LOUIS BOLK INSTITUTE

We would be interested to hear your opinion about this publication. You can let us know at http://www.kingfishergroup.nl/questionnaire/

Respiratory System Disorders and Therapy

From a New, Dynamic Viewpoint

Christina van Tellingen MD
Guus van der Bie MD (eds.)

BOLK'S COMPANIONS FOR THE PRACTICE OF MEDICINE

About the Louis Bolk Instituut

The Louis Bolk Institute has conducted scientific research to further the development of organic and sustainable agriculture, nutrition, and health care since 1976. Its basic tenet is that nature is the source of knowledge about life. The institute plays a pioneering role in its field by using experiential knowledge, by looking at questions that consider data as part of a greater whole, and through national and international collaboration. Through its groundbreaking research, the Institute seeks to contribute to a healthy future for people, animals, and the environment. For the Companions, the Institute works together with the Kingfisher Foundation.

Publication number: GVO 08
ISBN/EAN: 978-90-74021-39-5
Price €10
Postage € 7,50

KvK 41197208
Triodos Bank 212185764
IBAN nummer: NL77 TRIO 0212185764
BIC-code/Swift code: TRIONL 2U
For credit card payment visit our website at
www.louisbolk.org/companions

For further information:
Louis Bolk Instituut
Hoofdstraat 24
NL 3972 LA Driebergen, Netherlands
Tel: (++31) (0) 343 - 523860
Fax: (++31) (0) 343 - 515611
www.louisbolk.org
c.vantellingen@kingfishergroup.eu
g.vanderbie@kingfishergroup.eu

Colofon:

Translation: Sandy Reijnhart and Hendrik van Heek
Cover: Fingerprint
Cover painting: J.W.M. Turner, Lake with Park of Cromackwater (detail)

Respiratory System Disorders and Therapy

From a New, Dynamic Viewpoint

Christina van Tellingen MD
Guus van der Bie MD (eds.)

BOLK'S COMPANIONS
FOR THE PRACTICE OF MEDICINE

LOUIS BOLK
INSTITUTE

About the Authors

Christina van Tellingen MD (1949) has been a general practioner since 1982 and has educated medical students, physicians, and therapists in the United States, Canada, and Europe. She teaches medical students and physicians at the University of Witten/Herdecke, Germany and is a member of the Medical Section of the School of Spiritual Science at the Goetheanum, Dornach, Switzerland.

Guus van der Bie MD (1945) worked as a lecturer at the Department of Medical Anatomy and Embryology at Utrecht State University, Holland from1967 to1976. Next to his practice as a general practitioner since 1976, he continued to educate physicians and therapists, and medical students at Utrecht State University and the University of Witten/Herdecke, Germany. He is a member of the Medical Section of the School of Spiritual Science at the Goetheanum, Dornach, Switzerland.

Simon Arends MD has practiced homeopathy for 20 years. He is now working as a family physician in anthroposophical medicine at the Artaban therapeuticum, Hoorn, Holland.

Jan Keppel Hesselink MD is biologist and professor in molecular pharmacology.

Christien Klein-Laansma MD worked in psychiatry (1982-1984) and teaching (1984-1998). She practices homeopathy since 1993 and carries out clinical research in homeopathy since 2007.

David Kopsky MD works as acupuncturist and is researcher.

Lex Rutten MD is a general practitioner since 1978. He is a homeopathic physician since 1979, and researcher since 2001.

About the Project

The project *Renewal of Medical Education* aims to produce Companions that demonstrate how the insights of current biomedical science can be broadened by using the Goethean phenomenological method. This method innovates current concepts and expands the understanding of biochemical, physiological, psychological, and morphological factors in living organisms and their development in time and space, and in health, illness, and therapy. The project is commissioned by the Kingfisher Foundation, which aspires the development, application, and publication of the Goethean phenomenological research method in the widest sense, to complement and innovate the accepted scientific view and research method.

BOLK'S COMPANIONS FOR THE STUDY OF MEDICINE complement current medical education, specifically disclosing human qualities in the fundamental biomedical sciences of today.

BOLK'S COMPANIONS FOR THE PRACTICE OF MEDICINE contribute to a scientific phenomenological basis for integrative medicine and integral psychiatry.

Contents

Acknowledgments

This Companion was written at the Louis Bolk Institute in Driebergen, Holland. It is a result of the stimulating exchange of ideas with Bart van der Elst MD, Simon Arends MD, Tom Scheffers MD, Marko van Gerven MD, Toos Ganzevoort MD, Miek Jong PhD, and Kore Luske MD.

We thank Christien Klein MD and Lex Rutten MD for their contribution to homeopathic treatment of airway disease. We thank them and Simon Arends MD for a brief explanation of homeopathy for the appendix. We thank David Kopsky MD and Professor Jan Keppel Hesselink MD for their contribution on the use of acupuncture and traditional Chinese medicine in airway disease, as well as a brief description of these modalities for the appendix.

This project was made possible financially by gifts from the Triodos Foundation, Iona Foundation, Phoenix Foundation, the Brigitta Rogmans Fund, and the Bernard Lievegoed Foundation.

Christina van Tellingen MD
Guus van der Bie MD
Driebergen, June 2009.

Preface

After publishing the first Companion for the Practice of Medicine, a study of respiratory tract disease seemed to be a logical next step. Respiratory disease is well known to every medical student and intern, often from own experience. In medical practice, airway diseases are among the most commonly encountered.

We chose asthma and pneumonia as examples for this Companion. They are introduced by the stories of three of our own patients. It seemed important to start out from our own direct observations. We used the Goethean phenomenological method to elaborate on our observations. At the beginning of each chapter, the phenomenological background of the ensuing section is explained.

Goethean phenomenology is founded in perception and examination of living nature. In Goethean phenomenology, the known facts – in this case the signs and symptoms of our patients – are listed and then evaluated in view of the coherent functions of the organism. The relation between the collected data is sought and characterized. Then it is important to study where these relations are typical in other parts of the organism or in nature. It enables us to draw conclusions as to the role or meaning of these processes in the human organism. The result is a coherent innovative view on the collected data. Physiological and pathological processes are examined in terms of the processes themselves. In our study, it leads to new insights for the treatment of patients with airway disease. With this method, therapy goals can be tailored to each individual patient's needs and may be understood within the scope of modern medicine. Goethean phenomenology considers itself part of systems biology as a method that researches the coherence of living systems.

This is the second publication in the series: **BOLK**'S Companions for the Practice of Medicine.

1. Introduction

This Companion for the Practice of Medicine studies asthmatic disease and pneumonia as representative examples of airway disorders using the Goethean phenomenological method (Bartoft, 1986). This method is described in the Preface.

In Chapter 2, we will first describe some of our own patients with asthma and pneumonia to be able to study the signs and symptoms of these diseases. What do these diseases have in common and where do they differ? We will place our findings alongside of the pathophysiology of asthma and pneumonia to learn how these diseases divert from a normal healing process. Chapter 3 places the features of asthma and pneumonia in context. When we look at their symptoms in the respiratory tract, we find that these diseases have characteristics that are similar to physiological processes elsewhere in the organism. This makes it possible to give meaning to the characteristic qualities of these diseases and it will allow us to develop a dynamic concept of disease in the respiratory tract. Asthma and pneumonia appear to have polar opposite dynamics from this point of view.

> In the series **BOLK**'S Companions for the Practice of Medicine we discussed anatomy, physiology, biochemistry, pharmacology, immunology, and embryology from this viewpoint. Specifically, what can be learned from the Companions on Anatomy (Bie 2002), Physiology (Tellingen 2008), and Immunology (Bie 2006) is used in this Companion for the Practice of Medicine. The first Practice Companion: The Healing Process is also an important reference (Bie et al 2008).

In Chapter 4, we look at other inflammatory airway diseases comparing them to characteristic features of asthma and pneumonia. We will demonstrate that a dynamic perception of physiology and disease can uncover the relation between these diseases that, at first sight, may not seem to be connected. It leads to the insight that disease is a deviation from normal physiological processes in one or more of three ways: in intensity, in place, or in time. This is elaborated upon in Chapter 5. Chapter 6 presents a fresh look at the therapy for airway disease in light of what we have found. We will discuss

therapy from the standpoint of integrative medicine: safe and effective treatments used in regular medicine, homeopathy, anthroposophic medicine, traditional Chinese medicine, and acupuncture will be described. This gives a better understanding of their application as well as of how the different treatment modalities can complement each other.

We close by looking at non-inflammatory respiratory illness and at the importance of rhythms in the human organism in health and disease, in Chapter 7. Rhythms are essential not only in rhythmic functioning organs such as the airways, but also in the whole human organism. Respiratory disease, studied phenomenologically, can teach us about rhythmic functions.

In the appendix, the methods of the different treatment modalities – regular medicine, homeopathy, anthroposophic medicine, traditional Chinese medicine, and acupuncture – are presented.

We hope that this Companion will enhance the insight of medical students and interns – as well as of practicing physicians and therapists – when treating patients with respiratory disease.

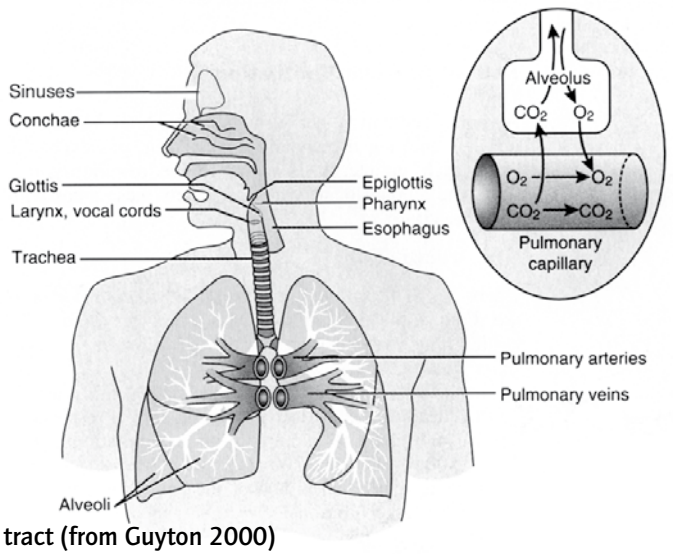


Fig. 1.1. The upper and lower respiratory tract (from Guyton 2000)

2. Clinical Signs and Symptoms in Patients with Asthmatic Disease and Pneumonia

In this chapter, we will introduce three characteristic cases of airway disease. The first patient has an acute asthma attack, the second patient is a chronic asthmatic, and the third patient has acute pneumonia. Using their signs and symptoms and the pathophysiology of asthma and pneumonia, we will explain the characteristics of asthma and pneumonia as typical respiratory diseases. Evaluating the signs and symptoms in view of functions of the respiratory tract, is the first step using the Goethean phenomenological method. It places these diseases within a larger perspective of polarity.

2.1. The Acute Asthma Attack

A 40-year old slender woman is sitting up straight in her bed complaining that she can hardly breathe. It is 11.30 PM. Her eyes are pronounced and she is wide-awake. She is short of breath and looks anxiously to the people around her for support. The shortness of breath forces her to speak in short sentences and, in between them, she needs to take a breath. While speaking, she does not move much, and the little movement she makes is brief and stiff. Her inhalation is eager. She cannot breathe out freely. Her expiration is accompanied by a tight wheeze, takes a great deal of energy, and is ineffective. The thoracic wall is caught in inspiration; it hardly moves. The breathing muscles and accessory breathing muscles are clearly visible and feel tense. The musculature of neck, back, and legs is also tight. She tends to have a constant, irritated cough that is not productive. The excursions of her thorax are greatly diminished.

She is on edge and slightly bent forward. Even though she is obviously tired, she is not able to fall asleep. When she speaks, her voice is strained. This is not her first asthma attack. She has had severe asthma since childhood.

On auscultation, we can hear the typical wheeze, as well as dry, sharp, spastic-sounding

noises. Expiration time is prolonged, the diaphragm is low. During expiration, her heart rate goes down considerably.

Her skin is pale with a slightly livid coloring and there is poor circulation in both her face and her extremities. The hands are cold and dry. The skin is generally dry and looks like the skin of a person with eczema. She has large areas with increased callousness, where the skin is hard and coarse. In other places, the skin is red and irritated with scratches. The patient has frequently complained about problems with itching.

If the shortness of breath continues for a prolonged period of time, we can expect the patient to become exhausted.

2.1.1. Signs and Symptoms of the Acute Asthma Attack

The general impression this patient makes is one of tension, anxiety, and fear. Her attention is wholly directed towards her breathing. We can list the various signs and symptoms of this patient according to function:

a. There is an increased awareness that manifests itself in
- Wakefulness
- Anxiousness
- Disturbed sleep
- An irritated cough

b. She has various breathing problems
- Shortness of breath
- Expiration is difficult and prolonged
- Her thorax is permanently in an inhalation position to almost maximum volume (barrel chest)
- There are wheezes and spastic noises on auscultation
- There is an unproductive cough

c. Her muscle tone is increased throughout the body
    There is strain with hypertonic and strained muscle groups
    She is pale from a strained circulation
    She has a bradycardia
    There is a tendency to stiffening of movements

d. Metabolic changes
    Slenderness
    Dry, calloused, eczematous skin areas
    Red, irritated eczematous skin areas with scratch effects

In general, we can observe an increase in stress and conscious functions. The more unconscious functions, such as metabolic activity, have decreased.

2.1.2. Pathophysiology of Asthma: Gross Examination and Histology

Asthma is a chronic, hyperreactive, inflammatory, lower airway disease. Autopsy of patients who have died during an acute asthma attack demonstrate how tissues are changed by asthma.

Gross examination shows hyperinflated lungs. The airways contain thick mucus plugs.

Microscopically, in the airways, the mucus contains cellular debris from necrotic epithelial airway cells and inflammatory cells (lymphocytes, eosinophils, and neutrophils), plasma protein exudates, and mucin produced by goblet cells. Charcot Leyden crystals, Cuschmann spirals, and creola bodies are crystallized elements in the exudate, a special type of consolidating tendency that occurs in asthma.

Histological examination of the airway tissue itself shows that all layers of the airway wall are thickened (subepithelial connective tissue, smooth muscle cells, and adventitia), except for the epithelial layer, a feature called "airway remodeling". Instead of moveable

lower airway structures, there is a thickening of the airway wall and an exudate in the normally air filled airway due to hyperreactivity. This results in a loss of function.

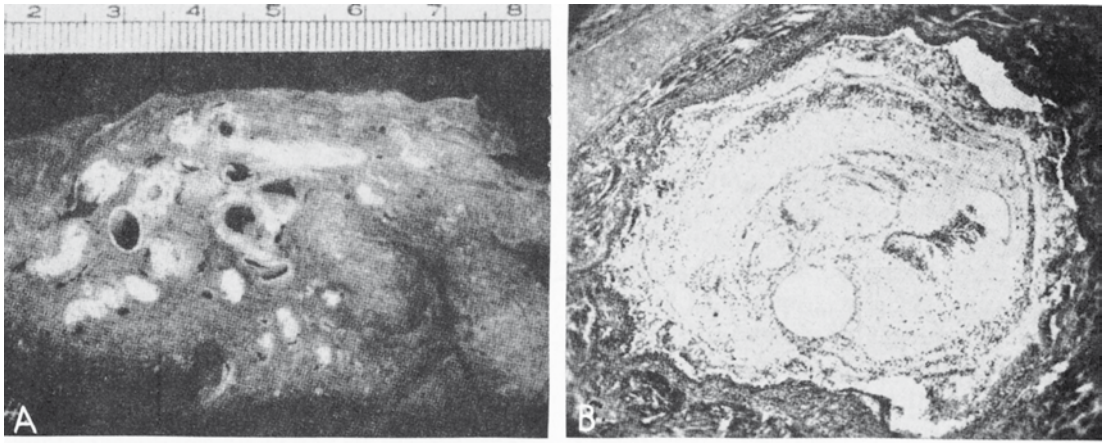


Fig. 2.1. Microscopic picture of bronchus with thickened wall and mucus plug in asthma (from Boyd 1970)

Airway Remodeling

The subepithelial basement membrane is thickened due to accumulation of extracellular matrix components other than type IV collagen under the true basement membrane (which itself consists of type IV collagen).

The subepithelial connective tissue is edematous and contains an inflammatory infiltrate. The cause for the thickening of the smooth muscle layer is unclear; it may be due to muscle hypertrophy, smooth muscle hyperplasia, increased extracellular matrix between smooth muscle bundles, or to other factors.

The epithelial layer shows ciliated columnar cells that are sloughed and squamous and goblet cells that show metaplasia. Both are manifestations of epithelial airway repair.

Throughout the full thickness of the airway wall, we may find an inflammatory cell infiltrate containing leukocytes and macrophages, CD4+T-lymphocytes, many eosinophils, and mast cells.

Conclusion: In the acute asthma attack, the airways become immobilized and show consolidation processes, functionally and in their anatomic structures. The pathophysiology shows similar tendencies: airway remodeling hinders airway movement and crystalline elements are present in the exudate.

2.2. A Woman with Chronic Asthma and Eczema since Childhood

A 36-year old slender woman has had moderate to severe asthma since she was a small child. Recently, her asthma attacks in the fall have led to her being hospitalized. She will first get a cold, and then the asthma becomes much worse and the cold progresses to a pneumonia, which requires hospitalization. She sleeps well except when she experiences an asthma attack. It tends to wake her up at night. She also has problems with hay fever in the spring and summer. She has had eczema since childhood. Her bowel movements are unformed.

Upon examination, we see a lean, blond woman of average stature who is keenly alert. Auscultation of the lungs reveals normal breath sounds, but expiration is prolonged, it lasts longer than inspiration. She has low lung borders in the back and her chest volume seems relatively large. She has active bowel sounds. Blood pressure and heart sounds are normal. Her feet, knees, and hands are cold.

She has a family with school age children and does volunteer work, but would like to take a job as a teacher, and also do further studies. She is hard working and ambitious.

2.2.1. Signs and Symptoms of Chronic Asthmatic Disease

The general impression of this patient is one of a woman with increased alertness and tension, though less acutely than in our previous patient. Her attention is directed towards achieving her goals. Again, we can list the different chronic signs and symptoms of this patient with asthmatic disease according to function:

a. Awareness
    Keenly alert
    Drive, resulting in stressful situations
    Sleeping problems during attacks

b. Breathing problems
    Recurring problems of shortness of breath since childhood
    Prolonged expiration
    Large chest volume

c. Muscle tone
    Active bowel sounds
    Unformed bowel movements due to fast passage of food
    Cold acra due to capillary spasm

d. Metabolic changes
    Leanness
    Dry eczema since childhood

We may add to this:
e. There is a seasonal influence with exacerbations in fall and winter

Conclusion
In both acute and chronic asthma, we can observe a chronic inflammation which has consolidating characteristics in a tense patient who has an overreaction to stimuli. The signs and symptoms in the chronic asthma patient match those of the patient with the acute attack. The pathophysiology is similar, albeit less pronounced.

We will elucidate this in Chapter 3.

2.3. The Third Patient: Acute Airspace (Lobar) Pneumonia

During the home visit, the patient is lying in bed, with the blanket tucked in solidly. What is immediately apparent is his accelerated breathing. He has a frequent cough, which is productive of yellow to green sputum that, not infrequently, contains traces of blood. It is a loose cough, during which the patient easily exhales, but he is unable to clear his airways coughing. The mounting red facial color leads us to suspect an increase in body temperature and, during physical examination it becomes apparent that the patient is burning with fever.
A damp, musty smell is noticeable when turning back the covers.

The patient is lying in semi-darkness, sleeps for long periods during the day, cannot concentrate, and feels thickheaded. In a kind of semi-sleep, the patient has rather turbulent 'visions.' As the patient wakes up, he can't seem to get comfortable and tosses and turns a great deal.
The pulse rate is high. Physical exertion and any physical activity cause, in no time, the tendency to faint and to sweat intensely. Moreover, the patient has less physical strength than normal. The muscle system as a whole tends to be hypotonic.
During auscultation, thin, moist crepitating sounds as well as moist rhonchi are heard. The expirium is not prolonged. The patient does not complain much of the shortness of breath and inability to get enough air, but the shortness of breath can be noticed in the phenomena of flaring nostrils and the use of auxiliary breathing muscles. His skin feels warm and moist.

2.3.1. Signs and Symptoms of Acute Pneumonia

Our general impression of this patient with acute lobar pneumonia is of a feverish, coughing person with a lowered awareness. We can list the signs and symptoms of this patient according to function:

a. The lower awareness is expressed in
   - Sleepiness
   - Dullness
   - Decreased sensorium
   - Loss of concentration
   - Deliriousness

b. He has breathing problems
   - Tachypnea
   - There may be a reflectory acute stop during inhalation
   - There may be painful breathing
   - The cough is loose and productive

c. His muscle tone is decreased
   - He has a generally lowered muscle tone
   - He has loss of muscle strength
   - Cold chills and chattering teeth off and on
   - There is a tachycardia
   - There is motoric restlessness

d. There are metabolic changes
   - Aversion to food
   - A negative nitrogen balance
   - Sweating
   - Fever

In general, there is an increase in dissolving catabolic processes throughout the entire body, especially in the lower airways. Pneumonia causes the patient to be acutely ill.

2.3.2. Pathophysiology of Bacterial Pneumonia

Macroscopically, a uniform, sharply demarcated area of the lung parenchyma with an infectious fluid exudate is found, that may progress to involvement of an entire lobe. It is harder to separate the airway walls from the airway space in this area. The typical shape of the lung is less distinct. The air in this region is displaced and the lung – or a part of it – is converted to an airless, watery organ. This part of the lung will sink when put into water. The infected area usually abuts the visceral pleura between the lobes or over the convex outer perimeter of the lung. The margin that does not lie next to the pleura is mostly well defined and the adjacent parenchyma is not involved. Larger bronchi within the infected area often still contain air, which creates the so-called air bronchogram on X-ray (fig. 2.2.).

Microscopically there is alveolar capillary dilatation and alveolar edema.
The exudate is initially relatively low in cells but contains numerous bacteria (Streptococcus pneumoniae or pneumococcus). Inflammatory cells such as leukocytes are sparse at first, but abundant later on, the microorganisms disappear. At a later stage, leukocytes disappear and macrophages take their place. There is no tissue necrosis. If the patient survives this infection, there is, normally speaking, a complete resolution and resorption of the exudate and a recovery of the histology of the lung tissue. Occasionally, the fibrino-purulent exudate results in a so-called hepatisation of the affected area. At this stage, the lung tissue becomes fibrinous (fig. 2.2.).

Blood Serum Changes in Pneumonia

In the serum of the patient with pneumonia in the acute phase, the alternative complement pathway is activated. There is then an increase in type-specific antibodies against a capsular mucopolysaccharide and an aspecific protein is present in the serum: C-reactive protein (CRP). There is usually a leukocytosis with a shift to the left and the appearance of immature leukocytes.

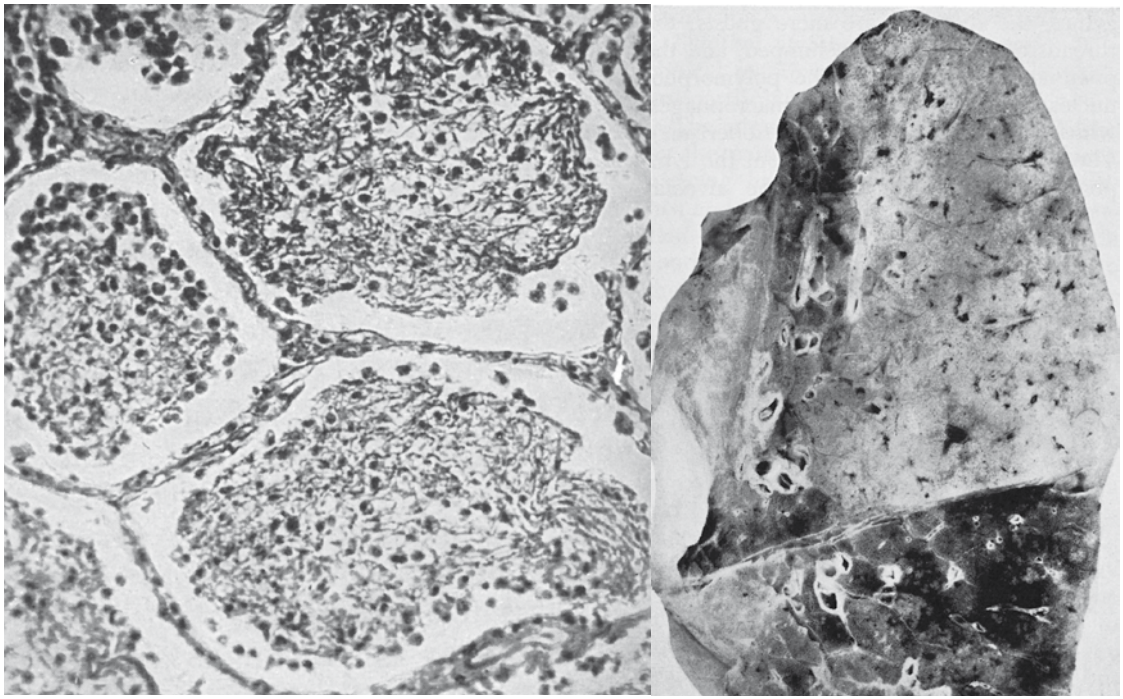


Fig. 2.2 Lobar pneumonia. Alveoli filled with exudate and grey hepatisation (from Boyd 1970)

Conclusion
The pneumonia patient is characterized by an increased dissolving immune and metabolic activity, which also shows itself in the dissolving shape of the lung and the immunological changes in the pathophysiology.

2.4. Framework for the Pathophysiology

In this section, a first step is undertaken to organize the clinical and pathophysiological data. We can classify these data by contrasting them with the general process of infection or injury and healing.

2.4.1. The Physiological Healing Process

Both asthma and pneumonia are inflammatory airway diseases. Inflammation is one phase in a larger process after injury: the general healing process in organisms. We will present some findings from the Companion that discusses how healing progresses (See the first **BOLK**'S Companions for the Practice of Medicine: The Healing Process, Organ of Repair. Bie et al 2008). This enables us to place the pathology of asthma and pneumonia in context.

The healing process is an archetypal cyclical set of events that helps the organism to heal from all kinds of injuries, from the visible skin wound and broken bones to invisible microscopic injuries that are constantly occurring. Without the healing process that repairs these larger or smaller, visible and invisible injuries, we would not be able to have a functioning organism. The healing process can be described as an organ of repair (Bie et al 2008, Ch 7). The skin wound, since it can be directly observed, is normally used to illustrate and research the healing process.

The healing process can be described in four distinct phases: the acute reaction to injury, inflammation, proliferation, and maturation. For airway disease, these phases can be characterized as follows:

1. The *acute reaction* can include hemostasis or the acute phase reaction of the immune system
2. The *inflammation phase*: the inflammation reaction is steered from out of the entire organism. It has a catabolic effect such that space for further healing is created
3. The *proliferation phase*: the organism repairs the tissue that was lost or replaces it with collagen
4. The *maturation phase*: the new tissue in the lesion is reintegrated into the organism as a whole; the healing is complete.

Inflammation as the second phase serves to clear out the cellular debris and bacteria from the injured area and to reinstate the severed relation, that is the functional and/or anatomical consequence of the injury, with other parts of the organism. In the normal

healing process, *integrative forces* actively bring the process through its four consecutive phases to completion (see also section 7.1.).

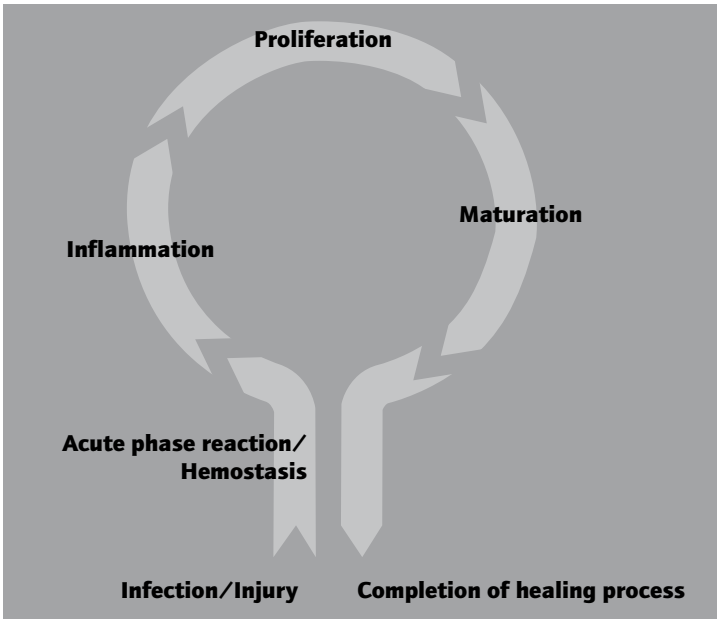


Fig. 2.3. The four phases of the healing process

2.4.2. General Pathology of Healing Processes

In the study of healing processes, we demonstrated that healing reactions could become deviated. Each phase of the healing process needs to find a balance between two polar opposite diversions:

a. Processes that go in the direction of delay and consolidation. They halt the cycle of healing in a particular phase and have a tendency towards chronicity
b. Processes that display the characteristics of intensified activity of one of the four phases, which leads to acute and serious worsening of the phase in question.

The first diversion demonstrates a consolidating tendency; the other tends more towards

dissolution. These diversions can lead to two different types of pathological processes when the imbalance is not corrected. The inflammation phase also has two types of diversion. An example of the consolidating type is any chronic inflammatory process; an example of the dissolving type is an infection, such as in an infected wound or in pneumonia.

Fig. 2.4. The diversion in the inflammatory phase

Two types of cells are especially active in the inflammation phase: The macrophages and the neutrophils. The leading impulse in the inflammatory phase is to restore the impaired connection with the rest of the organism with the aid of forces that can be described as interactive in nature and that function alongside the integrative forces that move the healing process along to completion (Bie et al 2008, Ch. 3).

The four characteristic signs of inflammation are rubor, calor, dolor, and tumor. In chronic inflammatory disease, we see a preponderance of swelling and reddening of tissues together with pain sensations. In infectious processes, warmth in the form of fever is additionally present and the dominant symptom.

2.4.3. The Pathological Diversion of Asthma

In chronic asthma and its exacerbations, the pathological findings show characteristics of persistence of inflammatory processes:

- The thickening and remodeling of the airways and the characteristic exudate are constant phenomena that show the ***consolidation*** in asthma hindering normal breathing movements and averting the completion of the healing process
- The "slowing down" of the inflammation phase leads to chronicity. There is ***delayed***

resolution of the inflammation. There is a lack of dissolving impulse to balance the consolidation. There is, for instance, no fever which could help break up the chronic inflammation (see fig.2.5.)

- From immunology, we know that the organism is not able to stop the inflammatory reaction in asthma (Companion Immunology, Bie 2006). There is an overreaction to stimuli in the lower respiratory tract: ***hyperreactivity***.

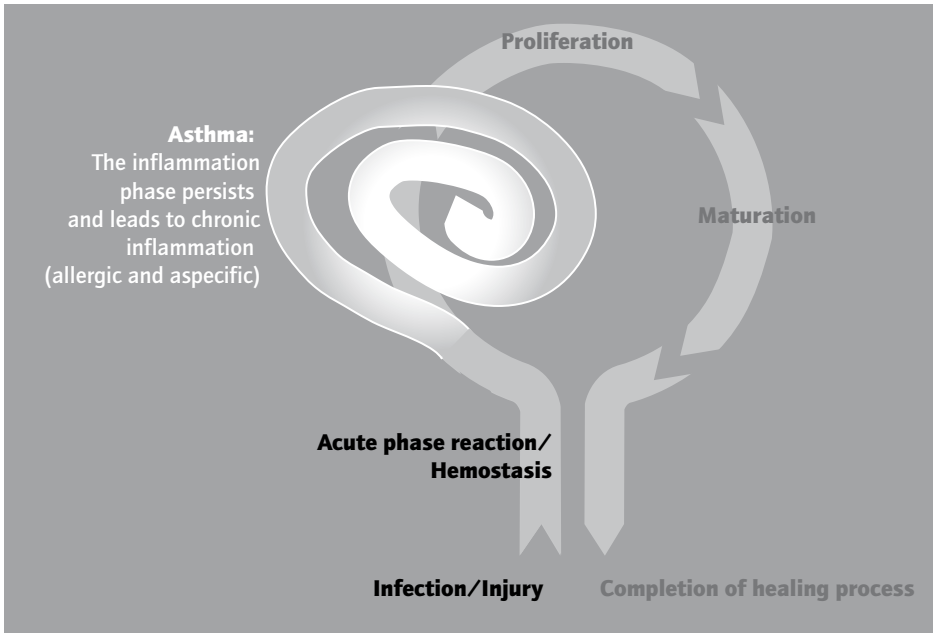


Fig. 2.5. Dynamic diagram of the diversion of the healing process in asthma

Conclusion

The pathophysiology of asthma attacks shows persistence of the inflammatory phase of the general healing process leading to a chronic inflammatory disease with:

1. *Hyperreactivity*
2. *Consolidation*
3. *A lack of resolution.*

Table 2.1. Pathophysiological characteristics of chronic asthma and exacerbations

Pathophysiology of **ASTHMA** particularly in exacerbations	
Reaction to stimuli	**Hyperreactive airways**
Consolidating tendency	**Airway remodeling**
Dissolving tendency	**Delayed resolution of the inflammation phase**

2.4.4. The Pathological Diversion of Pneumonia

In an uncomplicated pneumonia, the healing process is eventually completed, it does not become permanently stuck, it is temporarily diverted. However, in pneumonia, the inflammation phase is intensified and prolonged, compared to a normal healing process when there is no infection. The natural responsiveness to stimuli is used up onesidedly in the infection. New stimuli will meet with a reduced ability to respond, such as we see in complicated infections.

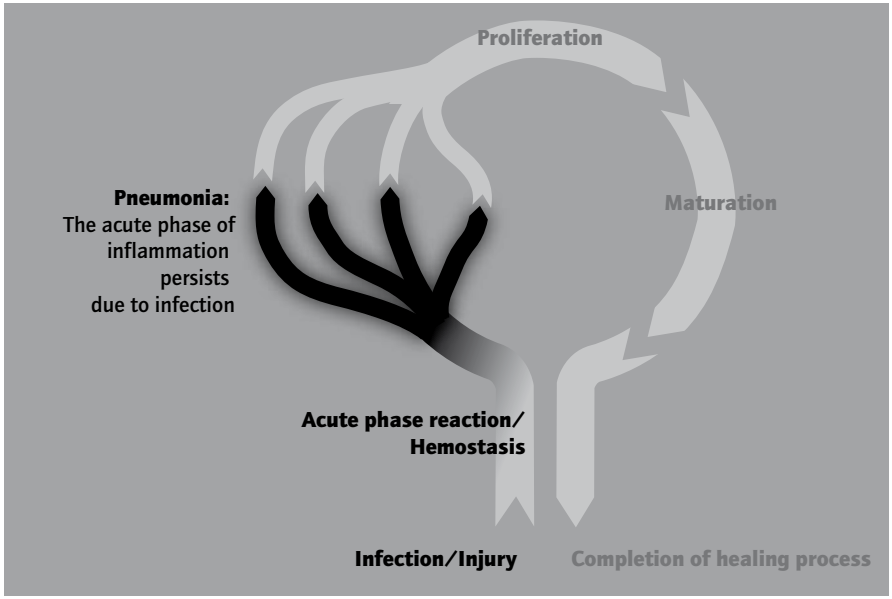


Fig. 2.6. Dynamic diagram of the diversion of the healing process in pneumonia

In pneumonia, the inflammation:

- Leads to a ***diminished reaction*** to outer and inner stimuli other than the infection
- Results in the distinct lung shape disappearing, ***formative elements*** are 'dissolved' in the watery exudate
- Has a dissolving characteristic, as for instance also happens in extremis in sepsis. The integrative forces that normally lead the process to completion are abrogated in infection. The Inflammatory process is intensified, leading to an aggravation of the symptoms of inflammation and an ***increased dissolution***.

See also Figure 2.6.

Conclusion

The pathophysiology of an uncomplicated pneumonia eventually completes the full cycle of the general healing process, a characteristic of self-limiting disease. There is a temporary diversion in:

1. Diminished reactivity

2. Reduced formative elements

3. Dissolving characteristics in the inflammation phase.

Table 2.2. Pathophysiological characteristics of acute lobar pneumonia

Pathophysiology of Acute Lobar **PNEUMONIA**	
Reaction to stimuli	**Directed reactivity to respond to the infection, for new stimuli reduced**
Consolidating tendency	**Reduced formative elements through the exudate**
Dissolving tendency	**Increased dissolution through the infection**

3. Characterization of Asthma and Pneumonia

In this chapter, we will take an in-depth look at the signs and symptoms of asthma and pneumonia in relation to the pathophysiological findings. This will allow the next step in the Goethean phenomenological method. We will characterize asthma and pneumonia as airway diseases dynamically in the sense of fig.2.4. and section 2.4.

3.1. Characterization of Asthma

We look first at the described signs and symptoms of the two asthma patients in relation to the clinical and pathophysiological observations of sections 2.1.1., 2.1.2., 2.2.1., and 2.4.3. Many of the signs and symptoms of the chronic situation match those of the acute attack, and we will therefore describe them together here. It is good to bear in mind that the situation of asthma patients is severe during the acute attack, but in the interval they may be symptom-free and able to function normally for prolonged periods of time.

3.1.1. Awareness

Overalertness

Our first asthma patient is overalert and aware during the asthma attack. Some of the alertness is "localized in the airways" themselves: it often leads to a tickle in the throat that may result in a frequent, dry cough due to the irritation that is present in the airways during periods of exacerbation, but it also contributes to the chronicity of asthma. Even when no attack is present, asthma patients often have a dry cough. The awareness in the trachea and bronchial tree can be described as a *pathological awareness.* Asthma patients do not seem to let go of their increased alertness completely, also in between attacks. Often, their attention is directed to changes in the physical condition. Our second patient shows a high level of self-consciousness and wants to achieve in her studies and work despite her health. The alertness contributes to an overreaction to stimuli.

Sleeping Problems

Asthma patients frequently experience sleeplessness during exacerbations. When lying down, patients have an increased shortness of breath. They may also be woken up by dyspnea. Normally, when we go to sleep the awareness of our body and surroundings ceases. In asthma, increased conscious sensory – and brain – function results in a pathological sleeping pattern.

Sleep is relaxing, it contributes to dissolution processes. *Sleep dissolution processes are abrogated* in asthma as indicated in fig. 2.4.

Anxiety

Many patients are fearful during – and sometimes even in-between – their acute episodes. They are afraid of suffocating, of going to the hospital, of becoming disabled. The fear can also become more diffuse.

An intensified awareness and a narrowing of consciousness accompany fear. There is only one focus in the mind, namely fear. Fearful patients can sometimes describe how they experience fear as an involuntary, somewhat obsessive concentration on one subject. Patients are not able to withdraw from the fear focus voluntarily or to freely direct their thoughts. We could characterize this as a *consolidating tendency of conscious life.*

Table 3.1. The characteristics of awareness in asthma and exacerbations

ASTHMA particularly exacerbations	Awareness			
Reaction to stimuli	**Overalert, also in the airways**			
Consolidating tendency	**Anxiety**			
Dissolving tendency	**Disturbed with decreased sleep**			

3.1.2. Breathing Problems

The time relation between inhalation and expiration in the auscultation of normal breathing sounds is 3:2. In asthma patients, the pathological expiration sound may take as long as the inhalation or the relation may even be reversed. This symptom can persist in the symptom-free period, as with our second patient. During the acute attack the imbalance is usually much more pronounced.

Obstructed Expiration

The spastically prolonged expiration with wheezing is characteristic for asthma. Asthma is an obstructive pulmonary disease, patients breathe out against a resistance. The obstructed expiration is secondary to a decreased flexibility of bronchial tissue. The resistance is due primarily to a spastic contraction of smooth muscle fibers. A swelling of mucus membranes – 'airway remodeling' (section 2.1.2.) – and tenacious, viscous mucus can further aggravate the obstruction. In asthma, the recoil of the lung is then not able to effect expiration: to the contrary, muscular activity is needed to exhale and even then may be insufficient. Expiration normally leads to relaxation after the activity of inhalation. The sigh of relief is a good example of this (see box). In asthma, especially during an exacerbation, *relaxation is abrogated*: the tension of inhalation is not resolved in expiration, but rather increases in the sense of fig. 2.4.

The Relation of Inhalation to Heightened Awareness

We can further clarify the relation between inhalation and the above-described overalertness with an example. Under which circumstances does an intensification of the inhalation normally occur? When a person is startled, during mounting tension, and with an increase in chronic stress, inhalation starts to dominate. The increased awareness accompanying shock or stress deepens and accentuates inhalation. If the shock proves to be unfounded or the tension disappears and we can allow our attention to slacken, then it is most relaxing to let out a deep expiration: the 'sigh of relief.' In this example, it is evident that the increase in inhalation is related to being more alert, or even overalert. In hyperventilation, we can observe a similar phenomenon.

Self-observation in stressful situations will demonstrate that this is a basic principle. It means that inhalation and increased awareness are directly and mutually related. The acuteness or severeness of a situation enhances our awareness and at the same time deepens our inhalation.

The Barrel Chest and Trapped Air

In the two asthma patients described, the thorax contains so-called 'trapped air'. It is a frequent finding in asthma patients. As a result, lung volume at the end of expiration is increased. This is descriptively called 'the barrel chest.'

On X-ray, we see an overinflated chest. At the same time, the breath excursions decrease and a low position of the diaphragm occurs. The air that enters the lung is barely breathed out. Instead of rhythmically moving air, a more or less static build-up of air develops in the thorax.

The barrel chest means that the thorax has become stiff; the thorax consolidates (fig. 2.4.).

Trapped Air

The dynamic of static air without rhythmical movement is normal in the nasal sinuses. In the nasal sinuses, air moves very little or not at all. There is no question of active gas exchange. Once air has reached the nasal sinuses it is, as it were, 'physiologically trapped' because there is no way out.

When there is 'trapped air' in the lung, it behaves dynamically in the same manner that air in the nasal sinuses does physiologically. Thus, we see that a dynamic that is normal in the sinuses, is pathological in the trachea and bronchial tree.

The ability of the nose and nasal sinuses to retain air is of essential importance for a clear consciousness and well-functioning senses, such as smell, taste, hearing, and sight. Every flu that is accompanied by a stuffed up nose and fluid in the nasal sinuses and the tympanic cavity causes a curtailment of sense functions. In this situation, even trying to think about solving a problem other than how to clear the airway is generally unsuccessful. The air in nasal sinuses could therefore be interpreted as functionally *related to the activity of the senses and consciousness.*

Cough

Sometimes, a persistent, dry, non-productive cough is the only symptom of asthma. It will typically be present at night and disturbs the sleep. This type of irritated cough is a sign of the chronic hyperreactivity in the lower airways, and, once more, contributes to the chronicity of the disease by *irritating the airways.*

Codeine as Cough Suppressant

In this context, it is interesting that codeine, as a cough suppressant is also a painkiller and a sedative. The most important 'side-effects' of codeine are certainly the generally feared atonic constipation and depressed breathing, because the motor movement of the intestines is immobilized and the 'breathing center' of the central nervous system becomes less sensitive. In short, awareness, tonus, and pain appear here as qualitatively related symptoms that are all suppressed by the same drug. All morphine mimetics have this effect on the organism.

Table 3.2. The characteristics of breathing in asthma and exacerbations

ASTHMA particularly exacerbations	Awareness	Breathing		
Reaction to stimuli	**Overalert, also in the airways**	**Irritated continuous cough**		
Consolidating tendency	**Anxiety**	**Barrel chest**		
Dissolving tendency	**Disturbed with decreased sleep**	**Obstructed expiration**		

3.1.3. Changes in the Musculature

Stress in tense living situations leads not only to an increased tonus of the skeletal muscles but also to hyperactive involuntary muscles. An example is the overactive bladder or intestine in stress, leading to a pattern of frequent urination or defecation.

Muscle Tone and Awareness

Muscle tone and changes in muscle tone are phenomena that are influenced by the nervous system. When a skeletal muscle is denervated, it can no longer contract nor is there a basic muscle tone; a flaccid paralysis develops. When nerve function is increased in stress, we will see an increased basic muscle tone. These phenomena are useful to teach us about the relation between nervous system function and muscle tone. We may conclude that intensification of awareness and increased muscle tone are directly related to each other via nervous system activity.

Increased Muscle Tone

We have seen in our two asthma patients that they have increased muscle tone, in both the smooth and striated musculature.

The increase in muscle tone is accompanied by an increased activity of the nerves innervating the muscles and an increased awareness (see box Codeine). We can observe the effect in the striated muscles between the ribs that pull the ribs to a more horizontal position than normal and in the tensed auxiliary breathing muscles in the neck. Hypertonic muscles will not only be found in the region of the head, neck, and shoulders. In most cases of asthma, we also find hypertonic muscles in the arms, legs, and back.
Smooth muscle contraction in the capillary vessels leads to the phenomenon of cold fingers, toes, ears, and nose that the second patient experienced. The increased smooth muscle tone in the digestive tract leads to active bowel sounds and loose bowel movements.
The increased muscle tone makes the *muscles harder* and the body thinner and colder (compare fig.2.4.).

Muscle Ache

The increased muscle tone leads to an accumulation of lactic acid that makes the muscles painful.

The blood circulation in the muscles is such that carbon dioxide, which is formed in the working muscle, can be removed and breathed out through the lungs. Normally, blood supply and production of carbon dioxide by muscle contraction are in a healthy balance.

In the hypertonic muscle, the decreased circulation may not be able to remove the carbon dioxide fast enough, so that lactic acid is formed instead of carbon dioxide, which is accompanied by the experience of muscle pain. Pain is an increase of conscious awareness in places of in the body, where we would normally not be aware.

The lactic acid that is present causes an irritation in the musculature that ***increases*** *the awareness* and puts further stress on the impaired breathing process.

Stiffening of Movement

The patient who is short of breath becomes increasingly more ***immobilized***. This is most pronounced, of course, during an asthma attack, but when the patient has chronic shortness of breath it is also present during normal activities. The action-radius of such a person can decrease considerably and physical movements cannot be carried out with the same intensity or for a prolonged period of time.

During forced inspiration, the negative pressure in the lungs and the poor passage of air through the upper airways cause retraction of the musculature between the ribs and in the neck. The retractions make the ribs more visible. This contributes to the reduced mobility of the skeletal part of the thorax.

Normally, our movements help us to relax and bring a balance to parts of the body that are tense. When our body has become tense from working at the computer, for instance, getting up and walking around every now and then relieve this. With asthma, normal movements are so tensed up that relaxation of the muscles does not take place sufficiently (see fig.2.4.).

Immobilization

The phenomenon of immobilization occurs physiologically in humans in the forming of the skull. The cranial bones knit together in the course of development in such a way that it is practically impossible for them to move with respect to each other. For the coronal bones, this immobilization occurs to such an extent that the original, paired bone development grows together, and leads to the development of one bone: the frontal bone.

In asthma patients, an immobilizing dynamic occurs that is dynamically and morphologically characteristic to the formation of the skull. The immobilizing dynamic of the skull extends dynamically to the thorax and even the extremities, and leads to a rigidity in the thorax and to a relative immobilization of the limbs. (see also the Companion Anatomy in which this functional anatomy is described. Bie 2002).

Table 3.3. Characteristic muscle changes in asthma and exacerbations

ASTHMA particularly exacerbations	Awareness	Breathing	Muscle tension	
Reaction to stimuli	**Overalert, also in the airways**	**Irritated continuous cough**	**Muscle ache through lactic acid**	
Consolidating tendency	**Anxiety**	**Barrel chest**	**Increased muscle tone**	
Dissolving tendency	**Disturbed with decreased sleep**	**Obstructed expiration**	**Impaired general movement**	

3.1.4. Metabolic Changes

Acidosis

Clinically, the asthma patient can be seen as someone who does excessive labor, involuntarily and unconsciously. There is a direct relation between exertion and asthma, which is immediately noticeable in patients with exercise-induced asthma. Asthma puts the organism in a catabolic, acidotic state. The excessive labor, as it occurs in asthma, therefore results in radical adjustments in the metabolism of the entire organism.
The catabolic metabolism and *acidosis* lead to a *consolidation* of the organism in the sense of fig. 2.4.

Acidosis in Asthma

The development of an acidotic state is a characteristic phenomenon of the labor phase of the organism, which explains the drop in pH. In exacerbations, asthma patients tend towards a catabolic state and develop a metabolic acidosis. C. Manthous reports: Lactic acidosis is a frequent laboratory finding in patients with severe exacerbations of asthma. The pathogenesis of lactic acidosis in asthma is not well understood, but it has been presumed, by some, to be generated by fatiguing respiratory muscles (Manthous 2001).

Hyperreactivity of the Mucus Membranes and Inflammatory Infiltration

Characteristic metabolic changes occur in the mucus membranes of the bronchial tree. Asthma patients have hyperreactive mucus membranes as a result of allergens or of aspecific factors. Aspecific hyperreactivity may occur due to a particular perfume scent, a paint smell, or cold air (section 3.1.5.). This means that the mucus membranes produce an excess of metabolites, in particular, cytokines. The best known of these are the histamine-like metabolites that are excreted in excess by mast cells. In addition, an abundance of inflammation mediators are produced that maintain the chronic inflammatory state of the mucus membranes. An excess of tenacious, viscous mucus points to a change in mucus from the normal sol condition to a more gel-like structure. In eczema, the skin is hyperreactive.
The ***hyperreactivity and the mucus change*** increase stress in the lower airways.

Delayed Growth and Leanness

Growth of organisms is a typically anabolic process. When we are awake, the organism is in a catabolic phase; when we are asleep, anabolism dominates. The asthma patient, particularly in exacerbations, is in a state that is comparable to the experience of concentrated or stressful labor day and night. This takes its toll on the vitality. An asthmatic period functions as a growth-inhibiting phase, in which too little energy is left for anabolic growth processes. Young asthma patients run the risk that their general physical condition and health will suffer with frequent asthma attacks. In the past, this sometimes led to growth retardation at a young age. Since the development of the modern asthma drugs, this delay in growth rarely occurs anymore.

The tendency to delayed growth indicates that ***anabolism in the body is abrogated*** (fig.2.4.).

Table 3.4. Characteristic metabolic changes in asthma

ASTHMA particularly exacerbations	Awareness	Breathing	Muscle tension	Metabolic changes
Reaction to stimuli	**Overalert, also in the airways**	**Irritated continuous cough**	**Muscle ache through lactic acid**	**Hyperreactive mucosa**
Consolidating tendency	**Anxiety**	**Barrel chest**	**Increased muscle tone**	**Acidosis**
Dissolving tendency	**Disturbed with decreased sleep**	**Obstructed expiration**	**Impaired general movement**	**Anabolism abrogated**

3.1.5 Seasonal Influences

There is an obvious seasonal influence on the occurrence of asthma attacks (Bueving 2004). The seasons with cold and moist air provoke exacerbations. This is due to aspecific hyperreactivity in asthma patients. In people with a tendency for asthma, the inhalation of cold, moist air can generate shortness of breath and coughing.

Seasonal Influences

The relation between cold and moisture, and increased awareness and inhalation is, in fall and winter, a nearly daily experience. Everyone knows the sensation of the (unexpected) contact with something cold – for example, cold water – leading to a forced intake of breath and, subsequently, the tendency to 'hold one's breath.' The thorax becomes rigid being overfilled with air: a hyperinflated chest. The enhanced inhalation occurs simultaneously with greater alertness and increased awareness of one's own body. Hypertonic muscles complete the picture of the asthmatic dynamic of the organism when it comes into sudden contact with something cold.

Those who still have doubts about the relations of the above-named phenomena with each other, may think of the opposite experience in which the organism comes in contact with something warm: warmth helps us to relax, exhale, and doze off.

Seasonal influences may increase the preexisting dysbalance in asthma patients by emphasizing the increased muscle tension and end-expiratory volume.

3.1.6. Summary and Conclusion Asthma

Particularly in exacerbations, asthma patients are forced into awareness, tend towards immobility and rigidity, tighten all their muscles, are anxious, and are limited in their movements. Verbalizing longer sentences is not possible during a serious attack. The cramping and held breath are palpably present, the eyes demand complete attention and are fully aware of everything that is happening. Patients feel cold to the touch. They are focused on the outside world and have an unremitting, intensified contact with it.

At such a moment, many asthmatics cannot rid themselves of the menacing picture of suffocation. They are literally 'threatened with a complete standstill' and the patient is intensely aware of that (fig.2.5.). The physician who visits a patient with an acute exacerbation may also experience this oppressive feeling.

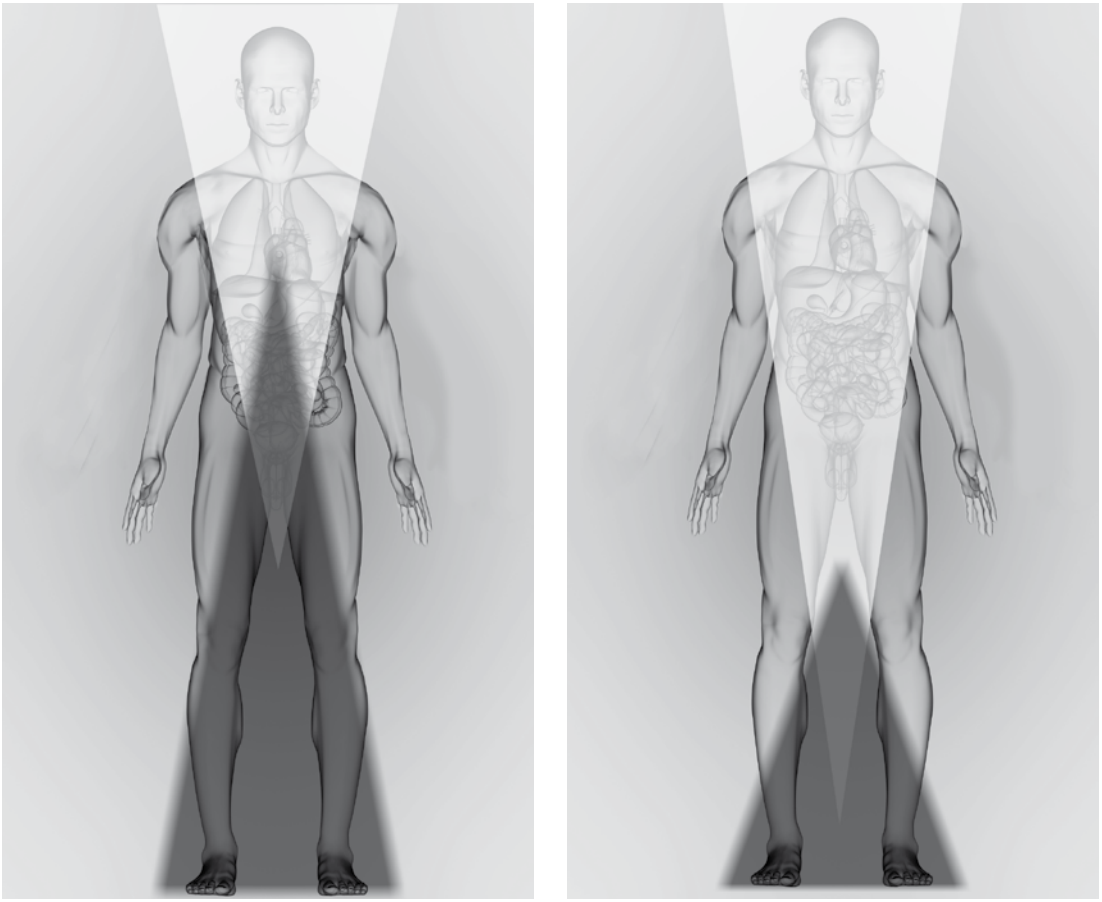


Fig. 3.1. The dynamic balance in health and in asthma

The signs and symptoms of chronic asthma and its exacerbations exhibit tendencies that are similar to the pathophysiological changes (section 2.4.3.).

The overactive nerve function allows perception, awareness, and tension to reach down too far into the organism. The dynamic that is characteristic of the nerve-sensory process leads to a reduction of movement and a tendency to create fixed forms in the airways, musculature, and metabolism that resemble skull formation. The asthma patient is, as

it were, dynamically poisoned by the nerve-sensory functions that originate in the head (figure 3.1.). Movement is slowed down and can even come to a complete standstill. The asthma process has a decelerated dynamic that is characteristic of all chronic processes. Recovery of normal function may not be achieved completely in disease-free periods. There is a strong tendency towards relapse and chronicity.
The signs and symptoms of asthma point in the direction that we had already observed in the pathophysiology (table 2.1.): a dysbalance that expresses itself in a tendency to consolidation, hyperreactivity, and diminished dissolution on all levels (section 2.4.3.). The morphological changes in the airways tend towards morphology that is characteristic of the skull and the functional changes correspond to increased activity of the nervous system.

The characteristic healthy tendencies in shape and function of head, nerve, and sense organs are related to the tendencies we found in the diseased respiratory tract in asthma.

This can be compared to what will be said in section 3.2.5. about pneumonia.

3.2. Characterization of Pneumonia

We will examine the described signs and symptoms of the pneumonia patient in light of the clinical and pathophysiological characterization of sections 2.3.1., 2.3.2., and 2.4.4.

3.2.1. Metabolic Changes

Increased Metabolism
The infectious processes of pneumonia increase the metabolism in the lungs.

In the inflammation phase of the healing process, debris — consisting of dead tissue, bacteria, and such — is normally opsonized, removed, and digested (Bie et al 2008. Ch.

3). The infection now leads to a further enhanced digestive activity in the lung. Metabolic functions that belong to the digestive process and are normally used to digest ingested food 'move' to the region of the lung and are involved in the pneumonia. This metabolic activity can nolonger be used for the digestion of food. A negative nitrogen balance is created.

A pneumonia patient generally has a high fever. With it, the ***dissolving tendency*** of the metabolism becomes active throughout the entire body (compare fig.2.4.).

Exudate

The presence of fluid in the lungs is visible on x-ray.

A characteristic pathological change in relation to the exudate in (pneumococcal) pneumonia is what used to be called the 'hepatisation' of the lungs. Hepatisation can be translated as "becoming liver." It indicates that the visible aspect of the infected lung looks like the visible aspect of the healthy liver. In hepatisation, the lung becomes increasingly saturated with blood, which leads to a transitory inundation of the airways with exudate. This gives the airways an appearance that is *morphologically similar* to the sinusoids of the liver at the expense of the air-filled space. Processes that belong, in the healthy state, in the liver are displaced upward to the lung area and lead to pathological symptoms. The liver is generally considered to be a principle organ of metabolism. In that sense, the concept of 'relocation of the metabolic process upward' can be used to demonstrate what happens when exudate appears in pneumonia (see also Ch. 5).

The normal ***shape of the lungs has disappeared*** as a result of excess fluid, is more or less 'dissolved' in the watery exudate.

Exudate in the Airways

In healthy circumstances, there is a continuous exchange between the content of blood vessels and tissue fluid (interstitium), which embeds all the cells in the body. There is an equilibrium that is specific for each organ in the body. In a healthy equilibrium, the fluid from the blood – with the elements dissolved in it – that leave the bloodstream balance the reabsorption of interstitial fluid – with its metabolic residues – into the lymph- and bloodstream. The equilibrium between secretion and reabsorption is a constant determinant in each organ,

but is normally different in the liver than in the lungs.

Under physiological circumstances, the presence of liquid components outside of the blood- and lymphstream is concentrated in organs below the diaphragm. The gastrointestinal tract contains fluid chyme, the liver has blood-filled sinuses, the gall bladder contains bile, the pancreas produces dissolved enzymes, the kidney produces urine, and the bladder holds urine.
Free air in the human body can be found in the airways that are situated above the diaphragm: the nasal sinuses, the airways including the middle ear, and the lungs.

When there is exudate in the airways, the lungs take on characteristics that belong to the organs below the diaphragm.

There is another interesting aspect. In the Physiology Companion (Tellingen 2008. Ch. 2), we described the respiratory tract as a membranous organ system that is enclosed by *physically hard* bones and cartilage. Mechanically defined pressure relations and gas exchange determine lung physiology. This is in contrast to systems such as the digestive tract, the urogenital system, and the circulation where mechanical forces are less prominent. In hepatisation of the lung, the physical forces are no longer effective and are displaced by an accumulation of fluid. The balance of the dissolving and consolidating forces is then shifted in the direction of the *dissolving tendency* in the sense of fig.2.4.

Decreased Appetite

The patient will generally have no appetite, especially not for a heavy dinner. Even the smell of meal preparation can lead to nausea. Warm drinks and perhaps some easily digestible fruit will be the only nourishment that the sick person will be able to take. The organism needs all its metabolic energy to master the pneumonia. There is a ***decreased reaction to the stimuli*** of hunger and thirst and, in this respect, the organism closes itself off from sensory contact with the outside world.

Table 3.5. Characteristic metabolic changes in pneumonia

PNEUMONIA				Metabolic changes
Reaction to stimuli				**Decreased appetite**
Consolidating tendency				**The typical lung shape disappears with exudate**
Dissolving tendency				**Infection and fever**

3.2.2. Breathing Problems

Tachypnea

Tachypnea, accelerated breathing, is the main breathing characteristic of patients with pneumonia. Inhalation is short and not very deep. With the accelerated breathing, the patient will generally also have a considerable tachycardia related to the fever. Tachypnea and tachycardia are related to the intensified metabolic processes that have a ***form-dissolving tendency***.

Productive Cough

Initially, there is a quick and loose cough but very little is coughed up, even when there is a considerable amount of audible mucus in the airways. In health, even a small amount of mucus will lead immediately to a stimulus to cough, which will remove the mucus from the airways. In pneumonia, mucus remains in the airways that does not activate the cough stimulus after the patient stops coughing. The cough in pneumonia becomes effective only in the recovery phase of the disease.

The ***reaction to the cough stimulus is decreased***.

Abrogated Inhalation

A patient with pneumonia sometimes complains of pain, especially at the end of inhalation. This pain generally originates in the pleura, especially when the pneumonia has reached the periphery of the lung. The pain causes a reflex abrogation of inhalation so that a shorter inhalation quickly becomes expiration. Inhalation is the active consolidating phase of breathing and is accompanied by an increase in muscle tension and awareness. Expiration leads to relaxation and a decrease in awareness. (See 3.1.2.).

The halting of inhalation indicates that the ***consolidating, formative tendency in the lung is abrogated*** (fig.2.4.).

Table 3.6. The characteristics of breathing in pneumonia

PNEUMONIA		Breathing		Metabolic changes
Reaction to stimuli		**Decreased reaction to cough stimulus**		**Decreased appetite**
Consolidating tendency		**Abrogated inhalation**		**The typical lung shape disappears with exudate**
Dissolving tendency		**Tachypnea and tachycardia**		**Infection and fever**

3.2.3. Muscle Tone

Hypotonic Musculature

The pneumonia patient 'lies limp in bed' and during physical examination, the patient has difficulty sitting up straight. Often, the thorax is presented for auscultation with the support of both arms and the patient wants to lie down again quickly.

The musculature is generally hypotonic. Muscle tension remains too low for vigorous

movements and there is little direction and form in the movement pattern.
The hypotonic musculature indicates an ***increased dissolving tendency.***

Involuntary Movements

Often, during periods with rising temperature, there are involuntary cold chills and chattering teeth. Shivering is a temporary motor hyperactivity which supports production of the necessary extra warmth. Shivering is what the organism does physiologically to raise its temperature. The rise in temperature is achieved through involuntary muscular movements that lack coordination and coherence. There are, at the same time, few voluntary movements. It is not unusual that patients, while awake, lie restlessly tossing and turning because they cannot seem to get comfortable in any position. The motoric restlessness is also part of the involuntary movement pattern. There is a ***loss of form*** in the movement pattern, which could be described as an increased dissolving tendency in the sense of fig.2.4.

Reaction to Motor Stimuli

The tossing and turning indicates that the patient does experience motor stimuli from his body; however, there is a general lack of movement and the stimuli that are present do not result in a focused movement. The ***reaction to motor stimuli*** is diminished.

Table 3.7. Characteristic muscular changes in pneumonia

PNEUMONIA		Breathing	Muscle tension	Metabolic changes
Reaction to stimuli		**Decreased reaction to cough stimulus**	**Diminished reaction to motor stimuli**	**Decreased appetite**
Consolidating tendency		**Abrogated inhalation**	**Hypotonic movements**	**The typical lung shape disappears with exudate**
Dissolving tendency		**Tachypnea and tachycardia**	**Involuntary musculature**	**Infection and fever**

3.2.4. Changed Awareness

Sleepiness

A patient with pneumonia and fever is less alert and concentrated and has a lowered awareness. There is a tendency to dose off. During the day, the patient often takes short or longer naps. Moreover, the attention span and the time span during which the patient can tolerate conscious contact with his surroundings are reduced. The patient easily tires, carrying a 'good conversation' is an impossibility, and the patient prefers to keep contacts to a minimum.

The decreased ability to concentrate is indicative of a ***diminished formative capacity*** in the patient's mind (compare fig.2.4.).

Need to Rest

Sensory stimuli such as smell, light, or sound are experienced as disturbing. The patient tries, therefore, to protect himself from the outside world.

The patient *does not tolerate sensory stimuli* very well and has a need to rest.

Deliriousness

In addition to the lowered awareness, an abnormal, generally incoherent type of awareness may occur with fever. The patient can become delirious, a situation in which strange, frightening, or even absurd scenes manifest themselves in the mind. In contrast to the anxiety of the asthmatic patient in which all awareness appears to concentrate on one thing, the inner scenes in a delirium are dynamic, often colorful, hyperactive, and quick to change. The richness of images and the dynamic quality of the scenes are similar to what we know from our dreams.

In contrast to what we saw with asthma, the awareness of the pneumonia patient is insufficiently formed and the quickly changing images exhibit a ***form-dissolving tendency*** (fig.2.4.).

Table 3.8. The characteristics of awareness in pneumonia

PNEUMONIA	Awareness	Breathing	Muscle tension	Metabolic changes
Reaction to stimuli	**Need to rest**	**Decreased reaction to cough stimulus**	**Diminished reaction to motor stimuli**	**Decreased appetite**
Consolidating tendency	**Decreased concentration**	**Abrogated inhalation**	**Hypotonic movements**	**The typical lung shape disappears with exudate**
Dissolving tendency	**Deliriousness**	**Tachypnea and tachycardia**	**Involuntary musculature**	**Infection and fever**

3.2.5. Summary and Conclusion Pneumonia

The pneumonia patient has a completely different dynamic than the asthma patient. There is an acceleration of the metabolism, awareness is diminished, the concentrating ability declines, the muscles are hypotonic.

The pathological process of pneumonia generally goes through a complete cycle in a limited period of time: acute beginning, quickly progressing development of infiltrate and infection, resolution of the infiltrate and complete recovery of the normal structure and function of the tissues. From the days before penicillin, we know that lobar pneumonia had an acute phase of approximately nine days, after which convalescence set in which took about five weeks.

Pneumonia is a diversion of the normal healing process, since the *infection* induces an enhanced inflammatory phase with an increased dissolution process. However, eventually the dissolution will be curbed in and the healing process will be completed (fig.2.6.). This is in contrast to what happens in asthma, in which the disease process tends to remain stuck in a more or less pronounced consolidating tendency of the inflammatory phase

for years, if not a lifetime (fig.2.5.). A case of pneumonia that has run its course does not have an increased risk of relapse. In this sense, it is generally a 'self-limiting' illness.

The signs and symptoms of acute lobar pneumonia show a deviation from the normal similar to what we find in the pathophysiology (table 2.2.): There is, on all levels, an intensified *dissolution process*, the *reaction to stimuli is decreased* and normal *consolidating processes are held up.*

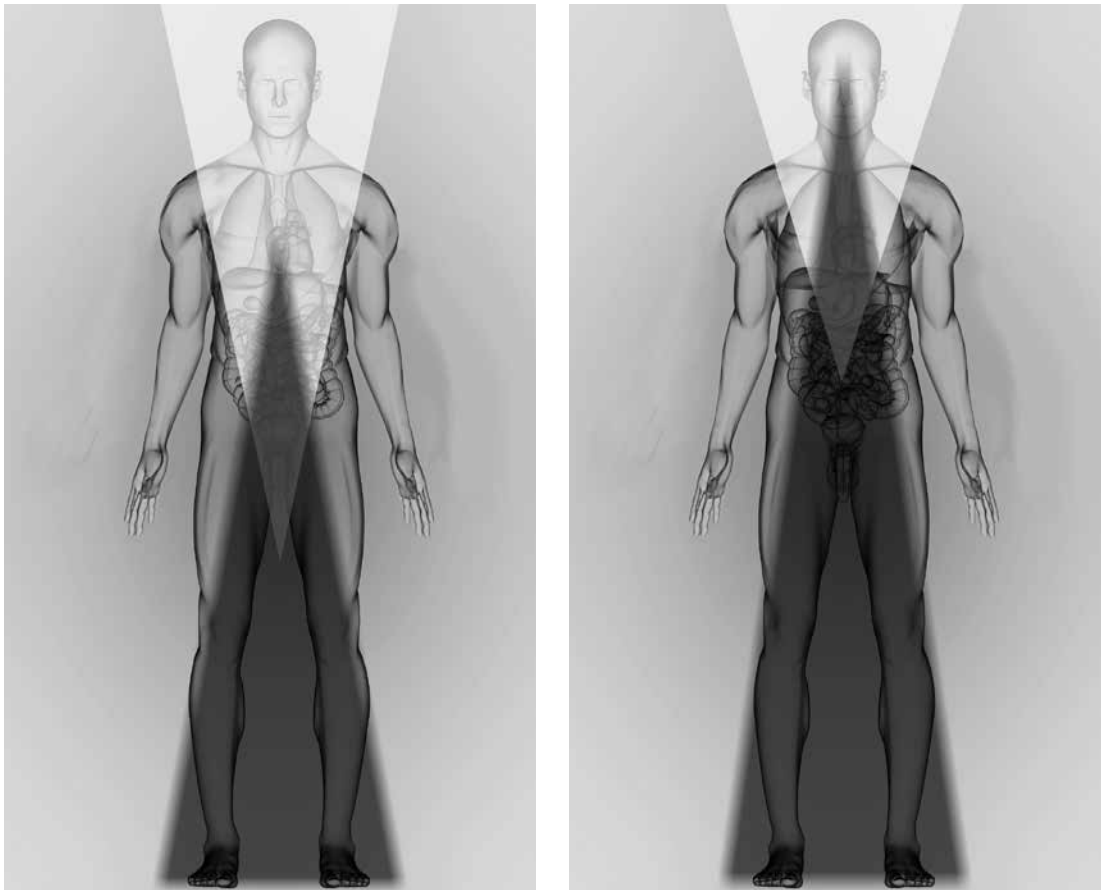


Fig. 3.2. The dynamic balance in health and in pneumonia

The dynamic of dissolving processes, including a continuing metamorphosis of circulating cells and substances, is functionally normal in the metabolic activity of the digestive system and skeletal muscles. In this sense, the pneumonia patient is put off balance by an over-active metabolism that 'poisons the organism from the bottom up.' There is increased metabolic activity in the lung and morphological changes tend towards a domineering morphology of the metabolic organs in hepatisation.

The characteristic healthy shape and functions of metabolism and metabolic organs, such as the liver, are related to the tendencies we found in the diseased respiratory tract in pneumonia.

This can be compared to what is said in section 3.1.6. about asthma.

3.3. Signs and Symptoms in Asthma and Pneumonia: a Dynamic Approach

3.3.1. The Polar Dynamic Tendency of Asthma and Pneumonia

Asthma and pneumonia have a polar opposite dynamic in their deviation from the normal balance in inflammation (fig.3.1. and 3.2.). The polar qualities can be found in the healthy organism as a whole (sections 3.1.6. and 3.2.5.). The consolidating, forming dynamic of asthma can be found as a healthy tendency in the nervous and sensory organs, which have their center in the head. The dissolving tendency of pneumonia can be found as a healthy and essential process in the digestion and in the normal metabolic activity of the muscles which have their center in the abdomen.

The balance that we find in normal healing processes is represented in the healthy body in the balance between nervous and sensory systems on the one hand, and metabolic organs and muscle metabolism on the other. The nerve-sensory system and the metabolic-muscle system have a polar opposite dynamic.
Everywhere in nature, where two polar opposites meet, a rhythmical process develops.

Just think of the interface between water and wind at sea and the creation of waves – or the interface between sand and water on the beach and the creation of undulating forms in the sand (see also 7.2.). This also applies to the organism where the living rhythms of heartbeat and respiration create an interface between the nerve-sensory and metabolic-muscle systems with their polar dynamics. Metabolic processes in the digestive and skeletal muscle systems and nerve-sensory activity meet each other in a rhythmic interchange. In the lung, this interface is present in the vicinity of the walls of the alveoli, where moving air and circulating blood meet in the rhythmic alternation of inhalation and expiration (see also section 5.3.2.). In a functionally dynamic sense, this provides three differentiated areas in the organism. The principle of a triple-segmented organization into a nerve-sensory system, a rhythmic system, and a metabolic-muscle system has been further developed in the Anatomy Companion (Bie 2002). The rhythmic system provides the place where the two opposite dynamics are balanced out.

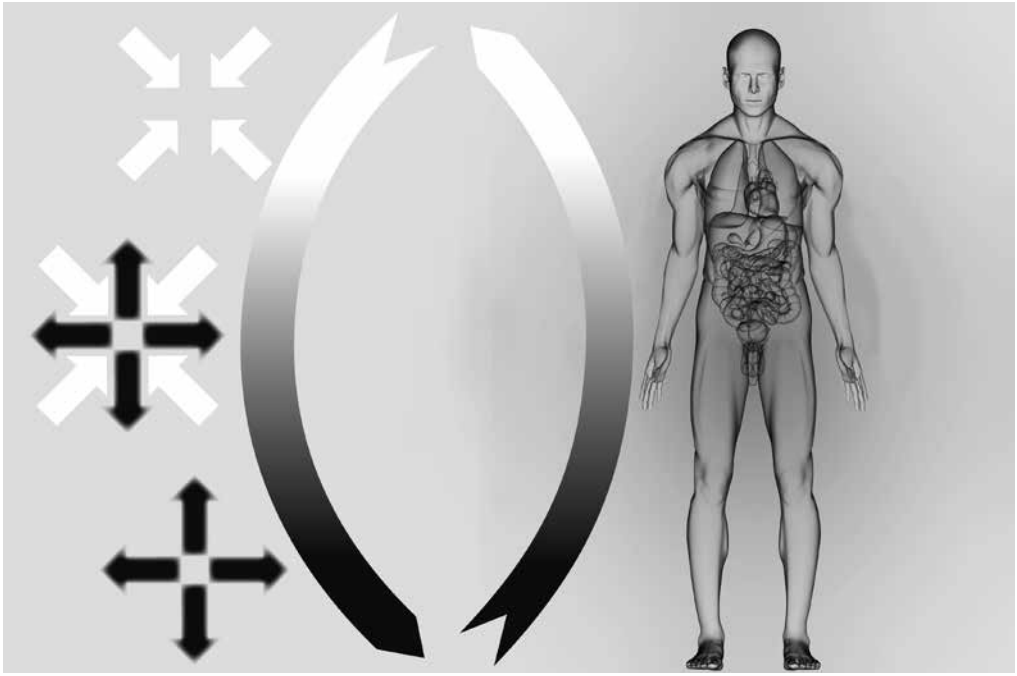


Fig. 3.3. Characteristic dynamic processes within the organization

3.3.2. Balance and Rhythm

To be able to react to all internal and external influences, processes in the healthy organism must be in an equilibrium that is not fixed. After all, a rigid organization is a threat to itself through its lack of adaptability (see also Gerven 2010, section 3.2.).

An equilibrium that oscillates around an average setpoint, such as the serum blood sugar level, is like an acrobat balancing on a tight rope. Rhythmically occurring processes stabilize the balance. Physiological processes are almost always rhythmical. Well-known examples of this type of rhythmically stabilized balance are the circadian rhythms of the serum cortisol level and of body temperature. Human physiology is set up with manifold balances that are stabilized by rhythmic alternation. In jetlag, we experience what it means when these finely tuned equilibriums are disturbed. Rhythm is vitally important for organisms (see also section 7.2.2.).

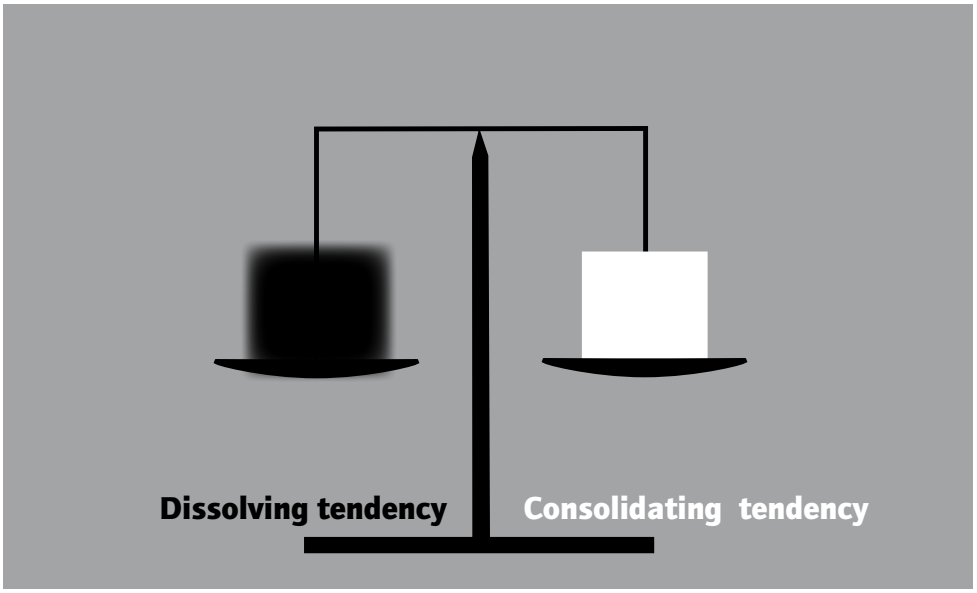


Fig 3.4. The healthy equilibrium

Jetlag

Who does not know the phenomenon of jetlag? During every trip in which we move around the planet going east or west, we 'travel in time'. Moving in an easterly or westerly direction results in our arriving at a place with a different day-and-night rhythm than we are used to. Our body reacts noticeably to this, particularly if the time difference is greater than two to four hours.

Curiously, not all functions 'travel with us' synchronically. When we examine the circadian rhythm of excretion of various substances by the kidneys, we find major differences in adaptation time to the new day-and-night rhythm.

Many substances are excreted in a circadian rhythm; they are not excreted at the same rate during the course of the day. For example, the excretion rhythms of phosphorus, sodium, and potassium in the urine differ greatly. These rhythms do not adapt to the new time zone simultaneously. Phosphorus has an excretion rhythm that is adjusted to the new situation within a day, the excretion rhythm of sodium is not adjusted for a week, and it takes three or four weeks before the excretion rhythm of potassium harmonizes with the circadian rhythm of the new location. It is perhaps most striking of all that the adaptation time for the excretory rhythm is not so much connected to the organ of excretion – the kidneys, in this case – but is specifically determined by the substances involved. This is a riddle of physiology for which there is, as yet, no explanation. It does show, however, the degree to which our organism functions rhythmically and how it adjusts its rhythms in health. (See also section 7.3.)

A balance that oscillates around a midpoint creates, on the one hand, the ability to adapt to ever-changing circumstances. This supports the ability for self-preservation. However, the fluctuating balance also makes the organism vulnerable to dysbalance in the form of disease. We have established that, in illness, the balance is disturbed to one side or the other (section 2.4.2.). The equilibrium no longer oscillates, it is temporarily stuck on one side. A balance that oscillates includes the possibility of illness and in a period of disease the body remains off balance.

3.3.3. A Dynamic Concept of Disease

Traditionally, disease is characterized using data that can be substantiated by the physical exam and supplementary techniques such as x-radiation, laboratory tests, bacteriological/virological examinations, and others. The dynamic approach of Goethean phenomenology offers the possibility to develop a *dynamic understanding of disease*. Diseases are then described as specific dynamic disturbances of the healthy equilibrium (see also Ch. 5). In health, the body is in homeostasis. In illness, this homeostasis is disturbed. The disturbance can cause a temporary dysbalance, such as we see in acute disease like pneumonia. In chronic disease, the persistent disturbance of homeostasis necessitates the creation of a new setpoint for the equilibrium. A good example of this is the blood pressure. It normally oscillates around 120/80 mm Hg. This is the healthy balance in homeostasis that may become temporarily offset by an acute shock. In hypertension, the bloodpressure oscillates around a new, higher setpoint, for example 160/100 mm Hg. This is a new, pathophysiological state of homeostasis also called allostasis. In chronic disease, the healthy balance is chronically offset. The dysbalance has become the new standard for the organism (fig.3.7.).

In general terms, health and disease can then be described as follows:

Health is a state of **homeostasis** ***with an equilibrium that oscillates around a midpoint; acute disease is a*** **temporary dysbalance** ***of the equilibrium; in chronic disease there is a*** **persistent dysbalance** ***in which*** **the balance midpoint is reset.**

Which type of dysbalance is involved can be indicated for each specific disease. Below is a schematic representation of the dysbalance in asthma and pneumonia.

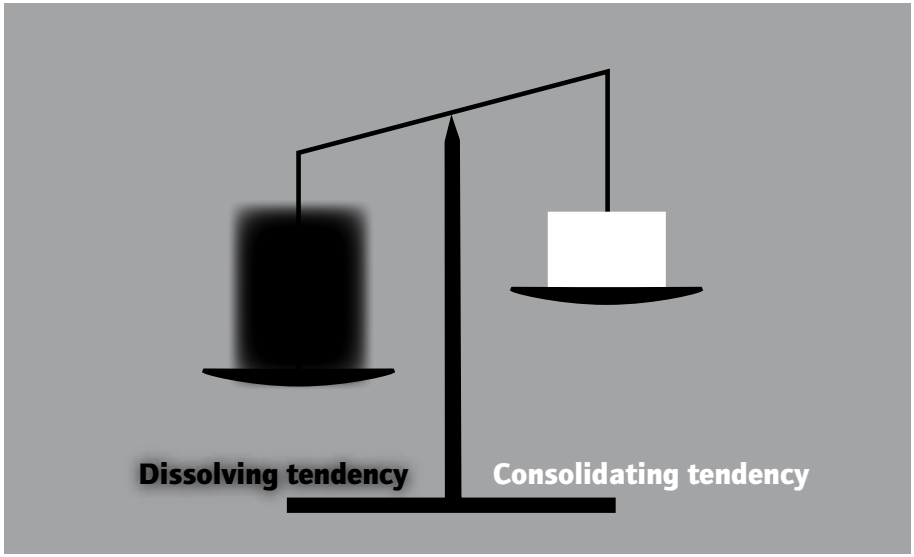


Fig. 3.5. The dysbalance in pneumonia

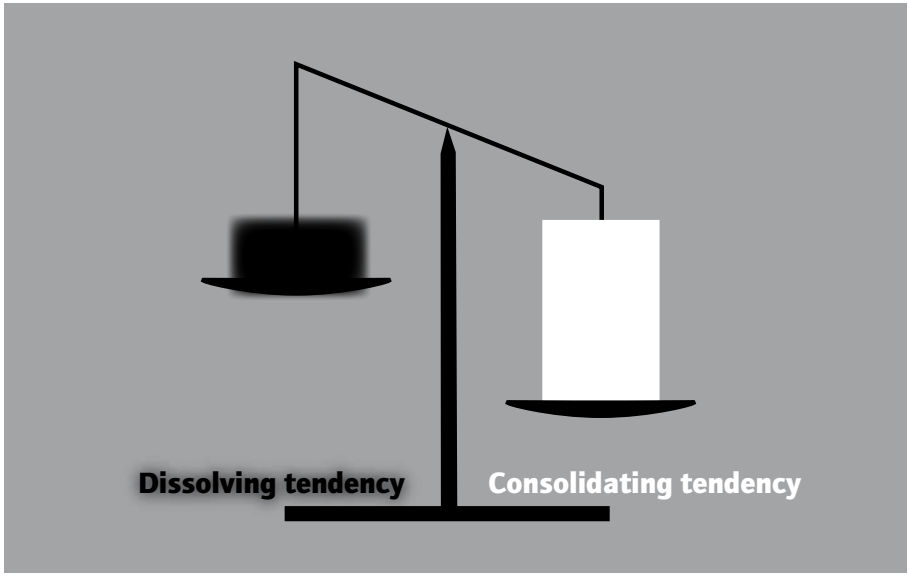


Fig. 3.6. The dysbalance in the acute asthma attack

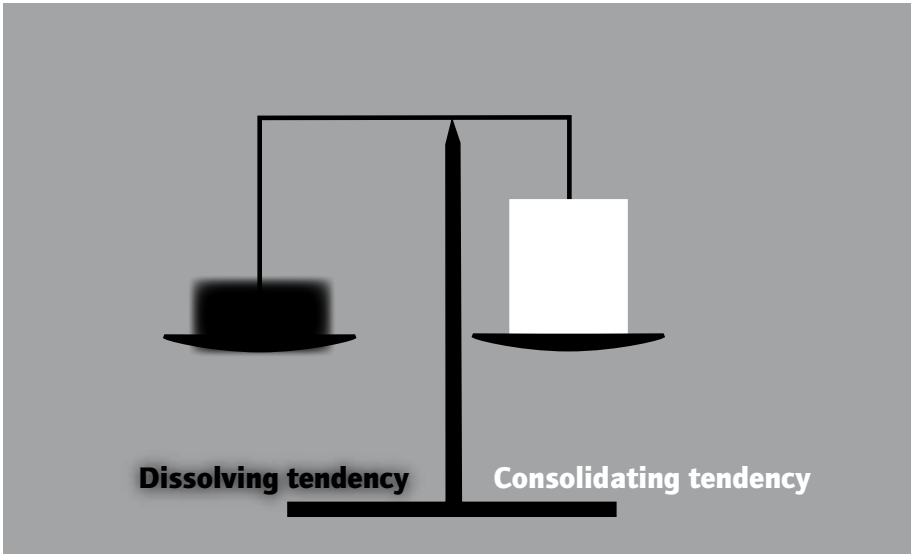


Fig. 3.7. The dysbalance in chronic asthma, homeostasis has shifted to become allostasis

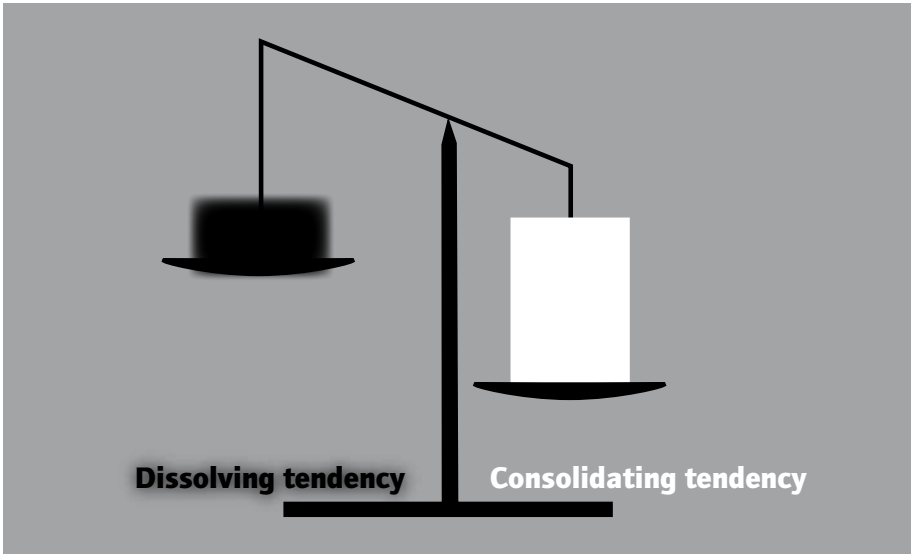


Fig. 3.8. Acute exacerbation in chronic asthma

4. Other Inflammatory Disease of the Respiratory Tract from a Dynamic Viewpoint

We have come to know asthma and pneumonia as two diseases of the respiratory tract with polar opposing dynamics (section 3.3.). The typical asthma patient is characterized by a hyperreactive mucosa and chronic exacerbations and remissions. A consolidating tendency such as we normally see in the nerve-sensory system in the inflammation phase determines these symptoms. The patient with pneumonia typically has an acute disease with fever, muscle weakness, and diminished consciousness. A dissolving metabolic dynamic prevails.

The step of the Goethean phenomenological method due now, is to broaden our investigation to other diseases and explore whether similar dynamic tendencies are present. In this chapter, we would like to briefly discuss some other inflammatory diseases of the airways and study their relations to the tendencies of asthma and pneumonia.

4.1. Sinusitis

The sinuses are a space filled with generally inert air. There is no gas exchange to speak of but some resorption of air takes place. The partial vacuum that is created locally due to the air resorption when swelling closes off access to the nasal cavity, accounts for the pain in sinusitis.

The symptoms of acute sinusitis include inflammation, mucus production, and an exudate in one or more sinuses and usually in some of the upper airways. These symptoms characterize sinusitis as disease. The acute inflammatory process involves viruses and often bacteria that are also active in acute pneumonia. Frequently, there is fever, and conscious functions have decreased. There is a superimposed metabolic dynamic in the

sense we discussed for pneumonia (section 3.2.5.), in which the dissolving tendency of the inflammatory process is emphasized. A pulsating pain often accompanies acute sinusitis. This symptom suggests an increased awareness in the sinus region, which demonstrates that nerve-sensory processes also play a role.

Sinusitis has the tendency to become chronic. In that case, greenish-yellow thick mucus is excreted as an expression of the localized bacterial infection, reminiscent of the sputum produced in pneumonia. However, there is not much fever, and exacerbations and remissions determine the course of the disease in which a typical chronic, headache-like pain dominates the picture. In chronic sinusitis, a consolidating tendency that we know from asthma becomes a leading factor. Due to its localization in the head, chronic sinusitis is comparatively more influenced by nerve-sensory processes than other chronic infectious disease.

Acute sinusitis could be seen as a "mild pneumonia in the head." Chronic sinusitis could be seen as a "mild asthma in the head."

4.2. Colds, Flus, and Otitis Media

Acute colds, the flu, and otitis media have dynamic qualities that resemble those of acute sinusitis. There is an acute infection with mucus production, exudate, and a low fever lasting only a couple of days. There are some nerve-sensory traits that manifest, for example, in a sore throat.

Here, again, a certain tendency to become chronic with exacerbations and remissions goes hand in hand with their localization in the head. In chronic colds and otitis, the chronicity of the condition is generally related to hyperactive mucus membranes.

The common cold, acute otitis, and the flu could be seen as a "mild pneumonia of the upper airways." Chronic pharyngitis and otitis could be seen as a "mild asthma of the upper airways."

4.3. Hay Fever

Hay fever is accompanied by an allergic condition of the upper airways. The symptoms of hay fever resemble those of the common cold. Patients have a runny nose and sore throat, and often also irritated conjunctiva. The symptoms generally appear with exacerbations and remissions in a yearly rhythm.

Hay fever has both chronic and acute characteristics.

Hay fever could be seen as a "mild pneumonia in the head with asthmatic tendencies."

4.4. Bronchitis

Acute bronchitis is an infection of the middle airways (Bie 2002, Ch. 6). In most cases, bronchitis will progress as a harmless self-limiting illness. A productive cough, an intermediate fever, and increased production of bronchial mucus are the most important symptoms. In contrast to pneumonia, there is not a massive exudate causing the loss of airspace. In that sense, bronchitis progresses "less wet" than pneumonia.

A ***chronic bronchitis*** gives itself away with the chronic irritating cough that is so familiar among smokers. Not infrequently, a mild bronchospasm also occurs with chronic bronchitis. The symptoms of chronic bronchitis are reminiscent of the symptoms of asthma. Using the explanatory model of disease that we have chosen, these developments can be understood in context. There is chronicity and an abrogation of the healing process in the inflammation phase, but less severe than in asthma.

Acute bronchitis could be seen as a "mild pneumonia of the middle airways," chronic bronchitis could be seen as a "mild asthma of the middle airways."

4.5. Chronic Obstructive Pulmonary Disease (COPD)

The main symptoms of COPD are cough, sputum production, and exertional shortness of breath. In severe disease, reduced oxygenation, barrel chest, and systemic wasting – including weight loss – become prominent. COPD is accompanied by a chronic airflow obstruction due to small airway obstruction with a reduced FEV1/FVC ratio and by emphysema at a later stage. The pulmonary alveolar space is normally filled out with alveolar walls forming a huge surface for gas exchange. In severe COPD, these walls are progressively destroyed, resulting in a loss of functional lung surface.

Here, the morphological characteristic of the paranasal sinuses – a space filled with inert air – becomes a prominent phenomenon in the alveolar space. We will further discuss this dynamic perspective in Chapter 5: processes that are normal and healthy in the upper region of the human organism are dislocated and provoke pathology on a lower level, just as in asthma.

In COPD, infiltrating mononuclear inflammatory cells in the airways indicate a more chronic inflammation and an abrogation of the healing process in the inflammation phase. Increasing fibrosis around the small airways indicates a progression of the chronic inflammation to chronic proliferation in the abrogated healing process.

COPD can be seen as an "aggravated case of chronic asthma in the lung."

4.6. Lung Fibrosis

In lung fibrosis, the lung becomes rigid. The rigidity occurs in the connective tissue of the lung. This transformation to a fixed form may progress until breathing becomes practically impossible. Fifty percent of these patients are diagnosed with some autoimmune disease. For the other 50%, the cause is unknown (Harrison's 2008).
With lung fibrosis, just as with asthma, there is a clear dominance of consolidating forces whereby the mobility becomes progressively limited. We see the nerve-sensory tendency intervene more deeply into the respiratory tract than is the case with asthma.

Lung fibrosis can be seen as an "aggravated asthma that intrudes deeper into the lungs."

4.7. Overview Inflammatory Disease of the Respiratory System

In fig. 4.1., the phenomena of the acute and chronic airway diseases discussed above have been placed in a dynamic diagram. The *right diagram* shows the ever-increasing effect of the formative influence from the consolidating nerve-sensory system spreading out into the rhythmic respiratory function. This leads to increasingly chronic diseases. The *left diagram* represents the diseases related to an expanded dissolving metabolic activity pushing up into the respiratory tract. Here we find the acute and self-limiting diseases.

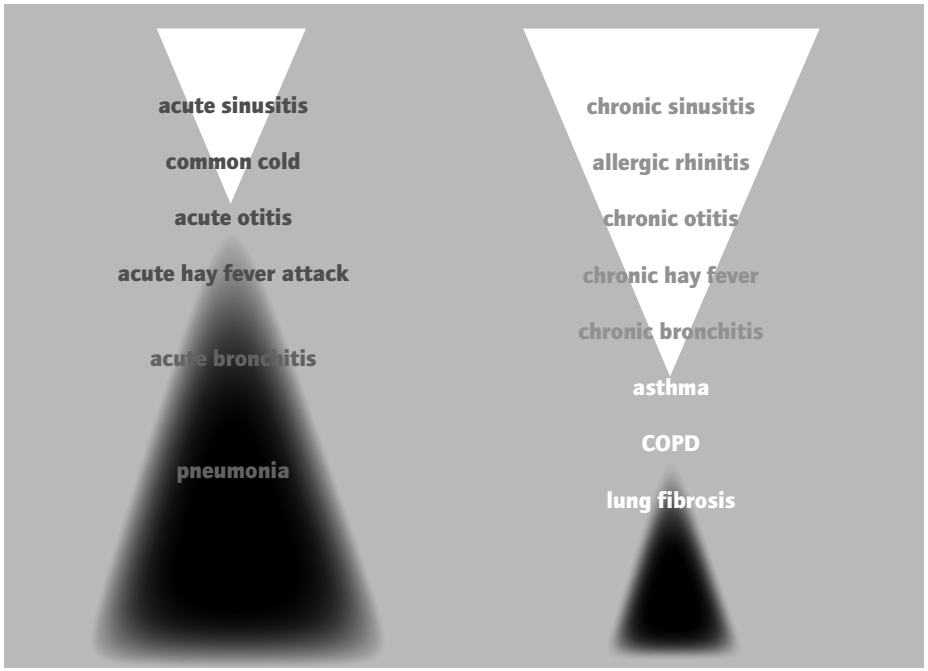


Fig. 4.1. Dynamic representation of acute and chronic inflammatory disease of the respiratory tract

4.8. Acute and Chronic Aspects of Illness

The symptoms of ***chronic illness*** generally progress with exacerbations and remissions. From the viewpoint of chronicity, the symptomatology of the various exacerbations is generally the same and specifically 'belongs to the patient.' It would be an extreme exception if the same patient reacted one time with the symptoms of asthma, the next time with the symptoms of epilepsy, and yet another time with chronic intestinal complaints. It is characteristic of a chronic illness that precisely the same symptoms, over the course of time, occur to a varying degree and frequency. There can also be longer periods during which the patient is symptom-free.

A second aspect is the ***acute moment*** of the exacerbation. Many patients themselves know very well what makes them ill, which ingredients may provoke an exacerbation. In other words: the acute moment is usually provoked by specific factors. Something which the one patient reacts severely to is for another patient with 'the same disease' irrelevant, and vice versa. The 'sameness' of the disease becomes modified by various individually determined factors that provoke an exacerbation. Many patients are also aware of the lifestyle that can specifically help prevent exacerbations. A change in lifestyle could then help them to improve their own health.

4.8.1. What is the Role of Constitution?

When we use phenomenology to look at patients, various symptoms can be recognized as belonging dynamically together. Two symptoms that, at first glance, appear to be clearly different, such as, for example, insomnia and increased muscle tension, can be recognized in their mutual relation and common cause. Thus, a dynamic and coherent picture of — the symptoms of — a disease is created.

The description of the asthma patients in Chapter 2 made it clear that, before the first acute moment in the 'illness' emerged, there was already a certain innate imbalance, which makes these patients extra sensitive (see figures 3.6., 3.7., and 3.8.). They had

developed acute asthma attacks as a reaction to increased nerve-sensory activity – for instance, stress. We could call this a predisposition or constitutional tendency for asthma. That means that a person could manifest a predilection for a specific disease, based on the innate, often inherited characteristics of the build and functional activity of their organism: people have a predisposition for illness based on their constitution. The description and characterization of a person's constitution is one method that can be used to indicate the relative preponderance of certain functional areas in a human being. In our asthma patients we discovered a prevailing influence of consolidating nerve-sensory processes.

The innate dominance of one specific functional activity creates a certain one-sidedness or imbalance within the organism. People are never completely harmonious and we all have our own predisposition for illness. Such an imbalance, however, has two consequences. Next to instigating a specific *predisposition for illness*, the person in question also possesses specific qualities as a result of the imbalance, such as the ability to pursue a set goal in the second patient. Imbalance has, therefore, both a positive and a negative side. The physician will usually be confronted first with the negative aspects of constitution in the form of the susceptibility for illness or actual disease.

Using the concept of constitution, we may approach innate tendencies for illness preventively. If, nevertheless, a period of illness occurs, then a treatment strategy can be developed that is also based on the constitution of the patient.

The patient's constitution plays a leading role when the course of illness is chronic.

Typologies in Medicine

In the history of medicine, we find numerous attempts to describe and clarify constitutional imbalance as described here. Well-known historical examples are the typologies as were developed by Schiller (Formtrieb/Spieltrieb/Stofftrieb), Kretschmer (leptosome/athletic/eurysome), Sheldon (ectomorphic/mesomorphic/endomorphic), Sigeaud (type cerebral/type respiratoir/type digestive), and Steiner (nerve-sensory type/rhythmic type/metabolic-limbs type).

In one form or another, the various typologies – and their corresponding anatomical/functional dominances – relate to the three germinal layers from human embryology: the ectoderm, mesoderm, and entoderm.

In current medical literature, we still find typologies in psychiatric diagnostics in the description of personality disorders, in diabetology, and in disorders of (fat) metabolism. Until recently a typology was used in cardiology that encompassed two types of personalities (A and B) with a corresponding predilection for hypertension or myocardial infarction.

4.8.2. What is the Role of the Acute Moment?

Having a predominant constitution is, in itself, not a reason for illness. In the course of life, however, a number of exacerbations may develop when the illness is precipitated by an acute moment. Well-known examples are when hay fever flares up through pollen in the air and when constitutional eczema worsens due to stress or allergenic foods. The rise in blood pressure, the increase of stomach complaints, the provocation of an epileptic attack, or the worsening of headaches in stress situations are all examples of acute moments. In this sense, a cold, an acute sinusitis, or a bronchitis show where the 'weak spot' is, even if they occur only once in a lifetime. These acute moments may become a stress factor for the constitution of the person in question. What can be considered a stress factor for a person is dependent upon their personal characteristics, upon their constitution. The part of the constitution that is susceptible to stress factors, the 'weak spot', usually has a completely personal profile. Even in people with comparable constitutions, stress factors are individually determined. Patients are generally fully aware of their 'weak spots'.

4.8.3. Acute Moment and Constitution

During an episode of illness, constitution and acute provocation come together. In the asthma patients we have described, the exacerbations were provoked by the following

factors: anxiety to meet certain people and situations, stressful life events, memories of traumatic experiences, viral infections, seasonal changes, family problems, and specific allergens.

A number of these factors have a mutual affinity. Anxiety, stress, family problems, and trauma are all awareness-related phenomena. They augment the awareness of the patient and their nerve-sensory processes. Allergens and seasonal changes (3.1.5.) may have the same effect by a different route. These factors give an extra impulse within the context of the constitution of the patient, which unbalances the constitutional dynamic. This may result in an episode of illness.

In the illness, situational aspects and constitutional aspects reinforce each other when they have a corresponding dynamic. The equilibrium of homeostasis, which oscillates around a higher setpoint during remissions in the sense of sections 3.3.1. and 3.3.3., veers into the dysbalance of an exacerbation (fig. 3.7. and 3.8.). Then the acute symptoms of the illness develop.

5. Functional Dysbalance in Airway Disease

In previous chapters, we described pathological symptoms as normal healthy processes that went out of balance (3.3.1.). In illnesses such as asthma and pneumonia, the equilibrium of homeostasis has shifted dynamically (3.3.3.). Investigation of the pathophysiological process during an illness is indispensable for the dynamic point of view. The next step using the Goethean phenomenological method will be to deepen our insight into the dynamic tendencies in disease, which will augment our capability for pattern recognition with respect to disease and shed light on the context of disease patterns. Pattern recognition is the skill we use in medical practice to make a diagnosis. In this chapter, we will explain the dynamic process of illness in more concrete terms.

5.1. The Shifted Balance of Homeostasis in Asthma

In chronic asthma, the healthy balance of homeostasis has been replaced constitutionally by an equilibrium with a new setpoint (3.3.3.). Exacerbations disturb the balance at the new setpoint of the asthmatic constitution. Symptoms in chronic asthma are part of the new pathophysiological homeostasis. The symptoms of exacerbations may match the symptoms of the shifted balance of homeostasis, but are more severe (see fig. 3.7. and 3.8.)

Pathophysiological Processes in Asthma

In asthma and its related diseases described in Chapter 4, normal physiological processes exhibit characteristics that make them pathological symptoms. Normal processes move outside their physiological domain. This can happen on several different levels.

When dynamic functional processes that are physiological in the nerve-sensory system, such as awareness, encroach upon the respiratory organs, where they, by nature, do not belong to that degree: they are 'dislocated.' Other processes, such as muscle tension, increase in intensity. Still other processes occur outside of the time-space allotted to them.

In asthma,

- There is an intensification of normal functions of the airways, such as muscle tension and inhalation: there is a *functional hypertrophy* on a local level
- A normal function, such as awareness, shifts with asthma from the nerve-sensory system to the respiratory tract: there is a *functional dislocation*
- Processes withdraw from the normal organization and phasing in time; they appear too early or too late, they slow down or speed up, as is the case in the persistence of the inflammation phase in asthma: the process withdraws from its normal *time line.*

5.2. The Disrupted Homeostasis in Pneumonia

In pneumonia, homeostasis is temporarily disturbed (fig. 3.5.).

Pathophysiological Processes in Pneumonia

Metabolizing foreign substances, regulating body temperature, and excreting waste products are *normal physiological processes* that become *pathological symptoms* in pneumonia and its related diseases described in Chapter 4.

The fever that occurs in pneumonia is connected to a generalized intensification of metabolic processes. An explosively extended and intensified cleansing process is active to clear the airways of the increased number of bacteria and the exudate. The anabolism and catabolism of foreign substances, processes that belong primarily in the digestive tract, are shifted to the respiratory tract. The course of the infectious process prolongs the inflammatory phase of the healing process.

In pneumonia,

- Normal processes which are part of temperature regulation and immune response increase in intensity: there is local *functional hypertrophy*
- Metabolic processes shift from the intestines to the respiratory tract: there is a *functional dislocation*

- Processes withdraw from the normal organization and phasing in time, the inflammatory phase is prolonged: these processes drop out of their normal *time line.*

5.3. Disease as a Functional Disruption of Equilibrium

We will elaborate upon functional hypertrophy, functional dislocation, and abnormal time lines in more detail.

5.3.1. Functional Hypertrophy

The word hypertrophy is generally used medically to indicate an increase in the amount of tissue. We have, for example, muscle hypertrophy, hypertrophy of connective tissue or liver tissue, etc. In a dynamic functional approach to pathology, the concept of *functional hypertrophy* can be used to indicate processes that become functionally excessive. Clinical examples are hyperventilation, hypertension, hyperacidity, or hyperthyroidism. In the examples given, there does not need to be an increase in tissue, but there is an obvious increase in function of the said organ tissue. Ventilation regulation, muscle tension in the heart and arterioles, acid production of the parietal gastric wall cells, and thyroxin production by thyroid cells are, in the examples given, functionally offset, while the organ with the hyperfunctional tissue remains anatomically intact (for awhile).

Just like a functional hypertrophy, functional atrophy also exists, such as with insufficient insulin production in diabetes mellitus type I, hypothyroidism, bradycardia, or atonic constipation.

5.3.2. Functional Dislocation

Embryonic development proves that certain physical functions can change location within the organism. The erythrocyte stem cell production shifts in the course of embryonic life

from the mesoderm in the yolk sac via the liver to the bone marrow. During life, when there is a need, the ability of the liver to contribute to erythropoiesis can be reactivated. This is also possible in regard to the vascularization of different parts of the body. Normally, the peritoneum is not vascularized. In appendicitis, a functional vascular system develops in the peritoneum through vasculoneogenesis. It will disappear again once the peritonitis has healed. In shock, people faint because there is an underfilling of the blood vessels to the brain as a result of the opening of vascular beds elsewhere in the body which draws away a large volume of blood. The infiltrate that is formed in pneumonia (and in other inflammatory processes, such as sinusitis or otitis) results from an increased blood supply and from fluid components and blood cells leaving the blood. There is a functional dislocation in these cases.

Another instructive example is thrombosis. The fact that blood can clot is obviously of vital importance for the organism. However, blood clotting in veins that are not injured is a pathological process. Deep venous thrombosis is an example of this.

The above examples make it clear that the ability for *functional dislocation* is a dynamic aspect that makes pathological processes recognizable as a *healthy process in the wrong place.*

The Relation between Aeration and Vascularization of the Lung

In the healthy lung, the relation between ventilation and perfusion varies. In the lung apex, aeration dominates vascularization and as a result there is more ventilation than perfusion. In the middle segments, ventilation and perfusion keep each other in balance and, at the base of the lung, perfusion dominates over ventilation.

The dynamic approach can identify three areas of function with differentiated relations between ventilation and perfusion in the lung. The lung apex is 'a bit asthmatic,' and the lung base is 'a bit pneumonia-like.' Shifts within these relations can be described as a 'dislocation' in space. In asthma, COPD, and related diseases, the entire lung assumes characteristics of the lung apex (fig.5.3.); in pneumonia and related diseases, it assumes characteristics of the lung base (fig.5.2.).

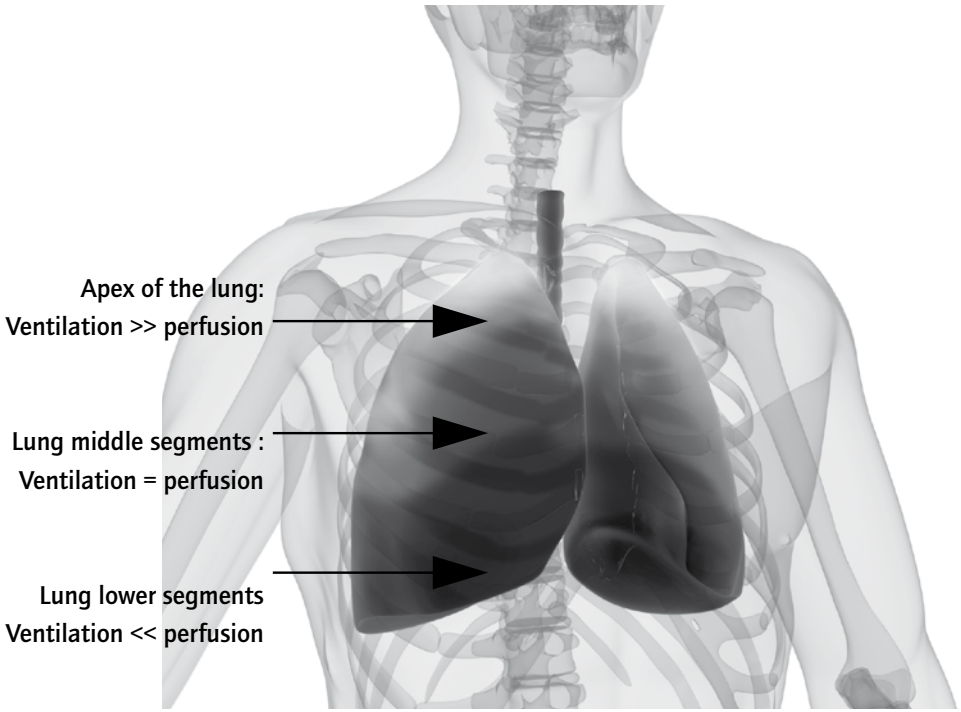
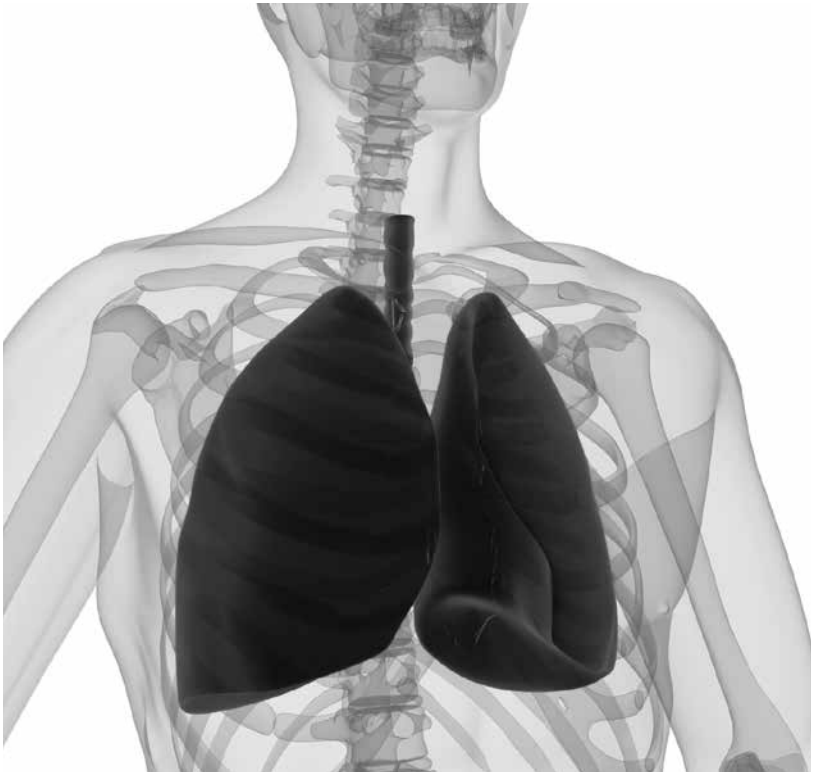


Fig. 5.1. Normal relations between ventilation and perfusion in the lung

We may conclude that we can recognize the qualities that we attributed to nerve-sensory activity and metabolism even in healthy lung functions. The healthy lung has a differentiated relation to asthma and pneumonia as dynamic processes.

5.3.3. The Disrupted Time Line

Organisms develop according to a type-specific biological clock. In illness, the time line is disrupted. Clinically relevant examples are developmental delays such as being late in losing one's baby teeth or delayed sexual maturation, and developmental acceleration such as early puberty or early osteoporosis.



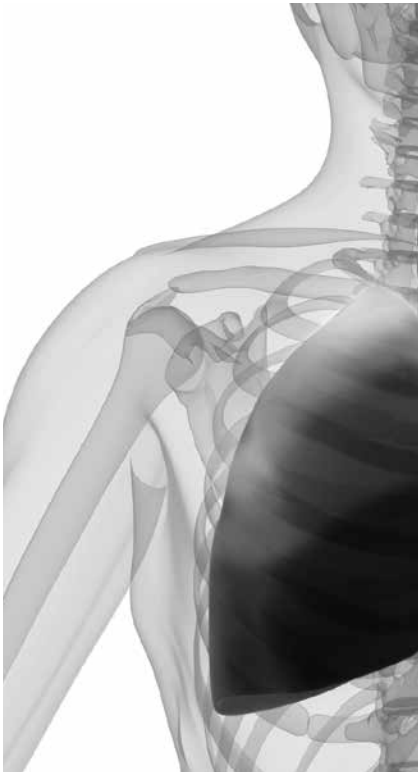


Fig. 5.2. Relation between ventilation and perfusion in pneumonia

The *disrupted time line* also becomes visible when we compare the upper airways of a newborn baby to those of an adult. A newborn has fluid in all of their sinuses. Also, not all of the sinusses are present in the newborn skull, most of the aeration must still occur. Sinusitis is therefore a regression in time for adults.

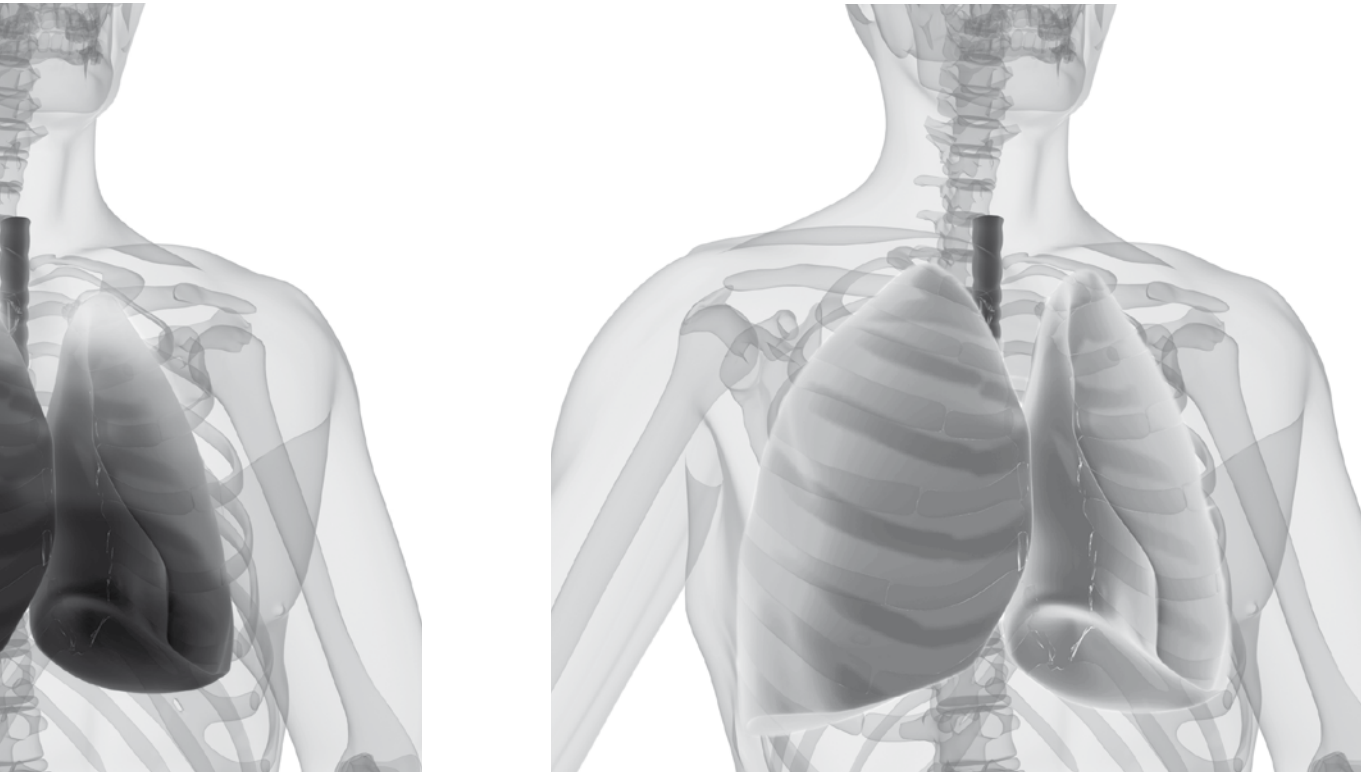


Fig. 5.3. Relation between ventilation and perfusion in asthma

The moment of the first breath is so special, because, for the first time, the alveoli that were filled with fluid up until then are filled with air. Premature birth carries the risk of Respiratory Distress Syndrome (RDS), when the fluid that is in the lungs is not resorbed and there is no room for the incoming air. Fluid in the airways, which is completely normal before birth, is absolutely abnormal at a later age. Pneumonia is therefore a regression in time for the lungs.

5.4. A Dynamic Concept of Disease

Modern genetics seeks the causes of disorders at the level of heredity and data transmission. Disease is preferably described in terms of a lesion, an infection, or a cellular and/or molecular functional disorder. Study of the causes of disease discloses that it is exceedingly rare to find diseases that have a monocausal explanation. In the past years, a *multi-causal or multi-factorial* explanation model has been developed for many diseases that appears to be closer to reality.

The insight that the organism has differentiated into mutually dependent and dynamic processes offers the perspective of a different disease concept. A multi-causal or multi-factorial explanation is comprehensible through the functional-dynamic approach that we have chosen for this Companion. The multiple causes and symptoms of clinical pictures are placed in perspective and the mutual relation between ostensibly non-related phenomena becomes visible. Using the Goethean phenomenological research method sheds light on context and connection of the various systems and functions in the organism.

With the three disease models that we have presented in this chapter: *functional hypertrophy, functional dislocation, and disturbed time line*, we can gain new access to the *dynamic* processes in pathology. Not infrequently, disease can be described as a combination of two or more of these disease models, as we have done for asthma and pneumonia.

A dynamic concept of disease can be characterized as follows:
Disease occurs when there is a functional hypertrophy and/or functional dislocation and/or disturbed time line for processes in the organism that are generally considered normal, natural processes, but that have changed in intensity, spatial localization, and/or time.

6. Therapeutic Considerations

In this chapter, we will formulate treatment goals for asthma and pneumonia using the dynamic approach that we described in previous chapters. Based on this, we will review various therapeutic interventions. The dynamic approach offers the possibility to innovate asthma and pneumonia treatment, to better comprehend it, and to apply it in a personalized form. We will discuss treatment options from the viewpoint of integrative medicine which uses those therapies that are considered safe and effective: both standard therapy and complementary options for treatment will be presented. A description of the different therapeutic methods can be found in the appendix.

The information on acupuncture and traditional Chinese medicine (TCM) was compiled by David Kopsky MD and Professor Jan Keppel Hesselink MD. Christien Klein MD and Lex Rutten MD supplied the homeopathic treatment options.

Comment

The descriptions below of potential treatments also include various natural and other medications. A dynamic approach of the process of disease implies that we can search for similar dynamic processes in other systems, such as in plants or mineral substances in nature, in order to find a treatment for the dysbalance of disease. The related dynamic processes in nature outside of the human organism must, when applied as medication, be able to counterbalance the disturbed dynamic of the sick person and lead to healing.

This search presupposes more than just a chemical approach to medicinal compounds, it also needs a dynamic view of medicinal mineral, plant, and animal substances. 'Thinking in dynamic processes' can augment the approach that is common in regular medicine, which generally thinks in terms of active ingredients. Experience and research offer a great deal of support to justify this approach. In our Companion "Pharmacology" (Tellingen 2006), we discussed the effect of some standard medications from a dynamic point of view. An extensive account of what the intended 'dynamic approach' means for understanding all the standard and

complementary medications and therapies discussed in this chapter would go beyond the bounds of this Companion.

The thesis of a recent inaugural address states: approximately 75% of clinical practice has not been researched epidemiologically; it is based on the clinical expertise of the physician. Clinical expertise should be reevaluated and taught as a method to medical students and interns (Smulders 2008). In other words: "Practice Based Evidence" guides most of our daily medical practices; Evidence Based Practice provides data that often do not match the individual patient.

The therapies we describe have proven their value in practice and rest, as such, on "Practice Based Evidence". We will describe them from a pragmatic point of view in the sense of "systems that work." A concise indication of their effective mechanism is provided in several places. These descriptions are by no means exhaustive. We feel that the practical nature of this Companion justifies this method.

By way of completion, we offer a more extensive list of references for those who would like to delve more deeply into the therapeutic approaches at the end of this Companion.

We are convinced that, above all, the therapeutic process is an artistic and creative process. A schematic or standardized treatment will be less effective than individually adjusted therapy. General perspectives are guidelines with a universal relevance. However, each person is individual and variable, particularly in illness. This applies to constitutional aspects as well as to the factors that determine acute disease. The ideal therapy is found by individualizing standard rules. Therapeuticians must, at all times, maintain a contact with the patient that allows them to adjust previously applied treatment to the current situation.

In the following, we will discuss the direction in which the therapy should work from a dynamic viewpoint, the objectives that are sought with the therapy, and the practical therapeutic options.

Treatment Modalities for Respiratory Disease

Acupuncture is part of ***Traditional Chinese Medicine***. Acupuncture and TCM have proven

indications, such as chronic pain syndromes and nausea and vomiting; less researched indications, such as sleeping problems and addiction; and barely researched indications for which there is no proof. Asthma, COPD, and pneumonia are examples of this last group. There are just a few large well-designed studies on the safety and efficacy of acupuncture for asthma and pneumonia. (McCarney et al 2004; Martin et al 2002). Moreover, many studies use different acupuncture techniques and are often too small to draw clear conclusions. In order to learn about the true value of acupuncture for asthma and related diseases, larger studies will be needed. There are, however, a number of botanical preparations based on the Chinese ayurvedic herbal tradition within TCM that have been used successfully for allergic conditions.

Anthroposophic Medicine combines the use of regular medication with natural medicines and specialized therapies. Treatment is individualized and addresses both the acute condition and the 'constitution' of the patient. Some thorough studies were done recently on the quality of anthroposophic medicine (Ritchie et al 2001; Scheel-Sailer 2003; Arman et al 2001). Studies have been published on the effectiveness of anthroposophic treatment in chronic disease in general (Hamre et al 2004a; Sommer 2005; Kienle et al 2006; Hamre et al 2007a; Hamre et al 2008), in asthma (references see below), pneumonia (references below), and in acute upper respiratory disease (references below). Several handbooks describe the treatment of respiratory disease and its background (Soldner et al 2007; Fintelmann 2007; Schönau et al 2005). The specialized therapies include specialized physiotherapy, art therapy, music therapy, eurythmy therapy, and external applications. They can be used in respiratory disease as indicated below. Medications made from potentially poisonous compounds are potentized through rhythmic dilution (Nani et al 2007; Rhigetti et al 2007; Witt et al 2007), non-poisonous substances are sometimes used as an extract, sometimes in potentized form.

Homeopathic medication can be given as support along with other treatments during an acute asthma attack or pneumonia. During an acute treatment, clinical homeopathy is generally used (see homeopathic methods in the appendix). Homeopathic medication is only to a limited degree available in pharmacies. It can therefore be useful to have the essential acute medications on hand in, for example, the C30 potency.

Classical, individual homeopathy is called for in the treatment of chronic conditions. An additional objective is strengthening the entire system, the 'constitution'. This is then called a constitutional treatment. Isopathy is also used for chronic asthma with an allergic component. This chapter includes examples of homeopathic treatment options for asthma and pneumonia. These examples are based on knowledge that is recorded in the homeopathic materia medica and repertoria, augmented with practical experience (Bönninghausen ed. 2002; Boericke/Phatak ed. 2005; Baets 1991; Harst 1987). Homeopathic medicines act differently from other medications; the same medication could be used in a large number of conditions, but the medication should 'fit the patient'. Homeopathic medications are chosen based on the 'modality' of the symptoms (peculiarities and circumstances that influence the course or intensity of the symptoms). A number of possible homeopathic medications are given per treatment category, with specific characteristics that could be applicable. (McCarney 2004; Rutten et al 2009; Baets 1991; Harst 1987)
Homeopathic treatment of patients with asthma and chronic recurrent respiratory infections could lead to a significant reduction in costs and use of conventional drugs (Bornhöft et al 2006). This is also suggested by retrospective research in patients in an outpatient clinic in Italy (Rossi 2009).

Regular medicine has validated medications for asthma and pneumonia therapy. It is, therefore, used as a basic treatment modality.

6.1. Therapeutic Goals for Asthma in Acupuncture and Traditional Chinese Medicine, Anthroposophic Medicine, Homeopathy, and Regular Medicine

Asthma, as a chronic episodic disease, requires treatment during the acute asthma attack and its sequellae but treatment may also be needed during remissions. The patient who is acutely short of breath has different treatment requirements than the patient who is chronically short of breath. The therapy options will pay explicit attention to this.

In the healthy situation, there is a rhythmic exchange of inhalation and expiration, muscle

tension and relaxation, afferent and efferent activity in the respiratory tract. This rhythmic process is disturbed in asthma in the direction of a consolidating and afferent nerve/sensory dynamic. The diagram of fig. 6.1. portrays the dynamic disturbance of the asthmatic, as we discussed in sections 3.1.6. and 3.3.1. From this, one can deduce the direction of therapy, which is to move the abrogated healing process along (see 2.4.3.). The consolidating, hyperreactive, non-dissolving dynamic of asthma must be brought into movement. We can do this at all of the previously discussed levels of the disturbed dynamic (fig.6.1.).

Regular Medicine

In asthma, treatment is anti-inflammatory and/or directed towards bronchodilatation in regular medicine. This therapy has been validated by epidemiological studies.

Traditional Chinese Medicine, Acupuncture, and Asthma

There is a high prevalence of Complementary and Alternative Medicine (CAM) usage in patients with asthma and COPD, especially those not involving medications. The appeal of treating asthma with vitamins, "natural" herbal treatments, special diets, exercise programs, special breathing methods, shiatsu, and acupuncture — some of the many non-traditional approaches to asthma care — is perhaps related to the sense that one may be able to avoid taking too many synthetic chemicals into one's body.

Evidence from some clinical studies supports beneficial effects of TCM herbal therapy on asthma. A number of mechanisms may be responsible for the efficacy of these agents. Strong preclinical study data suggest potential efficacy of a so-called food allergy herbal formula-2 for food allergies. Acupuncture is also used in asthma therapy.

A new review on complementary interventions stated: Recent studies indicate that TCM therapy including herbal medicines and acupuncture for allergic disorders in children is well tolerated. There are also promising clinical and objective improvements (Li 2009). For ayurvedic herbs in TCM, a recent group concluded: " Herbs may be useful in treatment of asthma. There is insufficient evidence to make recommendations for or against the use of these herbals. Established effectiveness must be balanced with a study of the quality and safety profile for the herb" (Singh 2007). For many of these cases clear evidence for efficacy and safety is lacking as yet (Li et al 2009).

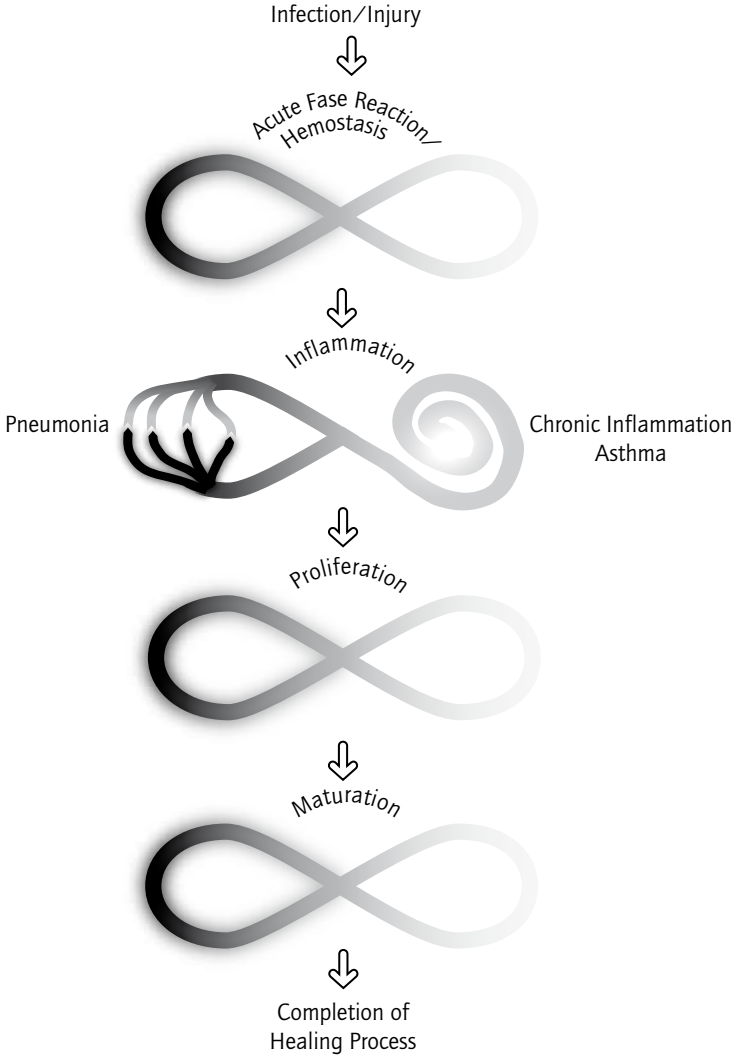


Fig. 6.1.The balanced healing process and its diversions in asthma and pneumonia

Anthroposophic Medicine and Asthma

In 2001, Ecker et al compared anthroposophic asthma therapy to conventional therapy in a small group of 38 children in in-patient and outpatient setting in two hospitals in Germany and the Netherlands. Over the course of 12 months, the two comparable groups had a marked improvement of their asthma symptoms. However, of the children receiving anthroposophic medications, none needed inhalation corticosteroid treatment (ICT) and only 7 out 19 used a ß2 adrenergic agonist inhaler intermittently, while all of the children using conventional treatment needed ICT, and 11 out of 19 had daily ß2 adrenergic agonist inhalers, and 6 out of 19 used them intermittently (Ecker 2001). In a prospective two-year cohort study of 90 adults and children with asthma from German outpatient clinics, anthroposophic treatment with medications, eurythmy therapy, and art therapy was associated with sustained improvement of asthma symptoms, asthma-related quality of life, and general health-related quality of life (Hamre 2009).

The effect of quality of life factors on the development of atopic disease and asthma was recently studied at the Louis Bolk Institute in cooperation with Maastricht State University. It showed that early antibiotic use preceded the manifestation of wheeze but not eczema or allergic sensitization in young children (Kummeling et al 2007a,b).

Homeopathy and Asthma

Homeopathic treatment for asthma is additional to other treatments and favored by a substantial number of patients. In an observational study in Southwest England, 1,320 patients with asthma in 27 general practices were interviewed (Shaw 2008). 14.5% of patients (c.i.12.5% -16.6%) had received additional complementary treatment. The three most frequently used methods were homeopathy, herbal therapy, and relaxation techniques. In an observational study in seven homeopathic hospitals in the UK (six out-patients departments, one in-patient clinic) asthma was the 6th most frequently observed diagnosis (Thompson 2008). In a Cochrane database systematic review, six randomized controlled trials on homeopathic treatment of asthma were analyzed (McCarney 2004). Different types of homeopathic treatment were evaluated. However, most treatments were standardized and not individualized, as is usual in homeopathic treatment of chronic conditions. Based on these trials, the authors conclude that the role of homeopathy in chronic asthma is unclear. They state that there is a need for observational data to

document the different methods of homeopathic prescribing and how patients respond.

6.1.1. Therapy for the Consolidating Tendency in Asthma: Relaxation

Table 6.1. The characteristics of the consolidating tendency in asthma

ASTHMA particularly exacerbations	Awareness	Breathing	Muscle tension	Metabolic changes
Consolidating tendency	**Anxiety**	**Barrel chest**	**Increased muscle tone**	**Acidosis**

Therapeutic Goals

a. Not infrequently, ***anxiety*** worsens the acute asthma attack. The increased smooth muscle tone in the bronchi is, in part, caused by the anxiety of the patient and those around him. The tendency for anxiety is also present in the chronic patient. The objective is, therefore, to help decrease the anxiety, both in the acute attack and in remission.
b. The ***barrel chest*** in severe asthmatics and COPD is based on hypertonic muscles that put the chest in an inhalation position. The therapeutic goal is to relax the inhalation position of the thorax.
c. The ***increased muscle tone*** in asthma can chiefly, but not exclusively, be found in and around the respiratory tract. It is matched by increased activity of the nervous system. Efferent motor nerves innervate the surrounding voluntary muscles of the chest, neck, and abdomen, including the diaphragm. The smooth muscles of the bronchi are activated by the parasympathetic nervous system. Both play an important role in the pathophysiology of hypertonic musculature in asthma. The objective is to achieve a relaxation of the muscle tone of these voluntary and involuntary muscles.

The general objective of a, b, and c is to achieve relaxation.

d. An existing metabolic ***acidosis*** needs to be corrected.

Treatment of the Consolidating Tendency in Asthma

a. Anxiety can be treated first and foremost by the calming effect of the physician's presence. Furthermore, it is important that the physician, by taking appropriate action, reassures the patient and those around them during an acute attack.
   In periods of remission, patients themselves can manage chronic stress or anxiety by consciously choosing a more *relaxed rhythm* in their lives, by learning techniques to handle stress and anxiety, and by protecting themselves from their hypersensitivity to impressions. *Psychotherapy* can greatly support this process of self-education.

   There is often anxiety due to the 'consolidating tendency' in asthma. ***Acupuncture*** studies have chiefly been done on the calming effects of anxiety treatment surrounding surgery. These studies show that anxiety can be decreased through acupuncture, particularly with ear acupuncture (Karst 2007; Gioia 2006; Pilkington 2007). In these studies, acupuncture is compared in a group of patients who were given fake acupuncture pricks in the ear versus a group who were pricked at the actual, verum points. There was clearly more effect in the true acupuncture group than in the control group who were pricked at fake points. In another study, the effect of acupuncture on anxiety in asthma appears positive, especially if the acupuncture is administered by a trusted person (Mehl-Madrona 2007). It is, thus far, unclear whether or not this suppression of the anxiety in asthma is caused purely by the acupuncture itself or if it is chiefly due to the evolved trust in the therapist.

   Anxiety is a good indication for such ***homeopathic*** medications as Aconitum, Arsenicum album, and Phosphorus. *Phosphorus* can be used for anxious patients who can lie on their right side but not on their left. Asthma attacks that are accompanied by mortal terror specifically require the medications *Aconitum* and *Arsenicum album* (Piltan, 2007). If the attacks occur around midnight (12.00-2.00 AM) and the patient does not want to be left alone, we can give Arsenicum album. Aconitum is particularly useful after catching cold. (Boericke/Phatak ed. 2005)

b. The barrel chest is positively affected by working on the hypertonic muscle groups in the torso and limbs. The hypertonic voluntary muscles can best be relaxed by moving

them rhythmically. Normally, the increased muscle tension results in a dearth of motility in the body where rhythmic movement is the norm, the thorax. Increasing motility and conscious muscle relaxation can be achieved by specific *physiotherapy* for asthma. Also, ***anthroposophic therapies***, such as *eurythmy therapy* and *rhythmical massage therapy* effectively support the motility of the chest region, and of the breathing in general, and can be used for the asthma patient (Hamre 2009). *Art therapy* can be of help to regain a more rhythmic function psychologically (Sinapius et al 2007; Hamre 2009). In artistic activity, there is a continuous alternation between observation of the art product made so far and changing the product by the ensuing activity. Observation is related to inhalation, and actively changing the product is related to expiration. This point of view gives art therapy a rational base in the treatment of asthma.

c. To decrease smooth muscle spasm in the bronchial tree, the so-called quick relief treatment belongs to ***standard treatment*** of asthma patients. It consists of *ß2 adrenergic agonists* (sympaticomimetics) such as salbutamol orally or as inhalers and *anticholinergic inhalers*. This therapy is effective as single drug therapy in two-thirds of the patients with an exacerbation. Another 5-10% responds to the addition of a ß2 adrenergic agonist or anticholinergic, whichever had not yet been used. The remaining 20-25% does not respond well in the acute phase to regular bronchodilator therapy (Harrison's 2008). Effects can be measured with peak expiratory flow rate (PEFR) or FEV1.
   Approximately 20-25% of the acute patients does not respond to standard asthma therapy and need to be admitted to a hospital when they have an acute attack. A small number of these patients may need ventilator assistance in an intensive care setting (Harrison's 2008). The relaxation of striated and smooth muscle spasm, and the more relaxed inhalation state will also decrease the acidosis that is present (Manthous 2001).

   Also effective in (sub) acute exacerbations is the ***anthroposophical medication*** *Lobelia comp*., which can be given as subcutaneous injections or as an oral medication (Hamre 2009). Lobelia cp. is also helpful in stress-induced asthma when given beforehand. It can be used instead of – or in addition to – sympaticomimetic or

anticholinergic therapy, depending on the state of the patient.

If the patient also has muscle cramps in other parts of his body during an asthma attack, we may give ***homeopathic*** *Cuprum metallicum*. For patients with nocturnal asthma attacks who need fresh air, and asthma and eczema in the history, *Sulphur* is the medication of choice. *Kalium carbonicum* is called for in asthma attacks that occur a few hours after midnight or in the early morning (2.00-5.00 AM); the patient is then sitting up straight or somewhat bent forward in bed. *Lachesis* also fits when attacks occur at night or in the morning for the patient who wakes up with an asthma attack and cannot bear any pressure from clothing. *Ipecacuanha* can be given if the patient has a spastic cough with retching or vomiting. (Bönninghausen ed. 2002; Boericke/ Phatak ed. 2005)

The effect of ***acupuncture*** on the spasms of the smooth musculature in the trachea is minor or altogether absent. In any case, inhalation bronchodilators have more effect than acupuncture, measured on a parameter that is often used with asthma, the FEV1 (Chu 2007). In spite of the minor effects that acupuncture has on this type of objective end points, it does seem that acupuncture improves the quality of life when the results are compared to data about patients who did not receive acupuncture (Maa 2003). In summary, the quality of life in asthma and COPD can improve in the hands of a qualified acupuncturist and acupuncture is, in any case, safe. There is as yet no evidence for the efficacy of acupuncture in asthma and COPD, and acupuncture and TCM do not appear to have an effect on the core symptoms of asthma and COPD.

6.1.2. Therapy for the Hyperreactivity in Asthma: *Stimulate Rest*

Table 6.2. The reaction to different types of stimuli in asthma

ASTHMA particularly exacerbations	Awareness	Breathing	Muscle tension	Metabolic changes
Reaction to stimuli	**Overalert, also in the airways**	**Irritated continuous cough**	**Muscle ache through lactic acid**	**Hyperreactive mucosa**

Therapeutic Goals

a. A second goal should be to decrease the patient's hypersensitivity to sensory impressions. The overburdening of our senses with intrusive images is a constant element in our communication culture. The content of many of these images is shocking. The chronic character of this type of information leads to an on-going over-activation of our mind. The widespread use of alcohol, tranquillizers, and sleep-inducing drugs is an indication of the degree of this overburdening of our mind.
   The ***overalert mind*** that is 'caught' in the senses must let go a bit. The objective is, therefore, to avoid everything that provokes and stimulates awareness. The therapy should have a 'sleep-stimulating' effect.
b. With relaxation of the muscle tone, the objective is to diminish the lactic acidosis, and therefore also the muscle ***pain***.
c. The phase of chronic ***hyperreactivity*** of the mucus membranes that has set in must be reduced.

Treatment of the Hyperreactivity of Asthma

a. *Meditative techniques, biographical research*, and *consciously directing attention and relaxation* have a healing effect on the overalertness of the asthma patient. *Mindfulness* is a relaxation technique that can be helpful. The patient's own activities consist, in this case, of learning self-management of conscious processes. These processes can, through their own inner activity, be freed from a one-sided direction. Inhalation, circulation,

and the patient's movements are freed from the unhealthy, over-stimulating nerve-sensory effect. This can contribute to a recovery of the normal rhythm of breathing and circulation.

Acupuncture and heart rate

Here we present some data on the effects of acupuncture on heart rate. In asthma and COPD, acute stress and anxiety often play an important role, since they diminish quality of life and increase chronic stress. In these situations, acupuncture can play a complementary role. The effect of acupuncture on the heart rate has been studied in human and animal studies. They show that acupuncture affects the sympathetic and parasympathetic nervous systems. Animal studies indicate that acupuncture inhibits the sympathetic nervous system (Chao 1999; Lin 2008). Human studies show that acupuncture increases the cardiac parasympathetic activity and decreases cardiac sympathetic activity (Nishijo 1997; Mori 2002). The reflex pathway to decrease heart rate by acupuncture-like stimulation consists of mainly group IV muscle afferent fibers whose activity leads to the activation of GABA-ergic neurons in the brainstem and an inhibition of sympathetic outflow to the heart (Uchida 2008). This regulating effect of acupuncture on the autonomous nervous system of the heart can have a positive effect on tachycardia.

b. To calm down the irritated cough, asthma *triggers should be avoided.* The irritated cough can be treated with *codeine preparations* or with *lavender oil* on the chest. The smell of lavender is soothing and calming and will also help the overalertness.

In ***anthroposophical*** pediatrics, *thymus vulgaris* in the form of an oil application on arms, chest, and back has proven to be helpful. Administered once a day, the continuous and irritated cough can disappear after just a few days. The irritated cough also improves when the patient is less over-stimulated (Soldner et al 2007).

Nux vomica can be given ***homeopathically*** to patients who are bothered by a tickling cough and cramped bronchial musculature. These patients are also mentally extremely irritable. If the patient is weepy during an attack and is producing much mucus, then

we may consider *Pulsatilla. Sulphur* can also be given when there is a great deal of mucus production. *Spongia* can be given where there is an on-going tickling cough that improves with (warm) drinks. (Bönninghausen ed. 2002; Boericke/Phatak ed. 2005; Baets 1987).

c. ***Anthroposophical*** therapy recommends rhythmic *movement* and *physiotherapy* to ameliorate muscle ***ache*** (Hamre et al 2007d).

d. In ***standard*** asthma therapy, the emphasis is first on resolving the chronic inflammation. This is effectively done with *inhalation corticosteroid therapy* with beclomethason or budesonide. *Glucocorticoids* can also be given orally. In the past years, several new anti-inflammatory medications have become available, including mast cell stabilizing agents such as *cromolyn sodium*, and leukotriene modifiers such as *zileuton* and *monteleukast*. *Omalizumab* is a monoclonal antibody that binds selectively to human immunoglobulin E (IgE). It modifies the allergic cascade. *Desensitization* can help the chronic hyperreactivity of asthma patients when a clear trigger can be identified (Harrison's 2008).

Natural products from ***anthroposophical medicine*** can also relieve the overloaded nervous system and senses. *Quercus cortex10%* can reduce chronic inflammation. Quercus cortex – the bark of the oak tree – contains tannic acid. Most of us will be familiar with the taste and the effect of tannic acid from the taste of strong black tea: its astringent action is due to tannin. This phenomenon demonstrates tannin's ability to dry up mucus. Tannin also has an anti-inflammatory effect and weak local anesthetic action. (Meyer 2005; Meyer 2007; Vademecum 2009; Hamre 2009).
Another complementary anthroposophic preparation that has an anti-inflammatory effect is a combination of citrus medica fructus (lemon juice) and cydonia fructus (quince juice). *Citrus/Cydonia* has been shown to restore the equilibrium in immunological processes that affect the balance between the Th1 and Th2 cells and mast cell metabolism at a cellular level (Baars et al 2008; Baars et al 2012; Bruin et al 2001).

6.1.3. Therapy for the Decreased Dissolving Tendency in Asthma: *Breathing and Rhythm in Therapy*

Table 6.3. The characteristics of the dissolving tendency in asthma

ASTHMA particularly exacerbations	Awareness	Breathing	Muscle tension	Metabolic changes
Dissolving tendency	**Disturbed with decreased sleep**	**Obstructed expiration**	**Impaired general movement**	**Anabolism abrogated**

Therapeutic Goals

a. An important therapeutic modality is strengthening the dynamic of exhaling at all levels. The objective is to stimulate a good ***sleep***, and to restore the balance of conscious activities.
b. ***Expiration*** itself must be stimulated. Stimulating and strengthening expiration will unburden inhalation, circulation, and movement
c. The ***impaired general movement*** of the muscles must be given a new impulse. This is important, as the lungs themselves make up part of the rhythmic system, which is always in movement
d. The phase of ***delayed growth*** that has possibly set in must be converted to an accelerated catch-up growth phase

Treatment of the Decreased Dissolving Tendency in Asthma

a. Sleep can be influenced by a rhythmic lifestyle. *Lifestyle changes* that have a rhythmical effect on daily life are important therapeutically. They help the chronic situation, but will ultimately also have an effect on the exacerbations. They stimulate the rhythm of sleeping and waking.

   Natural sleep-inducing therapy, such as *lavender oil,* was discussed above (6.1.2.).

If the patient is exhausted, bothered by regurgitation, and needs a continuous stream of cool air, we may give *Carbo vegetabilis* ***homeopathically***. *Stannum* can also be given to severely weakened patients who even have great difficulty speaking and for whom any movement at all can make their condition worse. For patients who cough all night long when lying down, we may give *Hyoscyamus*. (Boericke/Phatak ed. 2005)

Medications and external therapies that are given in rhythmic alternation can be used to bring rhythm to the organism from within. ***Anthroposophical medicine*** uses an *alternation of Quercus cortex 10% solution in the morning and Veronica 10% solution in the evening* (Hamre 2009) to bring rhythm in the day. The morning is a time of inhalation, the afternoon a time of exhalation. In the morning, the Quercus helps to decrease the over-reaction to stimuli (see 6.1.2d.); in the evening the Veronica solution helps by activating the metabolism (6.1.3d.). These measures can sustain and stengthen the rhythmic functions of the organism. They restore the balance between inhalation and exhalation. This will also support the patient's sleep pattern.

If these measures prove to be insufficient, *supplemental oxygen therapy* can help the patient sleep better.

b. *Rhythmic movement* will stimulate expiration. *Regular walking, swimming*, or *biking* will enhance the rhythm between inhalation and expiration. They have been found to be beneficial in asthma patients. These measures will also promote metabolic activity and body warmth. ***Anthroposophic*** *rhythmical massage therapy* can support the balance between inhalation and expiration, as well (Hamre et al 2007d; Hamre 2009). *Eurythmy therapy* has developed specific exercises for asthma that can be tailored to the individual patient's need (Hamre et al 2007b; Hamre 2009). They help the expiration as well as the impaired general movement. These measures can be used in both acute and chronic situations.

c. The impaired general movement can be treated with rhythmic movement modalities such as described under b.

d. The delayed growth can be treated passively with medication and later actively via the patient's own efforts. This is the domain of therapeutic modalities that strengthen the metabolism. Supplementary ***homeopathic*** constitutional treatment can support recovery.

Anthroposophical medication can help sustain the metabolism. *Veronica officinalis 10%* solution is a bitter substance. Its ingestion helps to activate the metabolism and results in a warmer body temperature (Pelikan 1998; Vademecum 2009). It has been shown to be effective in asthma patients (Hamre 2009).

6.2. Therapeutic Goals for Acute Pneumonia in Acupuncture and Traditional Chinese Medicine, Anthroposophic Medicine, Homeopathy, and Regular Medicine

Pneumonia, as an infection of the parenchyma of the lung, is most often community acquired (community acquired pneumonia or CAP). The pathogens that are found in pneumonia are increasingly frequently multiple drug resistant, such as used to be normal only in hospitals. Therefore, pneumonia classification now distinguishes between healthcare associated pneumonia (HCAP) and CAP. HCAP may also be hospital acquired or ventilator associated. The most frequently occurring pathogen in both CAP and HCAP is streptococcus pneumoniae. Other typical bacterial pathogens include Haemophilus influenzae and Staphylococcus aureus. Atypical cases of pneumonia, such as Mycoplasma pneumoniae, Legionella, and viruses, will not culture a pathogen on the usual media. The diagnosis can be made by physical examination in about half to two thirds of the cases. Chest X-ray and sputum examination can confirm the diagnosis and may specify a pathogen. Sputum cultures may be helpful in deciding which antibiotic is most effective (Harrison's 2008).

Dynamically, the healthy rhythmic exchange between inhalation and expiration is disrupted because a dissolving metabolic dynamic is predominant and the consolidating forces in the lung fall short. These must be strengthened. The pneumonia patient's reduced reaction to stimuli must be brought to a normal level.

In fig. 6.2., a dynamic diagram shows the disturbance in pneumonia. Once again, one can deduce the direction in which the therapy must go in order to correct the over-activated inflammation phase of the healing process. The metabolic, inwardly focused, form-dissolving dynamic must find new form. Here, too, therapeutic measures can be instigated at all levels of the dynamic disturbance.

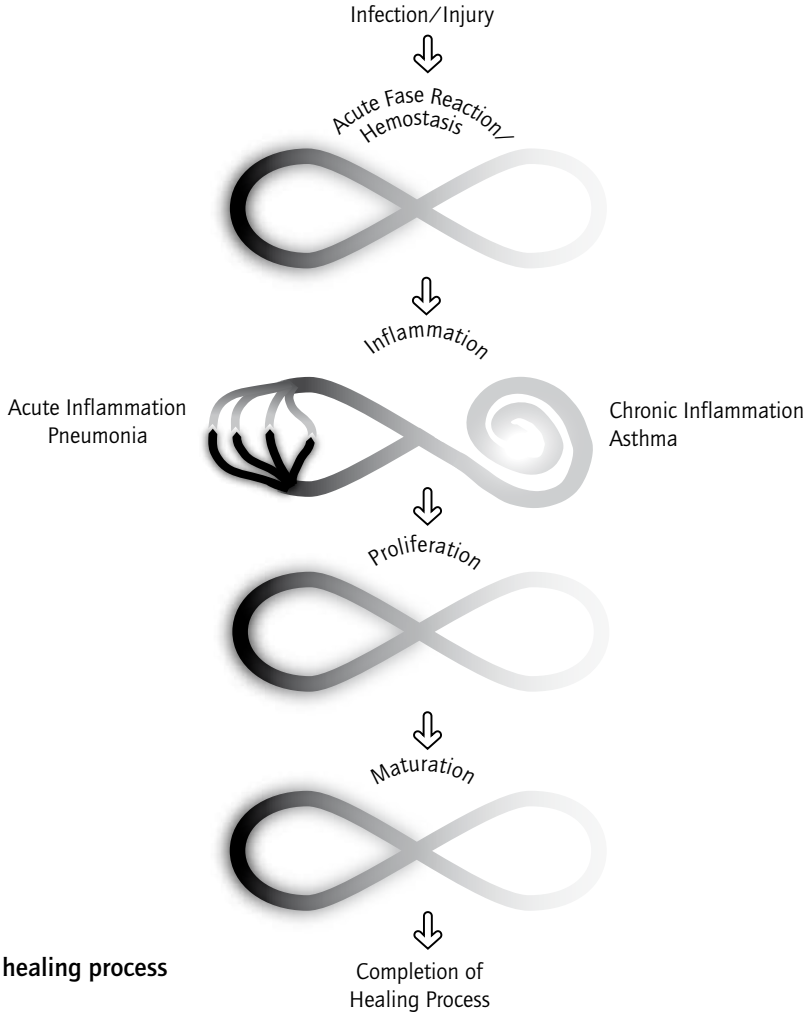


Fig. 6.2. The balance in the healing process in pneumonia

Regular Medicine

In pneumonia, antibiotics are the main stay of therapy in regular medicine, along with bronchodilators as needed.

Homeopathic Treatment of Pneumonia

Homeopathic medication can be given during an acute pneumonia, in support of other treatments. Before antibiotics were available, homeopathy was used as monotherapy. There have not been any studies in modern scientific literature on the homeopathic treatment of pneumonia, such as have been done on the homeopathic treatment of the upper airways (see section 6. 3.). Extensive knowledge of homeopathic treatment of pneumonia was developed at a time that no antibiotics were available. In this chapter, we will give examples based on the literature in which this knowledge is recorded and augmented with practical experience.

Acupuncture and TCM for Pneumonia

There has been practically no research on the effects of acupuncture and related techniques in the treatment of pneumonia. Few descriptive studies have been published on the possible value of acupuncture for this illness. Acupuncture can be used to improve the quality of life in pneumonia. However, there are no research data supporting the use of acupuncture in pneumonia.

Anthroposophic Therapy for Pneumonia

The only recent publication on the treatment of pneumonia in anthroposophic medicine is a case study at the Community Hospital in Berlin (Girke 1996). However, anthroposophic medications are often used additionally to antibiotic therapy on the basis of practice based evidence.

6.2.1. Therapy for the Dissolving Dynamic of Pneumonia: Metabolic Support

Table 6.4. The characteristics of the dissolving tendency in pneumonia

PNEUMONIA	Awareness	Breathing	Muscle tension	Metabolic changes
Dissolving tendency	**Deliriousness**	**Tachypnea and tachycardia**	**Involuntary movements**	**Infection and fever**

Therapeutic Goals

a. ***Delirium and hallucinations*** indicate an unformed awareness. Delirium in pneumonia is directly related to the presence of fever. Not every patient is delirious and patients have hallucinations with varying degrees of fever, from 38-41 °C. One therapy objective is to support the metabolic process to such an extent that the fever remains at a level at which there is no delirium.

b. ***Tachypnea and tachycardia*** support the locally increased metabolism with sufficient oxygen and blood flow and the removal of metabolic residue. They decrease as the increased metabolic process caused by the infection diminishes. The heart may be supported as long as the fever is high.

c. The involuntary ***movements*** of cold chills and chattering teeth can be abrogated by treating the quickly rising temperature.

d. Pathogenic bacteria multiply during the infection. In order to 'digest' the bacteria, a local increase in metabolism is necessary. This metabolic activity is lost for digestion processes in the intestinal system. A primary therapy objective in pneumonia is to direct the metabolic process so as to counter the ***infection*** and, thus, to bring the healing process back into balance.

   Fever intensifies metabolic processes. It is an endogenous activity that triggers the immune system and thus contributes to metabolizing the bacteria.

Treatment of the Dissolving Dynamic of Pneumonia

a. In order to prevent or treat delirium as a dissolving tendency in the awareness, good *fever management* is important: not too much and not too little. A quiet surroundings

with *low sensory input* is conducive to support the fever process. That means preferably dimmed light, no TV or loud music, no newspapers, etc. – measures that sick patients often indicate themselves. The body temperature tends to be at least one degree centigrade higher in the evening than in the morning, so that care must be taken to ensure a quiet environment later in the day, even if the morning has started off well with a lower body temperature than the evening before. A "good fever" brings relaxation of the mind without abnormal content of the mind.

Rest and warmth can support a "good fever" during the healing process. Sufficient warmth in the environment is essential and the patient's body should be kept warm all over, specifically the feet tend to get cold. Ensuring warm feet can turn a fever that has become too high into a 'good' fever.

For patients who, in the course of the day, have increasing fever, sweating, restlessness, and delirium, *Belladonna* can be given ***homeopathically*** in order to calm the patient. Aconitum is called for in patients suffering from mortal fear, high fever (without sweats), pressure on the chest, and worsening of symptoms around midnight. (Bönninghausen ed. 2002; Boericke/Phatak ed. 2005)

b. Tachypnea and, in particular, tachycardia are stressful for the heart. A complementary ***anthroprosophical*** medication such as *Cardiodoron* can provide relief (Cysarz et al 2000; Fintelmann 2007; Mulder 2007; Cysarz et al 2002; Zwiauer 2002).

In section 6.1.2., we described the effect of ***acupuncture*** on the heart rate in asthma. Whether this regulating effect of acupuncture on the heart rate can also be applied to the tachycardia in pneumonia has not been studied yet.

Homeopathically, we can give *Bryonia* to patients with intense, stabbing pains in the chest, where every movement makes the pain worse. This pain may be caused by pleuritis. *Phosphorus* is appropriate as a subsequent medication. (Boericke/Phatak ed. 2005; Harst 1987)

c. Treatment of the rising fever by, for example, adding external warmth in the form of a hot water bottle on areas that are cold, can decrease the involuntary movements of chattering teeth and cold chills (see 6.2.1.a.)

d. *Antibiotic therapy* of ***regular medicine*** in infectious processes is designed to stop bacterial overgrowth and kill bacteria. Various types of antibiotics are used, but, as mentioned above, there is increasing multiple drug resistance in the pathogens that are involved in pneumonia (Harrison's 2008). Curbing in the bacterial growth can help consolidate the dissolving inflammation process.

Homeopathically diluted phosphorus is used in ***anthroposophical*** medicine to support pneumonia treatment. The combination of its relation to form on the one hand and metabolism on the other enables phosphorus, in the form of Ferrum phosphoricum, to be a medication in pneumonia. It stimulates the balance between metabolic and formative processes in the lung, as well as supports the needed increase in metabolism. Once the infection is under control, the metabolic process will, with the aid of *Ferrum phosphoricum,* once again find easier access to its original localization: the digestive system (Vademecum 2009 p. 250-253; Schönau 2005, p. 126; Tellingen 2007).

Phosphorus is an essential mineral in every cell in the body because of its role in the morphology and the energy requirement of the organism and its cells. In the form of ATP, it activates the metabolism of cells (Stryer 2000).

Phosphorus in the Human Organism

Phosphorus is structurally present in bone as hydroxyapatite, and in cell membranes as phospholipids. Here, phosphor plays an eminent role at the level of consolidating processes. The human form is related to the form of the skeleton and the form of every single cell is related to the form of its cell membrane.

Functionally, phosphor is essential in all metabolic energy production and storage. It activates a great number of enzymes, hormones, and cell signaling molecules and affects oxygen delivery to the tissues through 2,3-diphosphoglycerate, which binds to hemoglobin. (Linus Pauling Institute 2008).

6.2.2. Therapy to Support Form: *Resorption of the Exudate*

Table 6.5. The characteristics of the consolidating tendency in pneumonia

PNEUMONIA	Awareness	Breathing	Muscle tension	Metabolic changes
Consolidating tendency	**Decreased concentration**	**Abrogated inhalation**	**Hypotonic musculature**	**Lung shape disappears with exudate**

Treatment Goals

a. ***Concentrating*** ability will improve with the temperature coming down.
b. Therapy goal is to restore ***breathing*** to a normal rhythm. The normal breathing rhythm restores the balance between the consolidating forces and the dissolving tendency in the lung, between aeration and circulation.
c. The ***decreased muscle tension*** helps to conserve energy necessary for movement in favor of managing the digestive process that has shifted to the lung. Regaining normal muscle tension and strength is an objective that must be achieved in the recovery time. The objective is for the patient to be able to relax during the acute phase of the disease.

d. Excess ***exudate*** is secreted in pneumonia, which hinders the diffusion of oxygen in the alveoli. It is not known what causes the exudate of pneumonia, which is present before bacterial growth can be found. The return of a normal aeration of the lower airways is dependent on resorption of the exudate. The therapy objective is to decrease the exudate, and thus improve the diffusion of O_2.

Treatment of the Decreased Consolidation in Pneumonia

a. To improve concentration by lowering the temperature see 6.2.1a.

b. The normal breathing rhythm is supported by rhythmic therapy. *Bryonia together with Aconite* (see 6.2.2d. and 6.2.3a.) is used in ***anthroposophic*** complementary therapy. *Tartarus stibiatus is used together with Phosphorus* (see 6.2.2d. and 6.2.1.d.). Aconitum/Bryonia can be alternated every one to two hours with Phosphorus/Tartarus to stimulate the rhythm in breathing (Vademecum 2009). This supports the therapeutic quality of rhythm.

   Phosphorus can support patients ***homeopathically*** who have serious breathing problems with pneumonia. In the past, this medication was used for left-sided lobar and tubercular pneumonia. If there is flaring of the nostrils in a patient with (right-sided) pneumonia and hydrothorax, we may administer *Lycopodium clavatum*. (Boericke/Phatak ed. 2005)

c. The ***decreased muscle tension*** conserves energy, which can be used to support the healthy progression of the disease process. For this reason, it is important that the patient relax. Rest and warmth can aid this.

d. Sufficient *warmth* will support resorption of the exudate and can lead to better aeration of the lower airways and better oxygenation of the blood. The resorption of exudate can be further supported by *lemon juice compresses* on the chest.

   Tartarus stibiatus (Kalium stibyltartaricum) is used in ***anthroposophical medicine*** to regulate expectoration. It will enhance the formative forces in the lung and also slow down the inflammatory process (Fintelmann 2007; Schönau et al 2005).

Bryonia alba is a plant in the cucumber and melon family. It does not produce big fruits like the other plants in this family, but instead has a large root. The root reddens and warms the skin when touched. Bryonia is used in situations where cold, watery exudates are present, such as in colds and other upper and lower respiratory infections (Pelikan 1998; Schönau et al 2005; Soldner et al 2007).
During and subsequent to an acute pneumonia, patients often develop anemia, which can contribute to the exudate, lowers the oxygenation of the blood, and worsens the dyspnea. *Ferrum D6* (10^{-5} concentration iron) is used in anthroposophical medicine to support blood and lung function and the oxygenation of the blood.

Ferrum metallicum is mentioned as the ***homeopathic medication*** for absorption of an exudate in a pneumonia that has been neglected. (Boericke/Phatak ed. 2005)

Russian scientists have studied the effects of laser ***acupuncture*** on 19 pneumonia patients. After 2 to 3 sessions with laser acupuncture, the researchers observed that the patients had less pain in the chest area, that the sleeping pattern was normalized and that the number of hospital days had decreased (Kochetov et al 1990) In a study on 142 pneumonia patients, another Russian researcher ascertained a rise in concentrations of iron and chromium in blood serum and improved microcirculation after laser acupuncture (Amirov 2002). From the last study, the added value, clinically, of the laser acupuncture cannot be ascertained.
In an animal model for pneumonia, it appeared that laser acupuncture affects the permeability of the lungs. After the treatment with low-level laser therapy, a specific type of laser therapy, the exudate in the lungs of rats had decreased (Aimbir et al 2008).

Resorption of the exudate can also be improved by an effective cough, supported by *tappotage of the chest.*

6.2.3. Therapy for the Decreased Reaction to Stimuli: *Support*

Table 6.6. The reaction to different types of stimuli in pneumonia

PNEUMONIA	Awareness	Breathing	Muscle tension	Metabolic changes
Reaction to stimuli	**Need to rest**	**Decreased reaction to cough stimulus**	**Diminished reaction to motor stimuli**	**Decreased appetite**

Therapeutic Goals

a. Pneumonia patients sleep a great deal and express the ***need to rest.*** They have a lowered awareness. Sleeping helps to conserve energy to support the healthy progression of the healing process, as we have stated above (6.2.1a.). The patient's need to rest must be sustained, because the organism needs all its energy to deal with the infection.
b. ***Coughing*** in pneumonia must be supported to clear the airways, so that mucus does not irritate them and oxygenation improves.
c. The ***decreased reaction to motor stimuli*** must be supported where movements are unnecessary. The energy must be conserved for the infectious inflammatory process.
d. The ***decreased appetite*** is functional, because it matches the diminished activity of the digestive process in the intestines. Therapy objective is to ensure that the necessary intake of food can occur with as little loss of energy as possible.

Treatment of the Decreased Reaction to Stimuli in Pneumonia

a. The need to rest is supported by *temporarily halting all unnecessary mental and motor activities* and by *sending* the patient *to bed* in a *quiet room* with few sensory impressions. The patient must be supported during essential motor activities.
   The vulnerable consciousness can be supported by a refreshing nap and the appetite increases as metabolic processes that are temporarily active in the infection can once again return to the digestive system.

In ***anthroposophical medicine***, an *aconite extract* is given for additional support to the energy household of the patient (Fintelmann 2007; Soldner et al 2008; Vademecum 2009). Aconite's main active ingredient is aconitin, a diterpenoidalkaloid. Aconitin slows the inactivation of sodium channels in nerve tissue. Through this, the action potential is prolonged which makes subsequent activation harder. Aconite at first briefly activates and then decreases the activity of both motor and sensory nerve endings. Through this action, aconitin decreases the excitability of the organism. In this way, it supports the pneumonia patient's energy conservation and need for sleep. Aconitin is a poisonous substance that must be administered in homeopathic dilution. (Tellingen 2007)

b. Specific *physiotherapy* for pneumonia may help the expectoration of sputum (6.2.2d.). ***Homeopathically***, *Antimonium tartaricum* can help with patients who are too weak to cough up sputum sufficiently. (Bönninghausen ed. 2002; Boericke/Phatak ed. 2005)

c. The decreased reaction to motor stimuli can be supported as in 6.2.3a.

d. The digestion of food takes energy that, however, is barely available for digestion in pneumonia. The conservation of energy and the 'relocation' of metabolic processes can be supported by *limiting food intake* to small amounts of the necessary easily digestible foods (Vijver 2007). Decreasing the intake of proteins helps the digestion; the immune system needs all its strength to deal with the illness. Patients must *drink sufficient amounts* during the fever so that they remain well hydrated, and the drinks should be room temperature to promote their uptake. The urine output can be used as a gauge.

6.3. Treatment of other Inflammatory Airway Disease

In other acute inflammatory disease of the respiratory tract, the different treatment modalities, medications, and therapies that are used in pneumonia are also effective: *antibiotics*, ferrum (often in the form of a naturally occurring ferrum/sulfur combination such as *pyrite*), and *bryonia*, as well as *warm oil applications*. For specific acute diseases, additional specific therapy will be indicated per disease below.

The various treatment modalities that are used in asthma are also used in chronic respiratory tract disease (*corticosteroids, decongestives, rest, physiotherapy, art therapy, and eurythmy therapy*). For specific chronic disease, specific medication will be indicated below.

Bellavite et al compiled 24 studies (12 randomized and 12 non-randomized) on common upper respiratory tract infections and otorhinolaryngologic complaints and reviewed the effectiveness of ***homeopathy*** in allergic diseases using the criteria of evidence-based medicine.

Myristica D4 dilution and *externally applied horseradish compresses* are tried and true therapies in acute and chronic sinusitis in ***anthroposophic medicine*** (Jeschke 2007; Sommer 2005; Hamre et al 2005; Hamre et al 2004b; Hamre et al 2004c).

For colds, typical medications are Ferrum phosphoricum and Cinnabar, for the flu *Infludo*, for otitis media L*evisticum radix D3 dilution*, an extract from the root of the lovage plant (Soldner et al 2007; Hamre et al 2007e; Hamre et al 2004b; Hamre et al 2004c).

With hay fever, Gencydo is the medication of choice, both in the acute situation and for chronic sufferers (Baars et al 2005; Baars et al 2008; Baars et al 2012).

For acute bronchitis, *Pyrite D3* is effective. In the treatment of chronic bronchitis, the same medication can be used for a longer time period (Fintelmann 2007; Soldner et al 2007).

.

COPD therapy is similar to asthma therapy in the different treatment modalities.

The effect of ***homeopathic*** medication on the prevention of upper respiratory tract infections (URTI) in children showed a clinically relevant effect of individualized homeopathic care in the prevention of URTI in children (Steinsbekk 2005).

7. Balance and Rhythm

The last step in Goethean phenomenology is to formulate the essence of the studied material.
In this chapter, we will examine several non-inflammatory diseases of the airways and draw a conclusion concerning their characteristics. We will also take another look at the rhythmic functioning of the human organism and the meaning of rhythm in nature to obtain a broader perspective of rhythms in general and of the importance of rhythm in therapy in particular.

7.1. The Balance in Non-Inflammatory Disease of the Respiratory Tract

We have come to know disease as a disturbance of the balance that is present in the body (fig.7.1.). During the course of the day, continuous deviations from homeostasis to one side or the other occur that must be averaged out. That is done by the self-regulating activity of the organism. One important component of this self-regulatory activity is the reaction of the body to injury: the healing process in four phases (section 2.4.1.), also called the Organ of Repair (Bie et al 2008). In previous chapters, it became clear that many diseases of the airways could be seen as an aberration of the inflammatory phase of the healing process. There are also, however, diseases of the airways in which the balance of a different phase in this process is disturbed.

Pulmonary embolism is a disease in which a blood clot in the periphery of the body, generally in the legs, develops (venous thrombosis). It is a well-known complication of lying or sitting for a longer period of time, as with intercontinental flights. The clot can loosen, drift via the circulation to the lungs and cause an embolic event there. This closes down the circulation to the alveoli and suddenly reduces respiratory effectiveness, which accounts for the sudden shortness of breath that people experience in this situation. Pulmonary embolism is a disease of the clotting or *hemostasis phase* of the healing process, in which the organism has too much consolidating tendency.

Sarcoidosis of the lung is a disease in which the *proliferation phase* hypertrophies. There is so much proliferation in the lung that normal tissue is displaced and lung function is impeded.

Even after it is cured, the ***scars from tuberculosis*** remain visible on X-ray, which indicates that the *maturation phase* has remained stuck in a consolidating tendency. ***Emphysema*** can be seen as a disease in which the dissolving tendency of the maturation phase dominates.

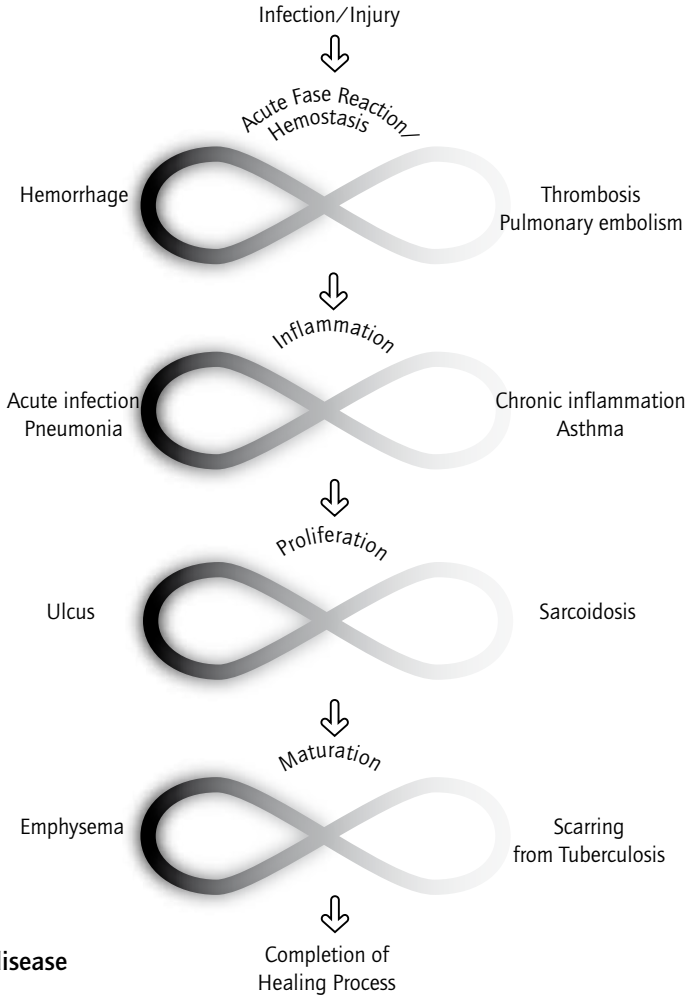


Fig. 7.1. The balance of the healing process and diversions in respiratory disease

When we make up the balance of common diseases of the airways, it is clear that disturbances in the healing process lie predominantly in the inflammatory phase. In this phase, interactive processes of the injured area with the surroundings are restored (Bie et al 2008. Ch. 3). The respiratory tract is the organ that harbors the continuous interaction with the outside world through the exchange of air. When this interaction becomes disturbed through injury, inflammatory processes are pre-eminently suited to attempt to restore the balance of interactive functions. This attempt is not always successful and may end up in a chronic inflammatory process or an infection such as we have seen in asthma and pneumonia. Then, therapeutic interventions are needed to reinstate the natural rhythmic function of the airways. In all therapy of the respiratory tract, rhythms are of eminent importance. We will elaborate on rhythms in nature and the human organism so that the function of rhythm in therapy can be clarified.

7.2. Rhythms in Nature

Rhythmic processes originate in nature in those places where a meeting place develops between various substances or aggregate states. For example, rhythmic figures develop where water and wind meet in the form of waves and where water and beach meet in the form of rhythmic sand ridges (fig. 7.2.).

One of the well-known larger rhythms in nature is the annual course of time. As one great inhalation and expiration, nature moves through the four seasons and, for organic substances, there is the progression of growth and development in the spring and of decomposition and death in the fall. The reproductive life of nearly all animals in the moderate climate zone is dictated by the course of the seasons. Famous examples include certain species of sea turtle that, on a specific, astronomically determined day in the course of the year, crawl onto the beach, lay and bury their eggs, then return to sea. This cycle is determined by the position of the earth with respect to the sun, which, in chronobiology, has been given the meaningful name: "Zeitgeber".

Fig. 7.2. Rhythm in nature: sand and water meet on the beach

Day and night is a rhythm on a smaller scale. This is another rhythm that is determined by the relation between sun and earth. This 24-hour rhythm, also known as circadian rhythm, can be observed day in and day out, in our own biological and psychological functions and in the natural occurrences outside of us: the "awakening" of nature in the morning and the "falling asleep" of nature in the evening. Humans, animals, and plants take part in that rhythm; yes, even the earth itself is part of this rhythm, as we can observe from, for example, the fragrance of damp, freshly plowed fields in the evening.

7.3. Rhythms in the Human Organism

In the human organism, everything is in motion. Cells move through the body, fluids move through the cells, and there is an active exchange of metabolites, hormones, molecules, and ions throughout the entire organism (Tellingen 2001, Introduction). The ancient Greeks had an expression for this: panta rhei, which means: "everything flows." Also,

another ancient Greek saying: "one can never step twice into the same stream" alludes to this ever-flowing and ever-changing aspect of life.
No matter what compound we study and however we follow its conversions, when we are carried into the dynamic world of metabolism, of the transformation of substance, we encounter an intricate web of interrelated activities. This web is studied in systems biology and can be understood with the aid of the Goethean method (see also Bie 2012), which is designed to find the coherence in organic functions. Functions in this web include such opposite processes as: growth and decomposition, increase and decrease of tissue, intake and excretion, creation and death. This series of opposing processes is infinitely expandable. Rhythms level out the opposite tendencies and create a state of homeostasis in the organism. We can even state: all physiology is permeated with rhythmic change; ***the intricate web of organic function is rhythmically oscillating.***

We know some of these rhythms from our own experience, for example the rhythm of the heart with its systole and diastole, and the rhythm of the lungs with its inhalation and exhalation. What we are less conscious of is that heart rhythm and breathing rhythm vary in their own cycle as well as in their mutual relation within the circadian rhythm. When we are awake, the heart and lungs function in a different rhythm than when we are asleep. These rhythms develop between the consolidating influences originating in the nerve-sensory system and the dissolving influences originating in the metabolism (sections 3.3.1. and 3.3.2.). The influence from these systems is mirrored in the pulse/respiration quotient: the ratio between the number of heart beats and breaths, a relation that averages 4:1. However, when we are awake, this quotient is closer to 3:1 because nerve-sensory activities dominate during the day. Only in rest, our heart beats at a rate that is four times faster than the rate of our breathing (Cysarz 2000).

We can examine the nerve-sensory influence on the heart rate by studying what happens in disease. When the vagal nerve to the heart is transected, this results in tachycardia, because the vagal nerve inhibits heart function. A transected vagal nerve means that influences initiating from the nerve-sensory system are cut off. It becomes apparent that the nerve-sensory system has a decelerating influence on heart rhythm. Metabolic processes, on the other hand, have an accelerating effect on the rhythm – as we have

already observed in fever. This also occurs with hormones that boost the metabolism, such as adrenaline and thyroxin.
The human organism has a circadian rhythm of approximately 24 hours. The sun dictates this circadian rhythm. Whenever we create a rhythm in life that does not adhere to day and night, changes occur in our circadian rhythm. Human beings, as self-conscious creatures, can remove themselves from the imperative physiology of the 24-hour rhythm, by for example, having night duty. In chapter 3.3.2., we discussed jetlag as another example.

In short, to form a true-to-life picture of the human organism, we must think in terms of continually changing compositions of substances and processes that function rhythmically. Each still image or image of a dynamic in one direction, not followed by a counter-movement, is an image of disease. The stone in the gall bladder or the kidney, the fat deposits in the arteries, the uric acid crystals in gout, everything that no longer flows can make us ill.
The reverse is also true: everything that dissolves too strongly and remains in flow without ever changing its dynamic makes us ill as well: the maceration of lung tissue in certain types of tuberculosis, the formation of pus in an abscess, hydrocephaly caused by unrestrained production of cerebral fluid, profuse bleeding during menstruation or clotting disorders, and an on-going dissolving of bone in osteoporosis. Every one-sidedness, in which the rhythm is lost, is pathology. The relation to previous chapters is clear here, in particular where we stated that health is a state of homeostasis with a *dynamically oscillating equilibrium*, acute disease is a *temporary dysbalance* of the equilibrium, and in chronic disease the *dysbalance* persists and the *balance setpoint is reset* (section 3.3.3.).

The healthy organism is in homeostasis. The healthy balance is maintained by the rhythm of manifold related polar processes that oscillate around a midpoint.

7.4. Rhythm in Therapy: Conclusion

We have attempted to show the significance of a process that occurs outside of its 'healthy rhythm' in dimension, location, and time (Chapter 5), using the phenomena in asthma and pneumonia. Whether it is to one direction or another, a one-sided dynamic leads to

pathology. Asthma and pneumonia are, in that sense, good examples to clarify a more general principle in medicine. The two described directions in which an organism can go wrong and drop out of the rhythmic interchange are, as briefly explained in the clinical pictures in Chapter 4, not difficult to find once you have developed a sense of the dynamic aspect of health and disease.

In the therapeutic measures described in Chapter 6, we endeavored to clarify the value we attach to a therapy that is implemented rhythmically. Explicit reasons for this were given above: all healthy and health-promoting events occur in a rhythmic and alternating-opposing dynamic. The rhythmic alternation of polarity from one dynamic process into the other is of vital importance for maintaining or regaining good health.

Fig. 7.3. William Turner: Lake with Park of Cromackwater

Appendix Therapeutic Methods

The method of acupuncture and traditional Chinese medicine (TCM) is depicted by David Kopsky MD and Professor Jan Keppel Hesselink MD. The homeopathic method is portrayed by Simon Arends MD and supplemented by Christien Klein MD and Lex Rutten MD.

Acupuncture and Traditional Chinese Medicine

Traditional Chinese medicine (TCM) is thousands of years old and was already described as early as 200 BC in the book the "Nei Ching" of the "Yellow Emperor" Huang Ti. This emperor is said to have lived 4500 years ago. TCM uses a metaphorical view of disease, in which the symptoms are described in terms of Yin and Yang: too much or too little, white or red, cold or warm, etc. Later on, the diseases were categorized with the aid of the five elements: water, wood, metal, fire, and earth. These symbols stand for the characteristics of body and mind. When someone becomes ill, it is called a dysbalance. This can be relieved through massage, herbs, nutrition, or heat application.

At the same time, the Chinese discovered spots on the body that could bring relief when stimulated. We now know these spots as acupuncture points. TCM has at least 365 points on the body which can be stimulated by pressure, heat, or a needle. The last technique is called acupuncture: 'acus' means needle in Latin and 'punctura' means piercing. Over the past 40 years, a great amount of research has been done on this technique. Alongside of the Chinese metaphorical explanation of acupuncture, there are also western explanations of how acupuncture works, based on research. The endorphin hypothesis explains how acupuncture can be an effective pain killer by freeing pain-killing substances already present in the body, such as endorphin, enkephaline, and dynorphin in the central nervous system.

Anthroposophic Medicine

Anthroposophic Medicine is a human-centered approach to medicine. It uses and recognizes the vast advancements made in the fields of physiology, biochemistry, pathology, and clinical sciences acquired by modern medicine. Its concepts are broadened through a study of the laws of the living organism, the laws governing developmental

aspects of consciousness and behavior, and the laws of development of the self-conscious individuality, as well as their interrelations. This gives an integrated image of the whole human being in health and in illness and makes it possible to have a comprehensive approach to pathology and therapy. Rudolf Steiner PhD (1861-1925) and Ita Wegman MD (1876-1943) provided the impulse to develop this method in medicine: it is less than hundred years old!

In anthroposophic medicine, the organic laws of living organisms are investigated and taken into account. Their action can be observed, for instance, in child development or the growth and development of any physiological function throughout life.
The laws governing consciousness and behavior can be studied in qualities such as the affections and emotions, but also in human movement. Animals also possess these qualities, albeit in a specialized form.
Individuality is subject to laws that disclose uniquely human principles. We can observe them in the typically human erect posture, self-consciousness, speech, self-reflection, and the ability to give shape to our own individual destiny. Human biography reveals the unique and personal aspects of life and inner development. Illnesses can additionally be seen as opportunities for personal growth and the overcoming of unfruitful conflicts in life (Fintelmann 2007; Soldner et al 2007; Bie 2012).

The wisdom behind nature is the same wisdom that is at work within the human being. Every substance and process in nature relates correspondingly to a substance or process within the human being. The human organism is a uniquely organized summary of nature and nature represents the forces and substances within the human being. This allows a rational approach in finding substances in nature that correspond to the abnormal processes of illness. Medications are derived from minerals, plants, or animal substances. They are prepared with specialized pharmaceutical processes to make the substances more adapted to the diseased human organism. They can be given orally, by injection, or as external applications such as ointments (Bussing et al 2008b).

Over the past 20 years, anthroposophic medicine has been studied extensively with modern scientific methods. Its efficacy in many areas of medicine has been proven (Vademecum

2009; Chernyshov et al 2000; Kienle et al 2006; Hamre et al 2008; Hamre et al 2004a; Schönau et al 2005). Its principles have been researched (Kienle 2008). Its safety and low cost compare positively to regular medicine (Kooreman 2011; Kienle et al 2006; Hamre et al 2006a; Hamre et al 2006b; Hamre et al 2007e). Patient satisfaction was investigated and found to be high (Esch 2008).

Over time, anthroposophic medicine has developed its own forms of therapy which include eurythmy therapy (Baumgartner-Durrer et al 2007; Hamre et al 2007b; Bussing et al 2008a; Hamre 2009), music therapy, speech formation therapy, external therapies (Bussing et al 2008b), and clay modelling and painting therapy (Hamre et al 2007c; Sinapius et al 2007). Art is an indispensable part of human life. Artistic therapies subtly but powerfully affect disease processes and a patient's growth through the illness.
A specialized physiotherapy and massage therapy has been developed (Hamre et al 2007d).

Homeopathy
Homeopathy is a scientific, empirically based therapy that was first introduced in medical practice by the physician and chemist, Samuel Hahnemann, at the end of the 18th and early 19th century. He described his approach to disease extensively in his Organon of Medicine and Chronic Diseases. (Hahnemann 1810; Hahnemann 1828). Many others have continued to build on Hahnemann's work, and have contributed knowledge over the course of more than 200 years. Expansion of the knowledge concerning homeopathic medicine and treatment is an on-going process. Since the 1990's, scientific studies of homeopathic treatments have increased. Thus, homeopathy is also growing as a modern form of medicine.
An extensive discussion of the principles of homeopathy falls outside the context of this Companion. The principle rule of homeopathy is: 'Similia similibus currentur:' 'like will be cured by like,' also called the 'like cures like principle.' Hahnemann discovered this through drug testing with cinchona bark. If you would take a pinch of cinchona every day, you would get symptoms that resemble a three-day fever such as we see in malaria. The system becomes unbalanced. When you stop taking it, the symptoms also stop. Hahnemann's discovery was that, when you observe these symptoms in a patient, you

could give the patient the substance that generates these symptoms in a healthy person, on the condition that you give small amounts. Hahnemann noticed that taking 'normal' amounts of cinchona bark had a worsening effect on the malaria patient. He started to work the original medication into stable dilutions. In patients with malaria symptoms, taking the dilution ultimately resulted in the symptoms disappearing permanently. The system of shaking and diluting is called 'potentiating'. Nowadays, this is generally done by machines.
Hahnemann thus tried out complete series of 'medicines' using the above-named technique by doing a medications test. Those tests resemble phase I trials in conventional medicine and are also called 'provings' or, more recently, Homeopathic Pathogenic Trials (HPTs). Thus, medication pictures were developed that, in fact, are characteristic descriptions of the substances that can cure the matching clinical pictures. The descriptions of the medications are assembled in the so-called Materia Medica (Boericke/Phatak ed. 2005).

As a result of the preparation process, homeopathic medicines work differently than conventional medicines. It is suspected that information is stored in the solvent, which then transmits a signal that is recognized by the self-healing qualities of the organism. The effective mechanism is more subtle than that of conventional medicines and, also, more specific. A specific homeopathic medication only works for a limited number of people who are sensitive to it. This can be compared to the genetic sensitivity for drugs that is the subject of study of pharmacogenomics. The symptoms that are used in homeopathy in order to estimate the chance of success could be seen as the phenotypic expression of such a genotypic sensitivity. Worth mentioning are the so-called §153 symptoms. In the 153rd paragraph of the Organon, Hahnemann deals with these extensively. They are curious, different, and noteworthy separate symptoms from the patient's history that are specific for the patient in question. If present, they can lead the prescriber in the right direction to the medication that is to be used.

Based on an extensive history, knowledge of the various drug pictures and pattern recognition, the prescriber can come up with the medication picture that 'resembles' most the symptoms of this patient in this situation. In order to do this, a repertory is used, in which – in layman's terms – all of the symptoms that can be generated by the drugs are

systematically noted and which can lead the prescriber to the most 'similar' medication. This repertory follows a head to foot blueprint with respect to its arrangement. Nowadays, computer programs help the physician to 'repertorize' the symptoms and to select the most fitting medication (Bönninghausen 2002).

In modern homeopathy, we have a number of different uses of the basic principles.

a. Clinical homeopathy. The medication is chosen based on a group of symptoms or a disease, for example, a medication for the flu. The characteristics of the complaint determine which medication is suitable.
b. Composite homeopathy. Various medications are combined in one preparation, for application to a specific complaint or illness. It is, therefore, a form of clinical homeopathy. This method is often used in over-the-counter medications.
c. Isopathy. In order to heal the disease, a medication is given that is made from precisely the same substance that has also caused the disease: for example, pollen in potentiated form for the treatment of hay fever. Therefore, it is not the same type of symptoms that determines the choice of medication, but the same type of substance that caused the disease in the first place.
d. Classical, individual homeopathy. A medication is chosen based on the total picture of mental/emotional and physical characteristics, reaction patterns and the patient's history. This method is extremely well suited to chronic complaints. An extensive history is necessary.

Regular Medicine

The method used in regular medical practice is based on perception, empirical research of the observed data, and data analysis. The human organism is studied in its appearance and functions, and understood out of the analytically gained data. This results in highly detailed and specific information about the human organism and disease.

When possible, clinical research is directed to epidemiological studies and reviews of large numbers of patients to provide evidence of effectiveness for clinical practice. Recent estimates put the percentage of epidemiologically researched treatments in regular medical practice at approximately 25% (Smulders 2008).

Literature

Aimbire F, Ligeiro de Oliveira AP, Albertini R, Corrêa JC, Ladeira de Campos CB, Lyon JP, Silva JA Jr, Costa MS. Low level laser therapy (LLLT) decreases pulmonary microvascular leakage, neutrophil influx and IL-1beta levels in airway and lung from rat subjected to LPS-induced inflammation. Inflammation. 2008 Jun, 31(3):189-97.

Amirov NB. Parameters of membrane permeability, microcirculation, external respiration, and trace element levels in the drug-laser treatment of pneumonia. Ter Arkh. 2002, 74(3):40-3. Russian.

Arman M, Rehnsfeldt A, Carlsson M, Hamrin E. Indications of change in life perspective among women with breast cancer admitted to complementary care. European Journal of Cancer Care, 2001/10, 192- 200.

Baars E, Bruin A de. The effect of Gencydo® injections on hay fever symptoms: a Therapeutic Causality Report (TCR). Journal of Alternative and Complementary Medicine, 2005, 11(5):863-869.

Baars EW, Savelkoul HFJ. Citrus/Cydonia Comp. Can Restore the Immunological Balance in Seasonal Allergic Rhinitis-Related Immunological Parameters In Vitro. Mediators of Inflammation, 2008, Article ID 496467, 5 pages, doi:10.1155/2008/496467.

Baars E. The anthroposophic treatment of seasonal allergic rhinitis: Rationale, treatment approaches and health-promoting effects. European Journal of Integrative Medicine, 2008/1: 19-20.

Baars EW, Jong MC, Boers I, Nierop AFM, Savelkoul HFJ. (2012). A Comparative In Vitro Study of the Effects of Separate and Combined Products of Citrus e fructibus and Cydonia e fructibus on Immunological Parameters of Seasonal Allergic Rhinitis. Mediators of Inflammation. Article ID 109829, 10 pages, 2012. doi:10.1155/2012/109829.

Baets P de. Een andere kijk op asthma vanuit de homeopathie (Another look at asthma from the viewpoint of homeopathy). Stichting Homeopathische Opleidingen (SHO) (Foundation for Homeopathic Education), 1991.

Baumgartner-Durrer T, Baumgartner S, Heusser P. Eurythmische Bildekraftfelder: ätherisch-energetische Wirkungen auf Lebewesen. Auftakt 2007, Sonderdruck:1-12.

Bellavite P, Ortolani R, Pontarollo F, Piasere V, Benato G, Conforti A. Immunology and homeopathy. 4. Clinical studies-part 1. Evid Based Complement Alternat Med. 2006 Sep;3(3):293-301. Epub 2006 Jul 5.

Bie G van der. Anatomy, Human morphology from a phenomenological point of view. Companions for the Study of Medicine. Louis Bolk Institute, 2002.

Bie G van der. Immunology, Self and non-self from a phenomenological point of view. Companions for the

Study of Medicine. Louis Bolk Institute, 2006.

Bie G van der, Scheffers T, Tellingen C van. The Healing Process, Organ of Repair. Companions for the Practice of Medicine. Louis Bolk Institute, 2008.

Bie G van der. Wholeness in Science, a Methodology for Pattern Recognition and Clinical Intuition. Bolk's Fundamental Companions. Louis Bolk Institute, 2012.

Boericke/Phatak. Materia Medica. Edited by F. Vermeulen. Elmar, 2005.

Bönninghausen, Macrepertory Pro 6.03 for Windows. Kent Homeopathic Associates, 2002.

Bornhöft G, Wolf U, von Ammon K, Righetti M, Maxion-Bergemann S, Baumgartner S, Thurneysen AE, Matthiessen PF. Effectiveness, safety and cost-effectiveness of homeopathy in general practice - summarized health technology assessment. Forsch Komplementmed. 2006;13 Suppl 2:19-29. Epub 2006 Jun 26. Review.

Bortoft H. Goethe's scientific consciousness. Institute for Cultural Research 1986.

Boyd W. A Textbook of Pathology. Lea and Febiger, 1970.

Bruin A de, Baars E. Citrus/ Cydonia Comp. Use in general practice. A survey among anthroposophic physicians. Louis Bolk Instituut, 2001.

Bueving HJ, Bernsen RM, Jongste JC de, Suijlekom-Smit LWA van, Rimmelzwaan GF, Osterhaus ADME,. Rutten-van Mölken MPMH, Thomas S, Wouden JC van der. Influenza vaccination in asthmatic children: randomised double-blind placebo-controlled trial. Am J Respir Crit Care Med, 2004 - 171.66.122.149.

Bussing A, Ostermann T, Majorek M, Matthiessen PF. Eurythmy Therapy in clinical studies: a systematic literature review. BMC Complement Altern Med 2008a, 8:8.

Bussing A, Cysarz D, Edelhauser F, Bornhoft G, Matthiessen PF, Ostermann T. The oil-dispersion bath in anthroposophic medicine—an integrative review. BMC Complement Altern Med 2008b, 8:61.

Chao DM, Shen LL, Tjen-A-Looi S, Pitsillides KF, Li P, Longhurst JC. Naloxone reverses inhibitory effect of electroacupuncture on sympathetic cardiovascular reflex responses. Am J Physiol. 1999 Jun;276(6 Pt 2):H2127-34.

Chernyshov VP, Heusser P, Omelchenko LI, Chernishova LI, Vodyanik MA, Vykhovanets EV , Galazyuk LV, Pochinok TV, Gaday NV, Gumenyuk ME, Zelinsky GM, Schaefermeyer H, Schaefermeyer G. Immunomodulatory and clinical effects of Viscum album in children with recurrent respiratory infections as a result of the Chernobyl nuclear accident. Am J Ther 2000/7, 195- 203.

Chu KA, Wu YC, Ting YM, Wang HC, Lu JY. Acupuncture therapy results in immediate bronchodilating effect in asthma patients. J Chin Med Assoc. 2007 Jul;70(7):265-8.

Cysarz D, Schurholz T, Bettermann H. Evaluation of Modulations in Heart Rate Variability caused by a

Composition of Herbal Extracts. Arzneim.-Forschung, 2000, 50 (1), 3- 7.

Cyzarz D, Heckmann C, Bettermann H, et al. Effects of an Anthroposophical Remedy on Cardiorespiratory Regulation. Alt Ther Health Med, 2002, 8(6), 78- 83.

Ecker D, Uithoven MA, Van Dijk HA. Asthma Therapie im Vergleich. Schweiz Zschr GanzheitsMedizin, 2001/13, 326- 334.

Esch BM, Marian F, Busato A, Heusser P. Patient satisfaction with primary care: an observational study comparing anthroposophic and conventional care. Health Qual Life Outcomes 2008, 6:74.

Fintelmann V. Intuitive Medizin – Anthroposophische Medizin in der Praxis, Fifth Edition. Hippokrates, 2007.

Girke M, Kroetz M. Pleuropneumonie – Kasuistik. Der Merkurstab 1996/6, 520- 523.

Gerven M, Tellingen C van. Depressive Disorders, an Integral Psychiatric Approach. Companions for the Practice of Medicine. Louis Bolk Institute 2010.

Gioia L, Cabrini L, Gemma M, Fiori R, Fasce F, Bolognesi G, Spinelli A, Beretta L. Sedative effect of acupuncture during cataract surgery: prospective randomized double-blind study. J Cataract Refract Surg. 2006 Nov, 32(11):1951- 4.

Hahnemann S. Organon of Medicine. 1810

Hahnemann S. Chronic Diseases. 1828

Hamre HJ, Becker-Witt C, Glockmann A, Ziegler R, Willich SN, Kiene H. Anthroposophic Therapies in Chronic Disease: The Anthroposophic Medicine Outcome Study (AMOS). Eur J Med Res 2004a/9, 351- 360.

Hamre HJ, Witt CM, Glockmann A, Kiene H. Use and safety of WALA medicines in acute respiratory & ear infections: A prospective cohort study. Institute for Applied Epistomology and Medical Methodology 2004b.

Hamre HJ, Witt CM, Glockmann A, Kiene H. Use and safety of Weleda medicines in acute respiratory & ear infections: A prospective cohort study. Institute for Applied Epistomology and Medical Methodology 2004c.

Hamre HJ, Fischer M, Heger D. Riley M, Haidvogel M, Baars E, Bristol E, Evans M, Schwarz R, Kiene H. Anthroposophical vs. Conventional Therapy of Acute Respiratory & Ear Infections: A Prospective Outcomes Study. Wien Klin Wochenschr 2005/117, 258-268.

Hamre HJ, Witt CM, Glockmann A, Tröger W, Willich SN, Kiene H. Use and Safety of Anthroposophic Medications in Chronic Disease. A 2-Year Prospective Analysis. Drug Safety 2006a, 29(12):1173-89.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Willich SN, Kiene H. Health costs in anthroposophic therapy users: a two-year prospective cohort study. *BMC* Health Services Research 2006b, 6:65. DOI 10.1186/1472-6963-6-65.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Willich SN, Kiene H. Anthroposophic medical therapy in chronic disease: a four-year prospective cohort study. BMC Complement Altern Med 2007a, 7(10):DOI

10.1186/1472-6882-7-10.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Willich SN, Kiene H. Eurythmy therapy in chronic disease: a four-year prospective cohort study. BMC Public Health 2007b;7(61):DOI 10.1186/1471-2458-7-61.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Willich SN, Kiene H. Anthroposophic art therapy in chronic disease: a four-year prospective cohort study. Explore 2007c;3(4):365-371.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Willich SN, Kiene H. Rhythmical massage therapy in chronic disease: a four-year prospective cohort study. J Altern Complement Med 2007d, 13(6):635-642.

Hamre HJ, Glockmann A, Fischer M, Riley D, Baars E, Kiene H. Use and safety of anthroposophic medications for acute respiratory and ear infections: a prospective cohort study. Drug Target Insights 2007e;2:209-219.

Hamre HJ, Witt CM, Glockmann A, Ziegler R, Kienle GS, Willich SN, Kiene H. Outcome of anthroposophic medication therapy in chronic disease: A 12-month prospective cohort study. Drug Design, Development and Therapy 2008, 2:25-37.

Hamre HJ, et al. Anthroposophic therapy for asthma: A two-year prospective cohort study in routine outpatient settings. J Asthma Allergy. 2009; 2: 111–128.

Harrison's Principles of Internal Medicine, Part 10 Disorders of the Respiratory System. 17th Edtion. Editors Anthony S. Fauci et al. McGraw Hill Medical, 2008.

Harst PL van der. Poging tot practische homeopathie voor huisartsen (Attempt at a practical approach to homeopathy for family physicians). 9e druk. VSM BV, Alkmaar, Netherlands,1987.

Jeschke E, Lueke C, Ostermann T, Tabali M, Huebner J, Matthes H. Prescribing practices in the treatment of upper respiratory tract infections in anthroposophic medicine. Forsch Komplementärmed 2007, 14:207-215.

Karst M, Winterhalter M, Münte S, Francki B, Hondronikos A, Eckardt A, Hoy L, Buhck H, Bernateck M, Fink M. Auricular acupuncture for dental anxiety: a randomized controlled trial. Anesth Analg. 2007 Feb;104(2):295-300.

Kienle GS, Kiene H, Albonico H-U. Anthroposophic Medicine. Effectiveness, utility, costs, safety. Schattauer, 2006.

Kienle GS. Evidenzbasierte Medizin und ärztliche Therapiefreiheit - Vom Durchschnitt zum Individuum. Dtsch Arztebl 2008,105(25):A 1381-A 1384.

Kochetov AM, Shelygina NM, Klodchenko NN, Zarembo IA. The use of low-energy laser radiation in the combined treatment of patients with acute pneumonia. Vrach Delo 1990 Feb, (2):70-1. Russian.

Kooreman P, Baars EW. (2011) Patients whose GP knows Complementary Medicine tend to have lower costs and live longer. European Journal of Health Economics. DOI: 10.1007/s10198-011-0330-2.

Kummeling I, Thijs C, Huber M, van de Vijver LPL, Snijders BE, Penders J, Stelma F, Van Ree R, Van der

Brandt PA, Dagnelie PC. Consumption of organic foods and risk of atopic disease during the first 2 years of life in the Netherlands. Br J Nutr 2007a, 29:1-8.

Kummeling I, Stelma F, Dagnelie PC, Snijders BE, Penders J, Huber M, Van Ree R, Van der Brandt PA, Thijs C. Early life exposure to antibiotics and the subsequent development of eczema, wheeze, and allergic sensitization in the first 2 years of life: the KOALA Birth Cohort Study. Pediatrics 2007b;119(1):e225-e231.

Li XM. Complementary and alternative medicine in pediatric allergic disorders. Curr Opin Allergy Clin Immunol. 2009 Apr;9(2):161-7.

Li XM, Brown L. Efficacy and mechanisms of action of traditional Chinese medicines for treating asthma and allergy. J Allergy Clin Immunol. 2009 Feb;123(2):297-306; quiz 307-8.

Lin JH, Shih CH, Kaphle K, Wu LS, Tseng WY, Chiu JH, Lee TC, Wu YL. Acupuncture Effects on Cardiac Functions Measured by Cardiac Magnetic Resonance Imaging in a Feline Model. Evid Based Complement Alternat Med. 2008/Jan, 23.

Linus Pauling Institute. Phosphorus. Oregon State University, 2008. http://lpi.oregonstate.edu/infocenter/minerals/phosphorus.

Maa SH, Sun MF, Hsu KH, Hung TJ, Chen HC, Yu CT, Wang CH, Lin HC. Effect of acupuncture or acupressure on quality of life of patients with chronic obstructive asthma: a pilot study. J Altern Complement Med. 2003 Oct;9(5):659-70.

Manthous CA. Lactic Acidosis in Status Asthmaticus. Three Cases and Review of the Literature. Chest. 2001,119:1599-1602.

Martin J, Donaldson AN, Villarroel R, Parmar MK, Ernst E, Higginson IJ. Efficacy of acupuncture in asthma: systematic review and meta-analysis of published data from 11 randomised controlled trials. Eur Respir J. 2002 Oct;20(4):846-52.

McCarney RW, Lasserson TJ, Linde K, Brinkhaus B. An overview of two Cochrane systematic reviews of complementary treatments for chronic asthma: acupuncture and homeopathy. Respir Med. 2004 Aug;98(8):687-96.

Mehl-Madrona L, Kligler B, Silverman S, Lynton H, Merrell W. The impact of acupuncture and craniosacral therapy interventions on clinical outcomes in adults with asthma. Explore (NY). 2007 Jan-Feb;3(1):28-36.

Meyer U. The oak – a Medication for Allergies and Skin Disease. Der Merkurstab, 2005/5, 358- 364.

Meyer U. The treatment of asthma with tannins – Quercus, Salix, Juglans, and Salvia, from a pharmaceutical point of view. Der Merkurstab, 2007/2, 131- 137.

Mulder F. Cardiodoron. In: Tellingen C van, editor. Vademecum, Handbook of Anthroposophic Medicine. Mercury Press, 2007, 58- 59.

Nishijo K, Mori H, Yosikawa K, Yazawa K. Decreased heart rate by acupuncture stimulation in humans via facilitation of cardiac vagal activity and suppression of cardiac sympathetic nerve. Neurosci Lett. 1997 May 23;227(3):165-8.

Mori H, Nishijo K, Kawamura H, Abo T. Unique immunomodulation by electro-acupuncture in humans possibly via stimulation of the autonomic nervous system. Neurosci Lett. 2002 Mar 1;320(1-2):21-4.

Nani D, Brizzi M, Lazzarato L, Betti L. The role of variability in evaluating ultra high dilution effects: considerations based on plant model experiments. Forsch Komplementärmed 2007;14:301-305.

Pelikan W. Healing Plants. Mercury Press. 1998.

Pilkington K, Kirkwood G, Rampes H, Cummings M, Richardson J. Acupuncture for anxiety and anxiety disorders—a systematic literature review. Acupunct Med. 2007 Jun;25(1-2):1-10.

Piltan D. Mittelprüfung am Beispiel von Aconitum napellus, Dissertation. Medizinische Fakultät Zürich 2007.

Righetti M, Baumgartner S, von Ammon K. Forschung und Forschungsproblematik der Homöopathie. In: Bornhöft G, Matthiessen PF, Hrsg. Homöopathie in der Krankenversorgung - Wirksamkeit, Nutzen, Sicherheit und Wirtschaftlichkeit. VAS 2007; S. 24-43.

Ritchie J, Wilkinson J, Gantley M, Feder G, Carter Y, Formby J. A model of integrated primary care: Anthroposophic Medicine. National Center for Social Research, Department of General Practice and Primary Care, St. Bartholomew's and the Royal London School of Medicine and Dentistry Queen Mary, London 2001.

Rossi E, Crudeli L, Endrizzi C, Garibaldi D. Cost-benefit evaluation of homeopathic versus conventional therapy in respiratory diseases. Homeopathy. 2009 Jan;98(1):2-10

Rutten ALB, Stolper CF, Lugten RF, Barthels RJ. Statistical analysis of six repertory-rubrics after prospective assessment applying Bayes' theorem. Homeopathy 2009;98:26–34. Accepted for publication in the Journal of Evaluation in Clinical Practice.

Scheel-Sailer A. Welche therapeutische Wirkungen haben Kunsttherapien in der Erstbehandlung querschnittgelähmter Patienten. Inaugural- Dissertation Universität Witten Herdecke, 2003.

Schönau E, Naumann EG, Längler A, et al. Pädiatrie integrativ, konventionelle und komplementäre Therapie, First edition. Elsevier, Urban & Fischer, 2005, 126.

Schnürer C. Mehr Luft: Atemwegserkrankungen verstehen und überwinden. Asthma bronchiale, Allergie, COPD und Rhino-Sinusitis. Verlag Freies Geistesleben, 2006.

Shaw A, Noble A, Salisbury C, Sharp D, Thompson E, Peters TJ. Predictors of complementary therapy use among asthma patients: results of a primary care survey. Health Soc Care Community. 2008 Mar;16(2):155-64.

Sinapius P, Ganß M. Grundlagen, Modelle und Beispiele kunsttherapeutischer Dokumentation. In: Sinapius P und Ganß M, Hrsg. Wissenschaftliche Grundlagen der Kunsttherapie Band 1. Peter Lang Verlagsgruppe

2007.

Singh BB, Khorsan R, Vinjamury SP, Der-Martirosian C, Kizhakkeveettil A, Anderson TM. Herbal treatments of asthma: a systematic review. J Asthma. 2007 Nov;44(9):685-98.

Smulders, YM. Hoezo, bewijs? (What does evidence mean?). Inaugural adress at Amsterdam University June 11, 2008. VU medical Center, 2008.

Sommer M. Grippale Erkrankungen, in: Anthroposophische Arzneitherapie für Ärzte und Apotheker, First Edition. Wissenschaftliche Verlagsgesellschaft, 2005/12, 12- 16.

Soldner G, Stellmann HM. Individuelle Pädiatrie, third edition. Wissenschaftl. Verlagsgesellschaft 2007, 201.

Steinsbekk A, Fønnebø V, Lewith G, Bentzen. N. Homeopathic care for the prevention of upper respiratory tract infections in children: a pragmatic, randomised, controlled trial comparing individualised homeopathic care and waiting-list controls. Complement Ther Med. 2005 Dec;13(4):231-8. Epub 2005 Oct 18.

Stryer L. Biochemistry, fourth edition. W. H. Freeman and Company, 2000.

Tellingen C van, editor. Vademecum, Handbook of Anthroposophic Medicine. Mercury Press, 2007.

Tellingen C van. Physiology, Organ physiology from a phenomenological point of view. Companions for the Study of Medicine. Louis Bolk Institute, 2008.

Tellingen C van. Biochemistry, Metabolism from a phenomenological point of view. Companions for the Study of Medicine. Louis Bolk Institute, 2001.

Tellingen C van. Pharmacology, Selected topics from a phenomenological point of view. Companions for the Study of Medicine. Louis Bolk Institute, 2006.

Thompson EA, Mathie RT, Baitson ES, Barron SJ, Berkovitz SR, Brands M, Fisher P, Kirby TM, Leckridge RW, Mercer SW, Nielsen HJ, Ratsey DH, Reilly D, Roniger H, Whitmarsh TE. Towards standard setting for patient-reported outcomes in the NHS homeopathic hospitals. Homeopathy. 2008 Jul;97(3):114-21.

Uchida S, Kagitani F, Hotta H. Mechanism of the reflex inhibition of heart rate elicited by acupuncture-like stimulation in anesthetized rats. Auton Neurosci. 2008 Dec 5;143(1-2):12-9.

Vademecum Anthroposophische Arzneimittel. Der Merkurstab, Journal of Anthroposophic Medicine. First edition pdf (cd), 2009.

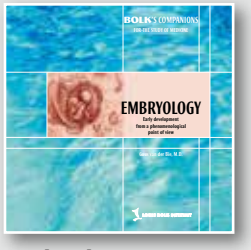
Vijver LPL van de, Hrsg. Proceedings seminar, Measuring food quality: concepts, methods and challenges. Seminar 12-14 February 2007. Driebergen: Louis Bolk Institute, 2007.

Witt C, Bluth M, Albrecht H, Weisshuhn TE, Baumgartner S, Willich SN. The in vitro evidence for an effect of high homeopathic potencies-A systematic review of the literature. Complement Ther Med 2007;15:128-138.

Zwiauer J. Cardiodoron aus pharmazeutischer Sicht. Weleda Korrespondenzblätter für Ärzte, 2002/154, 14- 20.

BOLK'S COMPANIONS FOR THE STUDY OF MEDICINE

Other publications in the series:



Embryology
Early development from a Phenomenological Point of View

Guus van der Bie, M.D.
Publicationnumber GVO 01

Can we give a scientific basis to our feeling that humans have unique human features? Are the human mind and the human organism 'nothing but' another variation of animal life? Can we find answers for the questions that satisfy both head and hart?
How these quetions are answered depends on the scientific method we use: the current scientific method to learn about biological facts and the phenomenological method to understand more about the meaning of these facts.
Early embryological development can teach us about the unique and characteristic qualities of the human being.
The result is, for example, a possibility to understand the relation between consciousness, psychology, and behavior and the shape of the body.

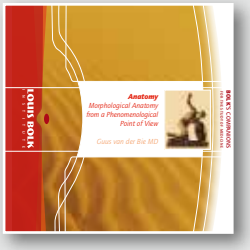
Biochemistry
Metabolism from a Phenomenological Point of View

Christina van Tellingen, M.D.
Publicationnumber GVO 02

Biochemistry offers insight into the continuous changes within the human organism. But can we maintain awareness of the coherence of the (changing) organism as we study the details? How can the many processes be understood as prototypical aspects of a unique organism?
The scope of the answers to these questions can be enhanced by using a combination of the current scientific method and a phenomenological method developed specifically to research the coherence of processes within living organisms. The current scientific method is used to discover biological facts. The phenomenological approach helps us in finding the meaning of the facts.
What emerges is a new grasp of the interrelations between biological processes, consciousness, psychology, and behavior.

BOLK'S COMPANIONS FOR THE STUDY OF MEDICINE

Other publications in the series:



Anatomy
Morphological Anatomy from a Phenomenological Point-of View

Guus van der Bie, M.D.
Publicationnumber GVO 03

Can we give a scientific basis to our feeling that the human being has unique human features? Are the human mind and the human body 'nothing but' another variation of animal life? Can we find answers for these questions that satisfy both our head and our heart?
How these questions are answered depends on the scientific method we use. In this publication two methods are used: the current scientific method to learn about anatomical facts and the phenomenological method to understand the meaning of these facts.
Human morphology can then be understood as an expression of the unique and characteristic qualities of the human being.
This results in new possibilities for understanding the relation between consciousness, psychology, behavior, and morphological aspects of the body.

Physiology
Organphysiology from a Phenomenological Point of View

Christina van Tellingen, M.D.
Publicationnumber GVO 04

Can physiology give more insight into the living human organism than the mere facts reveal at first? Is the level of activity the same for all organs? Are the vital qualities at work in organs unique for organisms and limited to biological activity? Can we find a scientific basis to research the coherence between organ systems?
By enhancing the current scientific method with phenomenological points of view we can find meaning in the facts and understand them as an expression of life itself. The phenomenological method makes the relation between organs visible and comprehensible. It approaches scientific facts from the point of view of their coherence and can give totally new insights this way.
What emerges is a grasp of the interrelations between biological processes, consciousness, and nature.

Immunology
Self and Non-self from a Phenomenological Point of View

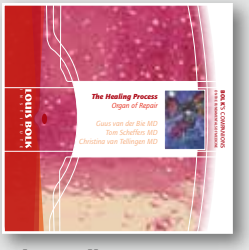
Guus van der Bie MD
Publicationnumber GVO 05

Why write this new booklet on immunology when there are already so many excellent texts on the subject? This Companion is about questions such as: why is it that the immune system functions as one organ? What coordinates the immunological functions?
Here, an attempt is made to develop a viewpoint to answer these questions. By using a phenomenological approach, the factual knowledge obtained through reductionism is placed in a larger perspective.
The concept that is presented in this Companion is derived from the functioning of organisms, observed in the way that was introduced by Goethe in his phenomenological method. This also includes the acquisition of insight into the holistic concept behind the immune system. Moreover, the organism as a whole can then be seen as an expression of the same concept.

Pharmacology
Selected Topics from a Phenomenological Point of View

Christina van Tellingen MD
Publicationnumber GVO 06

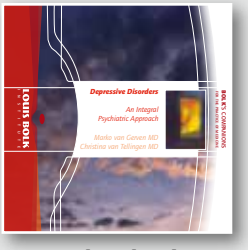
Pharmacology gives us insight into the way organic processes change when foreign compounds are introduced into the organism. Pharmacology is a changeable subject, depending on the needs and knowledge of the time. Can we find an inner coherence in the manifold ways compounds influence organisms? What should such a framework be based on? How can we understand the effect on human consciousness that most compounds have?
We can enhance the scope of the answers to these questions by using a combination of the current scientific method and a phenomenological method. It illuminates the known facts about the activity of compounds in organisms, and provides the means to find their significance.



The Healing Process
Organ of Repair

Guus van der Bie MD
Tom Scheffers MD
Christina van Tellingen MD
Publicationnumber GVO 07

After finalizing the series BOLK'S Companions for the Study of Medicine for the moment, this module on The Healing Process introduces a new series of BOLK'S Companions that studies the Practice of Medicine. In it, we research the healing process itself. There proved to be an enormous volume of scientific literature on the subject. It is easy to loose oneself in the countless details included in the descriptions of this process.
The phenomenological method of systems biology makes it possible to examine physiological and pathological processes in terms of the processes themselves. This results in a characterization of the various phases of the wound healing process. Out of this, new insights into the origin of health and disease emerged that also offer possible leads for medical practice.



Depressive Disorders
An Integral Psychiatric Approach

Marko van Gerven MD
Christina van Tellingen MD
Publicationnumber GVO 09

The treatment of depressive disorders is increasingly under scrutiny. We classified the risk factors of depressive disorders according to the scientific method applied in systems biology and phenomenology. The ordering in four biological levels that resulted from this, helps clarify the causes of the disorder. Together with the developmental history, it can lead to an individualized treatment of the patient, tailored to his or her specific situation. The treatment aims at restoring the deficient forces of self-healing.
This Companion presents a working model based on this methodological approach, as well as a variety of case histories to illustrate how applying this model can aid diagnosis and treatment in practice. Tables are added ordering well-researched regular and integral treatment methods according to the four biological levels. .

Wholeness in Science
A Methodology for Pattern Recognition and Clinical Intuition

Guus van der Bie MD

How do you develop clinical intuition? How do physicians gain practical knowledge about disease?

The above questions are vital for medicine. Diseases do not merely concern a partial defect, they recreate the life of the patient. At the hand of Pfeiffer's disease, the author shows that experienced physicians conceive of diseases as integrated concepts, which they can apply to the individual situation of the patient. Their clinical intuition is a form of pattern recognition and pattern recognition supports the ability to recognize an integrated 'whole.'
The practical exercises of this Companion allow readers to train and expand their ability of pattern recognition through Goethe's methodology. Clinical intuition, as experiential knowledge, appears to be a skill that can be actively developed.

For ways to order the Companions see inside of front cover or check our website: **www.louisbolk.org/companions**

Respiratory System Disorders and Therapy

From a New, Dynamic Viewpoint

In this Companion, the experience of three of our own patients with asthma and pneumonia is used as backdrop for our study of airway disorders. Nearly all of us have had some experience with respiratory disease, given that colds, flus, sinusitis, and bronchitis are so common. Most physicians and therapists know people with asthma and pneumonia from own experience and will readily recognize the descriptions we provide.

The experience with these patients leads us through a study of airway disease which eventually opens up to a wider view with new insights and innovative avenues of treatment for respiratory disorders in general.

Our research has alerted us to the part rhythm plays in the healthy respiratory tract and in the treatment of its disease. Rhythm, consequently, is the subject of the final paragraphs of this Companion.