



How's your Liver?

**Part I: Historical development, tasks of the liver,
diseases and diagnostic procedures**

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In his treatise on the significance of the liver, Naturopath Bartels describes the way the organ functions, the diseases which affect it and the possibilities for treatment. This report is published in two parts. Part II discusses the different approaches to treatment. (Ed.)

How's your liver? This is how you would be greeted day by day on many of the South-Sea Islands. Actually it would be a fitting greeting for us to use too, for this organ, so frequently overlooked, ought to be accorded considerably greater significance, both in prophylaxis and in treatment. The fact is that, if we take a look at the health situation in Germany, we do not find much to be happy about, and the outlook is grim. The alarming fact is that diseases of the liver are no more merely a problem of alcoholics and the malnourished. Increasingly, elevated liver counts are found in many Germans with an "average" lifestyle, signifying some kind of disorder. The nutrition report for 2000, issued by the Deutsche Gesellschaft für Ernährung (DGE) [= German Nutritional Society] quotes disturbing figures and refers to the fact that it is precisely people "in the best years of life" (from mid-20's to mid-40's) who are victims of a disease which is often diagnosed too late: in this age-group, in fact, there has been a

four-fold increase in mortality from cirrhosis of the liver over a period of only a few years. In the meantime this condition has risen to third place on the mortality risk table.

Statistically speaking, anyone suffering from severe liver disease has a lower life expectancy than somebody with cancer or heart disease! Cirrhosis of the liver remains the cause of mortality with the lowest mean age of death. This is 11-14 years below the average life expectancy. Some 5 million Germans suffer from chronic liver disease. Each year around 20,000 people die from cirrhosis of the liver. The estimated number of unreported cases is substantially higher. From these figures it could be inferred that liver disease is a phenomenon of affluence.

The high numbers of liver and gallbladder patients in Germany also testify to this. It has been estimated that up to 30% of patients in an established general medical practice have a fatty liver resulting from acute or chronic liver disease. Of the total population, the number of liver patients is assessed as 5%. Surveys suggest that around 10-15 million German citizens have been diagnosed with gallstones. Since this problem is more difficult to grasp, it seems probable that these

figures represent merely the tip of the iceberg. About 3 million of those affected suffer more or less regularly from complaints which range from severe pain to colic and digestive disturbances.



Fig.1: An eagle devouring Prometheus' liver. Laconic bowl, 550 BC.

Even for the Greeks of antiquity the liver was considered an organ of pivotal importance. It was regarded as the home of the soul and of well-being. In mythology it plays an important part in the fate of Prometheus. Because he had given fire to the human race, they were punished by Zeus, father of the gods, who inflicted all the illnesses upon them.

Prometheus, the culprit, was bound to a mountain in the Caucasus, where he had to suffer terrible torments. Every day an eagle would devour his liver which, however, al-



ways regenerated overnight. This great ability of the liver to regenerate itself represents an opportunity for both patient and therapist. The liver - and with it I include the gall-bladder - should receive more attention in naturopathy. In this area we have tremendous opportunities for helping, for healing, and for laying down a basis for the treatment of other illnesses.

People who have a disease or problem of the liver exhibit unmistakable outward signs and behaviour patterns which can point us to the causes. If we succeed, in the course of the first sensitive consultation, in eliciting the causes and getting some basic insights across to the patient, then success is more or less assured.

I hope that this contribution may shed some light on the complexity of liver problems, and may provide insights and assistance to practitioners and patients alike, originating from the author's own personal illness and experiences in his own naturopathic practice.

The liver - a unique organ

With its appendage, the gall-bladder, the liver is the largest uniform organ and, at the same time, the largest gland in the body. It consists of

about 100,000 lobules, each containing over 3 million liver cells, within which the biochemical reactions of metabolism and detoxification take place. The functional tissue of the liver, which is well supplied with blood, is known as the parenchyma. Every minute about 1-2 litres of blood pass through this organ. The liver is surrounded by a robust capsule. Only this exterior lining is supplied with sensory nerves. There are no such nerves within the liver to convey sensations of pressure or pain. Thus, when it is sick, the liver suffers in silence and painlessly, which means that any hepatic illness goes unnoticed until the later stages.

The liver is the most important organ for the metabolism, and carries the heaviest load. Nearly every substance which enters the body passes through the liver, being either converted or detoxified there. Many nutrients can only be utilised by the body if they have been processed by the liver. Our lifestyle often makes excessive demands on the liver's capacities.

Central organ of the metabolism

It is clear from the many tasks that it has to perform, that in the case of the liver we are dealing with an extremely efficient organ, and one which

is of critical significance for almost every metabolic process which is essential to life. Numerous chemical reactions and processes take place within a very small space, and therefore the liver is repeatedly referred to as the "central chemical laboratory" of the body.

The liver plays a substantial role in guiding the metabolism of sugar and fat. It breaks down numerous endogenous and exogenous substances, excreting them in the form of bile, which aids digestion and passes into the gut to be eliminated from the body.

Along with the kidneys, the liver is the largest and most important organ of detoxification in the body. As with every highly specialised system, when excessive demands are made upon it it is liable to become disordered. Then ailments occur, and not infrequently these develop into serious liver disease.

Testing liver function

In order to check out the efficiency of the liver, its individual functions are taken into consideration. To assess its synthesizing abilities, substances are selected which are produced in the liver cells and pass into the bloodstream. For this purpose normally the concentration of the protein

albumen in the blood is measured, plus that of the enzyme pseudocholinesterase and that of the clotting factors. Albumen is the main protein body found in the blood. Its chief function is concerned with transport and, inter alia, it serves to maintain the body's fluid balance. As many clotting factors are produced by the liver, a test of the blood's clotting ability enables conclusions to be drawn regarding liver function. However, a reduction in clotting fac-

tors may also be due to other causes.

The eliminative function of the liver may be checked in the blood by determining the level of bilirubin, which is a product of the breakdown of hæmoglobin. Normally it is excreted into the gut via the bile. A rise in the level of bilirubin in the blood indicates a disorder, either in the liver itself or in the bile ducts.

Beside bilirubin, other sub-

stances are also excreted by the liver, which may be used for diagnostic purposes. These include alkaline phosphatase and copper which, as a trace element, has a significant role to play in cell metabolism. The excretion of urea via the kidneys is also an indicator of the liver's efficiency, since urea is synthesized cyclically from toxic ammonia in the liver. Partners in this reaction are the partially essential amino-acids ornithine, citrulline and arginine.

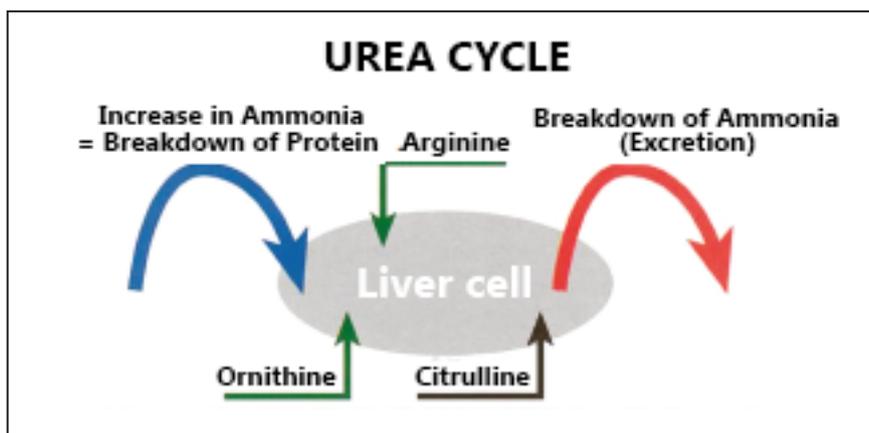


Figure 2: Ureagenesis. Single reaction of the Urea Cycle. (Source: Medical special 5/2002)

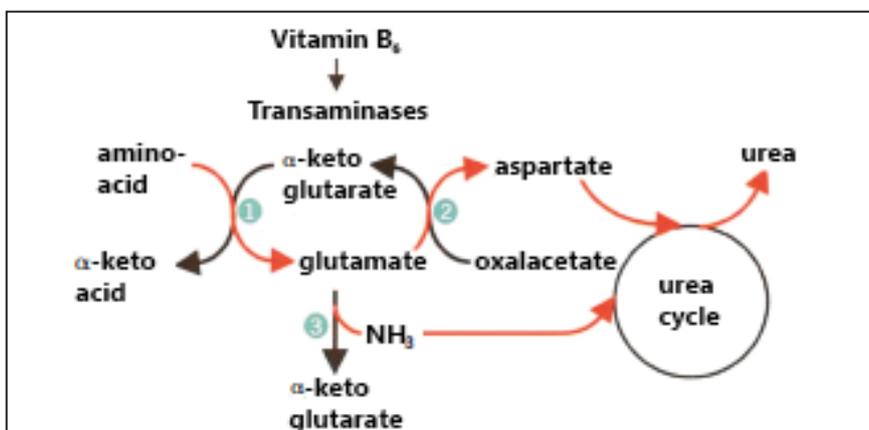


Figure 3: Amino-acid metabolism of the liver (Source: Medical special 5/2002)

In diseases of the liver, a rise in the concentration of immune defence substances, immunoglobulins or gammaglobulins, may sometimes be observed in the blood. The reason for this may be, on the one hand, an inflammatory process in the liver itself, or, on the other hand, if the defensive function of the liver is depressed, an increased production of immune defence substances outside the liver. The levels of globulins are determined by means of electrophoresis.

Disorders of the liver, from malfunction to destruction

Even when damaged, the liver continues to work for a long time, without any disorders being apparent.

If patients complain of tiredness, poor concentration, in-

creased flatulent distention, pruritus and loss of appetite, these are always signs of liver disease. As a rule malfunction of the liver metabolism also involves malfunction of the urea cycle. If the synthesis of urea decreases, there is an increase in the concentration of ammonia in the blood. Ammonia arrives at the brain via the bloodstream, leading to a variety of distinct symptoms there. Depending on the concentration of ammonia, mild to severe psycho-mental changes, epileptiform spasms or even comatose states may ensue. The precise pathological mechanisms leading to neurotoxicity of ammonia and the development of hepatic encephalopathy have not yet been completely clarified. The first signs are a slight irritability, poor concentration or chronic tiredness. However, they are frequently not recognised as such and therefore remain untreated.

Profiles of liver diseases

Hepatitis (Inflammation)

This is caused mainly by infection with hepatitis viruses (A to E), concomitant with weakening of the liver by alcohol, a diet low in vitamins or lengthy consumption of medicines. Recovery from hepatitis is possible. However, it may also progress to chronic, benign inflammation or, later, to cir-

rhosis of the liver. Acute hepatitis is considered to be the most frequent cause of cirrhosis. Although infection by the hepatitis A virus accounts for 50% of all viral hepatitis cases, the prognosis is good. The hepatitis C virus directly destroys the liver cells. In the case of Hepatitis B it is assumed that viruses do not cause direct damage to the liver cells, but that they trigger an auto-immune reaction, which results in the destruction of all the cells affected by the hepatitis B virus.

Fatty liver

Fatty liver occurs when the liver accumulates more fat than normal - i.e. 30% or more of its own weight. A fatty liver persisting over a long period of time results in obvious inhibitions of liver function. According to Prof. H. Kornhuber of Ulm University, 84% of men and 72% of women are affected by a fatty liver.

A healthy liver is low in fat, containing only 2%-5% of its own dry weight of fat, which is invisible, in the form of stored fats, phospholipids and cholesterol. Up to 10% of adults in the western hemisphere have a fatty liver, without any reason such as alcohol abuse or viral infection being detected. One in three people gets cirrhosis of the liver (Ärztzeitung, 7.7.2003). Fatty liver is

caused mostly by a diet too high in calories (obesity) and/or regular over-indulgence in alcohol. A bad case of diabetes mellitus may also result in the development of a fatty liver. But even in this case a fatty liver can be restored to normal with appropriate treatment.

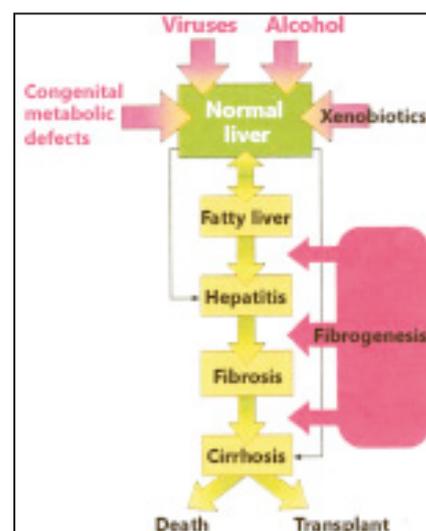


Figure 4: Fibrogenesis of the liver (according to H.K. Seitz, Heidelberg)

Cirrhosis of the liver

Cirrhosis of the liver is rather like efficient liver cells dying off en masse, to be replaced by non-functional connective tissue which develops a destructive compulsion to invade the last intact substance of the organ, displacing it once and for all. This fibrogenesis may be triggered by faulty nutrition, metabolic defects, viruses, xenobiotics or alcohol. In certain circumstances there may be a progression from fatty liver to



variant forms of hepatitis, via fibrosis - which is still reversible - to cirrhosis.

The connective tissue cannot assume the functions of the liver, which means that the liver's metabolic performance becomes steadily worse. This life-threatening cirrhosis can also be triggered by type II diabetes and various forms of icterus, or other diseases of the liver. These will not be discussed further here.

The most common reason for disorders of the liver and bile duct is that these have been overworked for a long period of time. In our latitudes, the main cause of liver damage used to be alcohol consumption. Like many other toxic substances which get into our bodies, alcohol is "disposed of" with the help of the liver. Regular consumption of alcohol overburdens the liver. This results in a fatty liver, leading to chronic inflammation of the liver and eventually to cirrhosis. About 90% of the breakdown of alcohol takes place in the liver, and only about 10% in the respiratory system and kidneys. The by-products of this detoxification are in some cases directly cytotoxic. This results in fatty liver and hepatitis, and sequelae. Other detoxification functions are reduced or even blocked. Nevertheless, in the meantime the current situa-

tion has changed. Most of the blame for weaknesses and diseases of the liver must now be borne by faulty nutrition, gluttony, processed foods, lack of movement, obesity, endogenous and exogenous toxins, environmental pollution and drugs, both medical and recreational.

Not only does excessive consumption of protein and fat play a part, but especially the biological quality and processing of food. The liver can only provide the body with high-quality building and operational materials if the raw materials delivered to it are of the best biological quality. Weak cartilage, tendons and connective tissue are among the things which can be attributed to deficiencies in this area.

All kinds of parasites, including viruses and pathogenic bacteria, will seize the opportunity presented by weakened immune defences and a loss of adaptability of the body. The need here is for a change of heart in, and education of, the patient.

The relationship between the gut and the hepatic system, along with the associated problems, was described as follows by Prof. Friedländer in 1932: "A human being consists of what is produced by his gut and his liver from

his food! The deterioration of the blood begins in the gut due to unnatural conditions. Sickness always affects the whole person. The most powerful organ of detoxification is a healthy intestinal mucosa. Here we see cosmetics beginning from within. The second most powerful organ of detoxification is the liver!"

An individual's quality of life is shaped by a causal chain of events: gut - portal vein - liver - blood - kidneys, via the blood and the lymphatics. So, for instance, intestinal ammonia is detoxified by the liver, to become urea, which is usually excreted with the urine. If the detoxification and elimination are not successful, the brain will become polluted, or rheumatism will set in. In particular, flatulence can result in the hepatic system being challenged and damaged.

Finally, reference must be made to **problems arising from vaccines**. A seven-year-old nowadays, in certain circumstances, has had to take on board more than 30 doses of vaccine - a tremendous load for the sensitive liver.

Diagnostic possibilities - liver signs

Even when damaged, the liver continues to work for a long time without any apparent disorder.



The following are some hints which suggest liver disease:

The patient complains of tiredness, poor concentration, increased intestinal distention, upper abdominal problems, lack of appetite and intolerance of fats. Other "liver signs" may be pseudo-allergies, hypoglycæmia, general susceptibility to illness, and depression. Typical symptoms include disturbed sleep with waking between 1.00 and 3.00 a.m. with restlessness, headache or pain behind the eyes.

Hints may also be received via the skin, in the shape of discoloration or jaundice, hæmatomas and senile lentigo caused by deposits of fuscins or lipofuscins. Further signs are palmar erythema, skin defects or Dupuytren's contracture of the inner surface of the hand. Mention might also be made of white markings of the nails, spider nævi, shininess of the tongue, varices, or xanthelasmas from cholesterol deposits in the eyelids.

The state of the skin is a reflection - in the truest sense of the word - of liver function. Thus in the final analysis, acne too indicates a weakness of the liver. The fat metabolism is disordered. I will mention once more the connection between liver function and the quality of the cartilage. Our top sportsmen and women,

who have a high protein intake and frequently suffer injuries in this area, could learn a thing or two in this respect. The colour and consistency of stools and urine also provide valuable indications, likewise irisdiagnosis. Dark-field microscopic investigation of the blood, in particular, can give information regarding the milieu, level of immune defence, and the body's regenerative capacity.

First published in the German language in the SANUM-Post magazine (73/2005)

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