

# What is gastroenterology ?

On the following pages the interested reader or the concerned patient will find some orientating hints regarding typical procedures treating gastroenterological diseases.

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## What is gastroenterology?

Gastroenterology (GE) is the field of medicine occupied with research and treatment of gastric, intestinal, nutritional and digestive diseases. Also, diseases of the liver, gallbladder, pancreas and all other problems with the origin or manifestation in the abdominal region belong to this specialization.

The gastroenterologist will, after having taken a detailed history of symptoms of his patient, propose the necessary tests permitting to find the exact diagnosis. On this base the treatment can be initiated. The aim of treatment is healing, or, when this is not possible, improvement of symptoms and prevention of complications.

In general, the gastroenterologist will assume the non- surgical part of abdominal diseases, exploring the diagnosis and ordering drug treatment. The operations are reserved for the surgeon. Recently however, this division of tasks becomes less categoric, since due to the evolution of digestive endoscopy, a number of interventions are now performed by the gastroenterologist.

The GE requires profound knowledge of every field of internal medicine, mainly because many of the diseases treated don't have their origin in the abdominal region. This is the case for diseases of the whole body (which are generally called systemic diseases). The GE works in collaboration with Surgeons, Gynecologues, Urologues, medical X-ray Specialists, Psychologues, Nutritionists, Immunologists and Oncologists.

## Signs and symptoms

At the beginning of consultation there is always a detailed description of the complaints and symptoms by the patient himself. The physician will then by precise questions approach the diagnostic hypothesis and by means of physical examination objectivate and document the findings.

In GE the so-called “guiding symptoms” are of great importance. These are signs or symptoms, which can be found regularly in a big number of cases, indicating a possible disease of abdominal organs. These are: diarrhea, constipation, nausea, vomiting, irregularity of bowel movements, Flatulence and abdominal gas, jaundice, vomiting of blood or blood in the feces, black stools. Important general signs are fever, weight loss, weakness, circulatory insufficiency and collapse, loss of appetite.

Especially important is the character of pain (burning, piercing, dull, colicky, cramps, alternating or continuous), the localisation within the abdomen and irradiation in distal regions of the body. Also must be registered the dependence of complaints of the meals, the position of the body, immobility or movement and other external influences.

The temporal context of the symptoms, the rapid or slow onset, manifestation after eating excess or alcohol, drug intake must be explored. There should be asked for journeys to tropical countries, contact to infected persons and special risks in private or professional environment.

Frequently, the physician will be able now to formulate a working hypothesis, which has to be confirmed by laboratory and technical methods. The particular challenge in this situation is the choice of the right tests to perform, which lead rapidly to the aim: not too few, not too much should be done. This is a narrow path: insufficient testing may result in incorrect or retarded diagnosis, too many tests, which are often expensive, unnecessary and uncomfortable for the patient, can produce non-relevant findings, which will lead to a cascade of further avoidable tests. For these decisions, the medical experience and common sense are particularly important. In all cases, the diagnostic methods should be in detail discussed with the patient.

## Organs and their functions

Following a pre-digestion process in the stomach, the real digestion takes place mainly in the small intestine. By means of different enzymes, which are produced partly in the small intestine itself, partly are found in pancreatic and biliary secretions, the aliments are deconstructed to their elementary molecules and in this state assimilated. The reconstruction of proteins to form the body mass is then performed in the liver. The colon is the organ for the resorption of water, which leads to a concentration of the fecal substance and prevents dehydration.

The tract gastrointestinal is also the place of the first contact of the body with many foreign substances. This explains the marked immunologic function of the small intestine, which is gradually constructed during biography. For the contact of the intestinal mucosa with foreign substances, the composition of the bacterial flora plays an important role.

The liver is, besides its function in the synthesis of proteins, the central organ for detoxication. It is able to function as a reservoir, participates in blood coagulation and produces the bile. The latter is mainly important for the assimilation of fat.

The pancreas is active in digestion and also in hormonal production and so becomes the central organ in homeostasis of blood glucose levels.

## Diseases

1. Inflammatory diseases
2. Infectious diseases (viral, bacterial, mycosis, parasites)
3. Precursors of diseases (Precanceroses)
4. Cancer
5. Allergic diseases and alimentary intolerance
6. Intoxications
7. Genetic diseases
8. Immunological diseases
9. Metabolic diseases
10. Stone formation
11. Vascular diseases
12. Functional diseases (no organic lesion detectable)
13. Psychological and psycho-somatic diseases
14. Systemic diseases with participation of the abdominal region

## Diagnostic methods

The diagnostic technical research starts generally with a laboratory analysis of blood, urine, gastric and intestinal secretions. The blood tests will show acute or chronic inflammation, they will reflect the function of certain organs, cultural and serologic analysis will be done to search for infectious diseases and the correct function of the immune-system will be tested. There are some values indicating the possibility of tumour growth in the body, however cancer diagnosis from blood tests alone is not possible.

The examination of the abdomen by ultrasound has no side effects and is relatively easy to perform. It permits mainly the investigation of solid organs (liver, pancreas, spleen, kidneys) and of liquid filled hollow organs (Gallbladder, bile ducts, blood vessels). The demonstration

of air-filled hollow organs is more difficult, however with the modern ultrasound tools a good judgement of intestinal structures is often possible. Air and bones disturb, liquids facilitate ultrasonic waves. This technique is also very useful for the follow up of many diseases. The use of ultrasound needs some experience of the examiner and a high quality machine with a high...

The importance of diagnostic X-ray has clearly diminished since endoscopy has been developed. Currently there remain only few indications. On the other hand, modern computerized techniques like computer- tomography and magnetic resonance have become indispensable in many situations. These techniques are complementary to endoscopy. The PET- CT (Tomography by emission of positrons) is reserved for special questions, mainly in cancerology.

The development of the modern endoscopy became possible by using the flexible and light-transmitting glasfiber. This technique made it possible for the first time to inspect hollow organs "from the inside" and to take biopsies from these areas for microscopical analysis (Histologie)., wick often permits to establish definite diagnosis. Most often, endoscopic examinations are performed under sedation or short time general anesthesia.

Today the fiberoptic endoscopy has been replaced by video-endoscopy, which allows several investigators to watch images from the interior of the body and to conduct video sessions live even to distant medical centers.

The rapid technical evolution of diagnostic and now also of therapeutic endoscopy has considerably enlarged the possibilities of this technique. Endoscopy is frequently combined with other techniques, for example with ultrasound. With an ultrasonic transducer on the tip of the endoscope it becomes possible to investigate the surrounding structures neighbouring the intestinal organs from the inside and so avoid the typical artefacts by external ultrasound. Today, endoscopy reaches the whole gastro-intestinal tract, including the small intestine, by means of modern balloon- assisted techniques. Diverses interventions permit hemostasis of different bleeding lesions, the resection of intestinal polyps, the complete removal of small cancerous lesions (Mucosectomie), the drainage of obstructions of bile- or pancreatic ducts by stones or tumours. In combination with laparoscopic surgery a number of interventions are now performed with an interdisciplinary approach. The endoscopic techniques will still continue to develop in the near future.

For special questions there are certain functional tests in GE.

The most frequently used are:

- Manometry (measurement of pressure)in the esophagus, anorectal region and bile-ducts
- pH- metry (measurement of acidity) in the stomach and esophagus (reflux diseases)
- H2 and C13 respiratory tests for alimentary intolerance, helicobacter- research, chronic diarrhea and troubles of intestinal passage.
- Contrast-Ultrasound for differential diagnosis of focal liver lesions.
- Elastography to estimate the degree of gravity of liver disease.

## Surgical treatment

For some abdominal diseases the operation is absolutely necessary, for others the indication can be discussed. The operation can sometimes be replaced by an endoscopic intervention, or even a drug treatment. Since the choice of therapy (operate or not operate) is not always easy, an excellent collaboration between the gastroenterologist and the surgeon is important. In case of cancer disease an expert surgeon in oncology surgery should always be included. Also, the right moment for the operation, the general state of health of the patient, his age, his social environment and his biographic situation should be considered.

Many people are afraid of an operation. This fear is however often not justified. Still today the operation is in many situations the best way of treatment. The explanations given to the patient for informed consent should permit the patient to understand the reasons in favour of an operation. Quite often patients need some time of reflection to decide to undergo what is medically necessary.

Today we find a strong tendency towards minimal invasive surgery. The term describes a less invasive, less radical procedure. The development of laparoscopic surgery (operation through tiny openings of the abdominal wall with special instruments) has largely contributed to this evolution, even if open operations still have their indications, especially in case of abdominal adhesions or for complicated interventions.

## Drug treatment

The majority of GE diseases can be treated by medicaments. The aim is healing, and when this is not possible, relief or control of disease activity. Some diseases can become accessible to operation only by a preceding drug therapy.

The groups of drugs most frequently used are:

- acidity-blocking or binding agents
- mucosa-protecting agents
- substances to slow or accelerate intestinal passage
- antiinflammatory agents
- antimicrobial agents
- anticancerous agents
- antiallergic and immunologic agents
- painkillers
- gas-binding agents
- blood-coagulation influencing substances

The gastroenterologist has to be familiar with possible side effects and contraindications of these substances. Some drugs, like for exemple corticosteroids for treatment of chronic inflammatory intestinal diseases, need special experience to avoid problems caused by these drugs. With painkillers and laxatives the development of drug dependency is feared-these therapies ask for professional surveillance.

In some cases natural substances can be effective for treatment. Especially for phytotherapy (plant extracts) there exist some good quality studies. In this field there is certainly a lot of clinical experience necessary, because quite often ineffective products for incorrect indications are prescribed.

## Other treatments

For some diseases abdominal massage, compresses and other external applications can be employed. Advice especially for nutrition and correct Hydration are important. In some cases, psychotherapy can be indicated, as in disturbances of eating behaviour.

## Prevention

A focussed prevention is established for primary Cancer of the esophagus, stomach, Colon and Liver. Precancerous states are controlled in regular intervals. The prevention of cancer of the biliary system and the pancreas is up to now unsatisfactory. Prevention of vascular diseases (thromboses, embolies) follows the same criteria as in cardiology. To prevent viral infections, vaccinations are widely used. The antibiotic therapy of Helicobacter in the stomach serves to prevent late complications.

## Special questions

Here are mentioned some of the most frequently asked questions in GE:

-Am I allergic to aliments?

\_Do I suffer from alimentary intolerance?

-Am I intolerant to Gluten?

-Do I have an irritable bowel syndrome?

-I noticed blood in the stool-is it dangerous?

-Can I take acidity- blocking agents for a long period?

-I suffer frequently from abdominal pain- could it be cancer?

-Since many years I have abdominal pain. No doctor takes it seriously.

-Recently I lost much weight, and my doctor has found anemia- what does that mean?

-The ultrasound- examination has revealed a cyst in my kidney-is it dangerous?

-In my colon there was found a suspect lesion- is it better to operate, or to wait, observe and to control?