

confirmed. Many risk factors are known to have an impact increasing with age. The forefront factors include inflammatory intestinal diseases, familial polyposis and colorectal carcinoma occurring in the first level of kinship. Risk factors include also the multifocal malignity in first level of kinship, especially the malignities in female genital organs. Activation of oncogenes can play a crucial role in the development of colorectal tumors.

Regarding the histologic aspect, adenocarcinomas of the large intestine are greatly variable. However, their prognosis depends more on the extent of invasion than on the histologic picture. They are predominantly localised in the descending and sigmoid colons and in the rectum. Early symptoms of colorectal carcinoma are unspecific and alternation of constipation with diarrhoea, and tenesmus are observed. Haematochezia with anaemia are significant symptoms. They are associated with weakness, weight loss and anorexia. More scarce is the development of peritonitis in consequence of tumor invasion, or due to perforation of the intestinal wall. Abdominal pain, alterations in stool shape, haematochezia and anaemia induced by iron deficiency in persons above 40 years of age require diagnostical consideration of colorectal carcinoma. Bright blood in stool can be put into association with haemorrhoids and diverticulitis solely after exclusion of malignity. The finding of occult bleeding, although without pronounced symptoms can contribute to an early diagnosis of malignity. Clinical examinations supported by bioptic examination are sufficiently reliable. Resection of tumor should be followed by a check-up detection of the plasma carcinoembryonic antigen which serves as a marker of relapse.

7.15.4 Polyps in GIT

Polyps in GIT result from excessive growth of luminal epithelial cells. The occurrence is sporadic or familial. Polyps may be both benign or malign, single or multiple. After 65 years of age, they are detectable in two thirds of the population. Benign polyps almost never progress to malignity. They are often accidentally detected in coincidence with other examinations as an accidental finding. Clinical manifestation of polyps includes bleeding, anaemia and abdominal pain. Large polyps may lead to intestinal obstruction or cause profuse diarrhea.

Familial polyposis of the large bowel is a disease of low incidence. Polyps begin to develop already in children at school age. They result from activation of a precisely defined oncogene. The intestine may contain as many as 1000 polyps ranging from micro to macroscopic size. They are potentially malign and therefore prior to their surgical removal it must be taken into account that total colectomy will have to be performed.

7.16 Bleeding from GIT

Bleeding from GIT is a severe, and frequent symptom. As to the quantity, the bleeding per se may be massive and acute, or occult. It may be of episodic character. In approximately 80% of cases, the acute bleeding stops spontaneously. If the bleeding reoccurs or persists, may be life-threatening. The treatment of gastrointestinal bleeding must therefore resolve the hypovolaemia, cease the bleeding and prevent the relapses. **Acute bleeding** can be manifestant by symptoms as follow:

1. **Haematemesis** refers to vomiting of blood. Oesophageal varices often result in vomiting of bright red blood. However, if the blood, prior to being vomited gets into contact with gastric acid its appearance resembles the sediment of black coffee.
2. **Melena** (melas Gr. black) refers to a black colouring of stool caused by the presence of blood. It appears due to bleeding from any part of GIT extending from the oral cavity to the large intestine. Melena is usually present in coincidence with bleeding from the portion above the ligament of Treitz. The black colouring of stool is caused by haem, namely due to its oxidation by intestinal and bacterial enzymes. The haem becomes oxidated within 8 hours. Melena develops when the bleeding from GIT reaches 50–100 ml per day.
3. **Haematochezia** is a symptom of bright red blood being present in stool. It is caused by bleeding

from the large intestine, rectum or anal aperture. The source of bright red blood in stool may be also in higher parts of GIT, namely in coincidence with fast intestinal passage. When the blood remains in the lumen for more than 8 hours, its presence is manifestant as melena, even in cases when the bleeding is localised in the lower parts of GIT.

Chronic gastrointestinal bleeding can be detected accidentally in coincidence with stool examination, or intentionally on the basis of the suspicion of such bleeding. The signals indicating to gastrointestinal bleeding include overall weakness, dyspnoe, syncope and in elderly patients problems resembling the symptoms of the ischaemic heart disease. The above mentioned symptoms, in particular, lead to the suspicion of hypochromic anaemia developing in consequence of chronic bleeding.

According to its localisation, gastrointestinal bleeding can be divided into two groups: bleeding proximal to the ligament of Treitz and that localised distal to the ligament of Treitz. The assessment of the site of bleeding simultaneously indicates to its chief etiology. Bleeding above the ligament of Treitz constitutes as many as 90% of all cases of gastrointestinal bleeding. Bleeding due to peptic ulcer may come from the stomach, duodenum, or anastomosis after surgical intervention (ulcus in anastomosis). Another cause of **gastric bleeding** may be due to erosive gastritis. It appears after alcohol abuse or in coincidence with antiinflammatory drugs, such as acetylsalicylic acid, indomethacine, ibuprofen and other NSAIDs. Gastric erosions often develop in patients hospitalized due to severe trauma, after massive burns and head injuries. In these cases stress-induced haemorrhagic gastritis develops. It may develop also due to abrupt systemic diseases. Regarding to the height of its mortality rate, haemorrhage due to erosive gastritis is very dangerous. The mortality rate in hospitalized patients is reported to reach 20%.

Bleeding from oesophageal varices is very frequent. It appears suddenly and is of massive character. Oesophageal varices result from portal hypertension which develops in cirrhosis, most frequently in that of alcoholic etiology. These relations are very significant. As many as 70% of patients with portal hypertension due to cirrhosis suffer from repeated bleeding from oesophageal varices. This situation

is complicated by another significant fact. Patients with cirrhosis develop defects in blood coagulation. Bleeding in such cases represents a life-endangering situation and its treatment is intricate.

Further causes of **bleeding from the upper part of gastrointestinal tract** may include oesophagitis, carcinomas and other gastric tumours. The bleeding may be chronic, but also acute with massive haemorrhage. The bleeding may sometimes develop in coincidence with repeated vomiting. It is referred to as Mallory-Weiss tear. Trauma of mucosa develops in the area of oesophago-gastric junction. Which is typical for this syndrome, is that haematemesis does not develop during the first attack of vomiting, but occurs during its subsequent attacks.

Bleeding below the ligament of Treitz most frequently originates in the anorectal area and colon. A small amount of bright red blood on the toilet tissue or coating the stool usually comes from haemorrhoids, anal fissures and fistulae. Proctitis due to infection frequently occurs in homosexuals. It usually results in haematochezia.

Carcinoma of the large intestine, and polyps are associated with chronic blood losses, but abrupt bleeding may also take place. Bleeding in ulcerative, bacterial and ischaemic colitis is associated with diarrhoea. Bacterial colitis is accompanied with fever and weakness. Stool contains mucus and leukocytes. Ischaemic colitis occurs in the aged. Stool is typically liquid with an admixture of blood.

Another cause of bleeding can reside in **diverticula**. Diverticula localised in the sigmoid colon are most frequent, but they rarely bleed. Inversely, the diverticula in the ascending colon occur a little less frequently, but frequently represent the cause of massive bleeding. Inflammation of diverticula – diverticulitis may be the cause of bleeding.

Elderly people may develop bleeding in consequence of vascular ectasias (not neoplasms) in the submucosal area of the colon. They are referred to as angiodysplastic lesions. Angiodysplasia of aged people is more frequently present in association with aortic atherosclerosis. Diagnosis of angiodysplasia, in association with bleeding, is very difficult to assess.

Small intestine disorders rarely cause gastrointestinal bleeding. The Meckel's diverticulum (a persistent omphalomesenteric duct) which may be the

source of bleeding, occurs in two per cent of the population.

Finally, **bleeding from GIT can be due to disturbed haemostasis and haemocoagulation**. Therefore, bleeding occurs in cases of impaired coagulation (haemophilia, disseminated intravascular coagulation), in vascular malformations (Osler-Weber-Rendu) and in vasculitis (Henoch-Schönlein purpura).

7.17 Abdominal pain

Pain is a general symptom which arises in consequence of tissue impairment. **In coincidence with gastrointestinal diseases, pain is the cause which drives the patient to the physician**. Specific signs of pain can facilitate the assessment of the correct diagnosis. Particular types of pain are specific for some diseases. Hence, e.g. the diagnosis of appendicitis can be assessed on the basis of the character of pain even when the result of computer tomography is negative. Sensitive neurons lead information from visceral organs and peritoneum via the sympathetic fibers into the spinal sensoric neurons. Their afferent endings terminate in smooth muscles of hollow organs, in organ capsules, peritoneum and intraabdominal vessels. Abdominal organs per se are not sensitive to stimuli of cutting, traction and burns. Only three stimuli are able to induce the pain in the digestive tract:

- **Distension** or increased tension in the wall of hollow organs or tension in capsules of solid organs. It arises due to strong muscular contraction in these organs, their spasms, distension, or traction.
- **Inflammation**, owing to which, substances such as bradykinin, prostaglandins, histamine and serotonin are released. These substances stimulate the sensitive endings of nerves.
- **Ischaemia** brings about a release of tissue metabolites. These products, in the same way, stimulate the sensitive endings of the nerves.

Spinal sensoric neurons receive information also from non-sensoric neurons. Consequently, abdominal pain can as well be perceived in extraabdominal parts of the body.

Localisation, time of occurrence and progression of abdominal pain are significant facts which are of important diagnostic value. Abdominal pain has one of the following three properties, or their mutual combinations:

1. **Visceral pain** is usually dull, inaccurately localised due to multisegmental and bilateral innervation of abdominal organs. Therefore it is frequently perceived in the central line. It has its origin in visceral organs. It may, however, be of crampy and carving character.
2. **Parietal pain** is of somatic character. It is very intensive, well localised and lateralised. The pain is usually evoked by inflammation in the parietal peritoneum.
3. **Transferred pain** is localised superficially. It manifests irritation of visceral organs perceived as pain in more remote areas. The involved areas are innervated by the same spinal segments. The pain is usually associated with hyperaesthesia.

Visceral pain, as mentioned above, is not precisely localised. Despite this fact it is possible to make out a list of pain characteristics classifying the relation of particular pain to individual visceral organs. Pain originating in oesophagus is localised substernally. If it is abrupt, it can be projected to the back, or to the left arm. The pain coming from the stomach, duodenum and pancreas is localised in the epigastrium, or right upper quadrant of the abdominal cavity. Pain from the gallbladder and bile ducts can be transferred below the lower angle of the right shoulder blade. Pain due to subphrenic or hepatic abscesses can be transferred to the upper margin of the right shoulder blade. Jejunal and ileal pains are often localised periumbilically. Pain from the terminal ileum can be perceived in the right lower quadrant. Pain from the large intestine is not precisely demarkated. It is perceived in the hypogastrium, or lower abdominal area, as if coming from organs within the pelvic cavity. Pain in the left upper quadrant resembling that which arises due to ischaemic heart disease is present due to affliction of the transverse colon. Pain