The common complaint of heartburn —
Pathophysiological context of the causes of the dominant symptom of reflux disease, heartburn —
Therapy for reflux disease using bioresonance therapy, Bicom

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INTRODUCTION

In recent years a drastic increase in reflux disease with the dominant symptom of heartburn has been noted among the populations of the industrialised nations. The prevalence of this set of symptoms has increased ten-fold over the course of 3 decades and shows no signs of abating. The often intense pain of a reflux action has a considerable effect on quality of life and can readily be compared to the high levels of pain encountered with the angina pectoris symptoms of coronary heart disease. Studies relating to reflux disease demonstrate that every second or third person in Germany suffers from heartburn occasionally or often. The consensus among gastroenterologists is that reflux disease is present if heartburn occurs on two or more days per week.

Apart from the painful symptoms, chronic reflux disease has a far more dangerous aspect: the development of an adenocarcinoma of the oesophagus based on a cylindrical epithelium metaplasia (Barrett-oesophagus), as the result of mucous membrane degeneration due to the effects of regurgitating the acidic contents of the stomach. The adenocarcinoma is now the tumour with the highest rate of advance. In the western civilisations, the incidence of adenocarcinoma of the oesophagus and the cardia-oesophageal transition has increased more rapidly in recent years than any other type of tumour (1).

SYMPTOMS OF REFLUX DISEASE

Disturbed function of the stomach inlet seal (cardia) and the motility of the stomach is responsible for the pain in reflux disease. The acidic gastric juice and stomach contents (chyme) welling up from the stomach have a corrosive effect on the mucous membrane of the cardial outlet and the oesophagus (for symptoms and diseases, see following list).

<table>
<thead>
<tr>
<th>Symptoms and diseases associated with reflux disease</th>
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<tbody>
<tr>
<td><strong>Heartburn</strong></td>
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<tr>
<td>pain behind the breast-bone which can extend through to the back</td>
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<tr>
<td>epigastric pains</td>
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<tr>
<td>burning in the neck</td>
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<tr>
<td><strong>Coughs</strong></td>
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<tr>
<td>chronic coughs, frequent coughing attacks at night</td>
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<tr>
<td><strong>Asthma attacks</strong></td>
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<tr>
<td><strong>Hoarseness</strong></td>
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<tr>
<td><strong>Results</strong></td>
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<tr>
<td><strong>Asthma, bronchial</strong></td>
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<tr>
<td><strong>chron. bronchitis</strong></td>
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<tr>
<td><strong>chron. laryngitis</strong></td>
</tr>
<tr>
<td><strong>chron. obstructive lung disease</strong></td>
</tr>
<tr>
<td>(after frequent aspiration of the reflux)</td>
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<tr>
<td><strong>plate epithelial metaplasia</strong> (cardia inlet and oesophagus) <strong>adenocarcinoma</strong> (cardia inlet and oesophagus)</td>
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</tbody>
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Colloquium staged by the International Medical Working Group BICOM Resonance Therapy and BICOM Resonanz-Therapie-Gesellschaft from 28 to 30 April 2001 in Fulda
Occurrence of symptoms

- frequently after meals, acidic belching, burning
- at night, waking due to pain
- during sport or physical exertion
- during or after consumption of! drinking acid-containing food and drinks

CAUSES OF REFLUX DISEASE

There are no concrete data relating to the causes of reflux disease in the medical literature, though there are various assumptions which have not as yet been proven through appropriate studies.

For example, Professors Hotz and Rosch (2) write: „The cause of reflux disease is known to be acidic gastric juice flowing back into the oesophagus“. But why this return process takes place remains unanswered.

The gastroenterologists Schrenck and Fuchs (3) express themselves in more concrete terms when they allocate the cause to „Incompetence of the lower oesophagus sphincter muscle and motility problems in the body of the oesophagus“. The underlying reason for the incompetence of the sphincter muscle and why this should have occurred in about 1/3 of the population over the recent past, even if only occasionally, is not explained.

An important statement relating to the cause of reflux disease was made, in my view, by Prof. Raedsch, Wiesbaden (4), who described, „a retarded emptying of the stomach which is unaffected by acute therapy and therefore continues to cause problems“.

According to the results of my work, reflux disease is causally connected to chronic acid stress in the overall organism. An excess of acid or a lack of base acts on the functional operations in the gastrointestinal tract in such a way that a delay in emptying of the stomach takes place when very acidic gastric chyme which is always passed in small portions through the stomach pylorus into the duodenum cannot be neutralised to a pH of about 7 either in good time or at a delayed time. If there is a lack of base in the pancreas, the contents of the stomach are retained and released only in amounts for which there is sufficient bicarbonate available for neutralisation purposes. The digestive enzymes in the intestines rely on a basic pH!

In order to rectify the lack of the base bicarbonate, the organism produces bicarbonate, inter alia by acutely increasing the amount of gastric acid via the coating cells in the stomach, wherein each acid ion (hydrogen ion, H⁺) released in the stomach simultaneously supplies a bicarbonate ion to the duodenum for neutralising the chyme. When the increase in acid occurs, there is a drop in pH to about 1.0 and at the same time an increase in gastric juice.

Afterwards, the pancreas has more bicarbonate and the stomach has more acidic gastric juice. When the stomach has produced a certain amount of acidic gastric juice, this process of base recovery is exhausted. During the course of emptying the chyme, acidic gastric juice remains in the stomach.

Due to delayed emptying of the stomach and due to the increase in acidic gastric juice, the pressure in the stomach rises, which can lead to overstraining of the closure muscles in the cardia. If this is the case, the acidic contents of the stomach flow back through the cardia into the oesophagus, resulting in irritation of the layers of tissue involved which then results in the typical symptoms experienced with reflux disease (Fig. 1, 2).

HOW DOES CHRONIC ACIDIC STRESS OCCUR (LATENT, COMPENSATED ACIDOYSIS)?

There are two main reasons responsible for an excess of acid which can lead to chronic acidic stress of the organism:

1. Continual supply of food with an excess of acid and/or the continual supply of food which supplies an excess of acid during metabolisation.

2. Chronic functional problems in the intestinal tract, e. g. irritable bowel syndrome, which result in acidic fermentation in the colon (due to release of carbohydrates from the small intestine).
Neutralisation of contents of the stomach under normal conditions

Food: acid-base neutral

H₂O + O₂

no base deficit, complete neutralisation of the chyme

pH ~ 1.2

pancreas

blood and tissue

no fermentation

large intestine

Fig. 1 Stomach-pancreas: neutralisation of the contents of the stomach under normal conditions

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Neutralisation of contents of stomach under chronic acid stress

Food: excess acid

amount of gastric juice t

stomach pH 4–
stomach pressure 1'

\[ \text{H}_2\text{O} + \text{CO}_2 \]

Neutralisation delayed due to increased amount of gastric acid and due to base deficit

\[ \text{H}^+ \]

\[ \text{CO}_2 + \text{H}_2\text{O} \]

\[ \text{HCO}_3^- \]

\[ \text{HCO}_3^- \]

\[ \text{H}^+ \]

\[ \text{CO}_2 \]

blood and tissue

pH < 7, acid-contaminated metabolism. Degradation of amino acids from excess protein

\[ \text{H}^+ \]

\[ \text{H}^+ \]

\[ \text{H}^+ \]

\[ \text{HCO}_3^- + \text{H}^+ \]

large intestine

acid fermentation

kidneys

urine

\[ \text{H}^+ \text{ buffer} \]

\[ \text{H}^+ \text{ free} \]

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Fig. 2 Stomach-pancreas: neutralisation of the contents of the stomach under chronic acidic stress
Cause and pathophysiology of reflux disease

Cause
chronic acidic stress
(latent, compensated acidosis)

1. due to wrong nutrition
acid-containing and acid-producing foods

2. due to acidic colonic fermentation
functional problems in the intestinal tract due to intolerance of foodstuffs, allergies to foodstuffs, stress, etc.

Pathophysiology
• under acid stress, increased gastric acid and increased gastric juice
• inadequate and delayed supply of bicarbonate to the pancreas
• delayed neutralisation to pH 7 of the acid gastric chyme in the duodenum
• delayed emptying of the stomach
• increased gastric pressure
• overstraining of cardia closure muscle
• reflux of contents of stomach into the oesophagus

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Re. 1.: Foodstuffs with excess acid are in particular
• lactic acid milk products, in particular yoghurt, quark, buttermilk, cheese
• sauerkraut; vinegar products
• citric acid lemonades and cola drinks
• wine (dry) and sekt
• coffee.

Acid-producing foodstuffs are in particular protein-rich foodstuffs (proteins taken in excess which are then subjected to metabolism)
• meat, fish and eggs
• milk products
• pulses.

Re. 2.: Acidic fermentation of carbohydrates takes place via autonomous bacterial flora in the large intestine when carbohydrates flow in via the small intestine (in the event of functional problems). The carboxylic acids produced by enzymatic microbial degradation of carbohydrates are absorbed via the large intestine. The hydrogen ions from the dissociated carboxylic acids represent the acid load on the organism.

ACID BUFFERING IN THE ORGANISM

Any excess acid, whether the result of foodstuffs, metabolisation of proteins or fermentation in the large intestine, has to be extensively buffered and then neutralised or eliminated by the organism in order to avoid a reduction in pH. This process is of vital importance to the organism's existence because the physiological pH of all biological liquids, intracellular and extracellular, which are all approximately neutral, have to be maintained within very narrow limits. The homeostasis of enzyme functions and the stability of the three-dimensional structure of molecules depend on the pH being kept at a very precisely constant value. That is a basic prerequisite for the metabolism to function properly.

The acidity-determining hydrogen ions are bonded in the blood primarily to haemoglobin and plasma proteins. Phosphate (hydrogen phosphate) takes on further important buffering of H\(^+\) ions, this being available both inside and outside the cells. If these permanent buffer systems are exhausted, as is frequently the case with chronic acid stress, and there is an excess of acid present, the organism has to call on emergency buffering systems, which are operated at the expense of the metabolism and organ functions. In this situation, H\(^+\) ions are deposited in the stomach (due to an increase in gastric acid), in the connective tissues and interstitial cells, and this results in functional problems and the development of diseases (see also, on this subject, the relevant section in my book: Droge Wohlstandskost: Chronisch 'crank durch Fehlernahrung, [Foods of affluence as a drug: chronic illness due to defective nutrition] ISBN 3-00-002927-3; (6)).

ACID ELIMINATION BY THE ORGANISM

Naturally, the organism has the possibility of constantly eliminating hydrogen ions from the body, but its capacity to do this is also limited. If the acid supply exceeds the elimination capacity of the organism, tissue overacidification gradually builds up with harmful effects on health. Elimination of acid takes place via elimination buffers, to which H\(^+\) ions are bonded, and via the emission of free Fr ions. Free Fr ions mainly enter the urine, but elimination capacity is very low.
Acid elimination by the organism

H⁺ ions bonded to elimination buffers

- Phosphate buffer — acid elimination via the kidneys
- Ammonia buffer — acid elimination via the kidneys
- Bicarbonate buffer — acid elimination via the lungs

H⁺ ions as free ions

- Urine — acid elimination via the kidneys
- Sweat — acid elimination via the skin

In the case of acid stress, more than 99% of H⁺ ions are eliminated in a form bonded to an elimination buffer, the proportion of free H⁺ ions in urine and in sweat is less than 1%.

The possibility of acid elimination via secretion of H⁺ ions in the intestines is not very clear.

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The major proportion of the acid is bonded to phosphate (H₂PO₄⁻) and ammonium (NH₄⁺) ions which leave the body via the urine in the kidneys. On the other hand, bonding of the substrate bicarbonate (HCO₃⁻) and hydrogen ions (H⁺) takes place in the lungs, promoted by the enzymatic reaction of carboanhydrase. Carbonic acid is produced which immediately decomposes into CO₂ and water, wherein CO₂ escapes when we breathe out.

If the food taken into the stomach contains an excess of acid, the pancreas has to borrow bicarbonate from the organism in order to neutralise the liquid contents of the stomach. If there is already overacidification of the organism, the process for supplying bicarbonate (via the enzymatic process: CO₂ and water to give HCO₃⁻ and H⁺) can take place only to a limited extent because further deposition of H⁺ ions in the tissues would lead to further overacidification of the tissues.

In this situation, the way out is to increase production of acidic gastric juice by the coating cells with a net balance of equal parts of H⁺ ions and bicarbonate. The bicarbonate is then supplied to the pancreas which requires it to neutralise the chyme. The gastric juice thus contains increased amounts of acid.

Further formation of the base bicarbonate takes place via metabolisation of the amino acid glutamine in the kidneys. This metabolic pathway is followed after a delay, however, and cannot compensate for the acute base deficit in the pancreas.

(Further comprehensive details and recent findings on the topic of acid buffering and acid elimination may be found in my book, as mentioned above (6)).

ACID STRESS LEADS TO REFLUX

Thus, in the event of chronic acid stress of the organism, reflux disease is formally preprogrammed. An overworked pancreas, with a deficit of the base bicarbonate, can perform the required neutralisation of the chyme only after a delay, and that delay becomes greater the greater the extent of the excess acid present in the food eaten.

The back-up thus occurring in the stomach with delayed emptying of the stomach cannot relieve the pressure in the stomach; on the contrary, the additional increase in acidic gastric juice for short-term provision of bicarbonate to the pancreas increases the pressure in the stomach. Thus, not only does the pressure on the closure muscle in the cardia increase, but it is maintained for a longer period. It is not surprising then that, under this type of non-physiologically acceptable stress of the cardia, reflux of gastric juice and gastric liquids can take place.

THERAPY FOR AND PREVENTION OF REFLUX DISEASE

The primary objective of therapy for and prevention of reflux disease comprises the removal of acid stress in the organism. Current eating habits which place fast food and soft drinks above natural basic foodstuffs and water, lead to an excess of acid. Under constant acid stress, the opportunities for the organism to compensate for this by buffering and elimination are increasingly overworked, which means that the condition of latent tissue overacidification gradually sets in.

Chronic acid stress may doubtless be a contributory factor in the origin of the constantly increasing diseases of civilisation, it not only initiates reflux disease but it also almost certainly contributes to other diseases such as age-related diabetes, high blood pressure, arteriosclerosis, rheumatism and osteoporosis (6).
According to provisional estimates, more than 50% of the population in advanced countries are now affected by latent tissue acidosis. This health problem, which has long been recognised by experiential naturopaths, is also now being accepted by traditional medicine; thus, for example, Prof Dr. I. Vormann (5) writes on the prevention of heartburn: “reduce the amounts of acid-forming foodstuffs, such as meat, cheese, sugar and white flour and, instead of these, consume more base-forming foodstuffs such as potatoes, fruit, vegetables and mushrooms”.

Therapy and prevention are remarkably simple: You should follow a nutritional pattern which takes account of the capacity and stress limits of the gastro-intestinal tract and be guided by the requirements of the metabolism. This type of diet is referred to in the medical literature as a “physiological diet” (6).

What should be eaten are untainted, non-industrially processed basic foodstuffs such as grain products, vegetables, pulses, salads, fruit, vegetable oils, fats and nuts. Water or tea are suitable as drinks. Animal proteins, which the organism does not rely on, such as meat, fish, milk products, should be eaten only in small amounts or not at all. In the event of completely meat-free and milk product-free food, the relative lack of vitamin B12 can be alleviated by the occasional egg or by substitution. The form of diet mentioned above is mostly acid/base neutral, although bases, less often acids, may predominate slightly, depending on composition.

TREATMENT OF FOODSTUFF ALLERGIES

Acid stress of the organism by microbial fermentation in the large intestine has developed into a major health problem. At the moment, almost half the population suffer from intestinal pains with digestive problems and corresponding acid fermentation. The amount of acid produced in that way can far exceed the amount of acid supplied by acidic food. The cause of continuous fermentation in more than 2/3 of cases is an allergic reaction by the intestinal mucous membrane to constituents in foodstuffs and foodstuff additives.

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**Therapy for and prevention of reflux disease**

**Rethinking diet**
- no or very little acid-containing foods / drinks
- no or very little acid-forming foods
- „physiological diet“, mainly vegetarian
  - (adults, optimum: 7% proteins, 82% carbohydrate, 11%)/0 fat

**Avoiding acidic fermentation in the large intestine**
- avoid indigestible foodstuffs
- avoid allergy-triggering foodstuffs
- avoid indigestible sugars (e.g. sorbitol, sorbitol-containing fruit)
- do not eat too much simple carbohydrate (e.g. ordinary sugar, sweets)

**Take bicarbonate**
- acute therapy 5-8 g daily, mainly NaHCO3,
- deacidification therapy: ca. 5 g daily for 6 weeks or longer

**Avoid food allergies**
- avoid allergy-triggering foods (milk products, some fruits, some nuts)
- stress, electrosmog, regeneration deficiency
- immune deficiency
- in the event of an existing allergy: elimination diet or therapy

**Treating foodstuffs allergies**
- bioresonance therapy (e.g. with Bicom)
- homeopathic therapy

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Acid take-up and acid elimination

**Take-up of acids** (food and drink)
- strict vegetarian diet: 0 - 20 mmol H⁺ ions/day
- mixed diet: 60 - 100 mmol H⁺ ions/day
- diet rich in animal proteins: 100 - 200 mmol H⁺ ions/day

**Elimination of acids** (therapy)
- bicarbonate: 6 g NaHCO₃/day → 72 mmol H⁺ ions/day
- proton pump inhibitor (each dose): 8 g NaHCO₃/day → 95 mmol H⁺ ions/day
- histamine H₂-receptor blocker (each dose): 0 mmol H⁺ ions/day

Therapy, side effects:
- bicarbonate: none
- proton pump inhibitor: considerable
- histamine H₂-receptor blocker: considerable

Therapy, costs:
- bicarbonate: very low
- proton pump inhibitor: very high
- histamine H₂-receptor blocker: high

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CONCLUDING REMARKS

To summarise, it can be seen that reflux disease with the main symptom of heartburn is based on chronic acid stress of the entire organism. The increasing evidence over recent decades of man's lack of ability to adapt to his environment and disregard for his biological needs, is being seen more and more in the form of health problems and diseases. Nutrition, which should take into account the natural requirements of the stomach, intestines and metabolism, is neglected more and more. The results are there for all to see in a rapid deterioration in people's health. A relatively steep increase in allergic reactions cannot be overlooked. Yet this situation can be reversed! Preventative measures are offered which promote a return to natural adaptability and to natural behaviour. Allergies can also be treated successfully through bioresonance.

Bioresonance offers therapists a new route to the causal treatment of allergies, not only of the intestinal tract, as in the case of the reflux disease described in this article, but also allergies in the skin and other mucous membranes, in particular allergies in the respiratory tract.

LITERATURE


Address for correspondence

See Annex at the end of this volume.