Laboratory methods in gastroenterology

Laboratory diagnostics in gastroenterology includes specific screening programs, non-invasive examination programs using modern methods of detection of analytes in stool, functional diagnostics, also in non-invasive form, using breath tests with detection of hydrogen – H_2 or stable carbon – ^{13}C isotope.

Diagnosis of Helicobacter pylori infection

Carbon ^{13}C-labeled urea breath test – UBT is the gold standard for **diagnosis of *Helicobacter pylori* infection**. A reliable variant is a non-invasive stool antigen detection test *H. pylori*. **Laboratory diagnosis of gastric pathology** includes serological tests of the condition of the gastric mucosa - the level of gastrin-17, the ratio of pepsinogens I and II (pepsinogens A a C), or the level of antibodies against *H. pylori*, CagA and VacA antigens, gastric acidity functional test and gastric motility test – sodium ^{13}C-oktanoate breath test (OABT).

Acute pancreatitis

The issue of **acute pancreatitis** includes routine methods for the determination of amylase and lipase in serum, detection of macroenzymes – makroamylase and makrolipase, detection of amylase in stool, determination of pancreatic elastase 1 in serum, or trypsin levels. Early diagnosis of acute pancreatitis is offered by the determination of trypsinogen in urine, resp. trypsinogen activating peptides - TAP and carboxypeptidase – CAPAP. The level of procalcitonin is a suitable marker for assessing the severity of acute pancreatitis, especially infection.

Chronic pancreatitis

The gold standard for the diagnosis of **chronic pancreatitis** is still a direct test of exocrine pancreatic function – the secretin-pancreasymin test (SCCK/PZS). Indirect tests are non-invasive, but have significantly lower reliability – PABA or PLT / pancreolauryl test, determination of pancreatic enzymes in stool – chymotrypsin a elastase 1. A modern, non-invasive and indirect test is the ^{13}C-MTG breath test.

Malabsorption syndrome

Differential diagnosis of **malabsorption syndrome** includes assessment of the absorption activity of the intestinal mucosa by detecting the level of β-carotene, případně zátěžovým testem s β-karotenem or vitamin A. A routine tolerance test is the detection of D-xylose in urine or lactose tolerance test. There are several test variants to assess intestinal permeability, such as the lactulose / mannitol test (La/Ma test). Non-invasive breath tests are the ^{13}C-laktose breath test or the ^{13}C-xylose breath test suitable for the detection of bacterial overgrowth in the small intestine.

The primary malabsorption syndrome is **celiac disease**, gluten enteropathy. Laboratory diagnostics offers a wide range of screening tests with the detection of antibodies to endomysium EmA/IgA, gliadin IgA and IgG. The basic, most reliable test is the detection of antibodies to tissue transglutaminase atTG IgA and IgG class. Anti-gliadin and anti-tTG can also be determined in a stool sample..

Pathology of the large intestine

Laboratory diagnostics of **colon pathology** is focused mainly on colorectal tumor screening, faecal occult blood tests, screening - guaiac Haemoccult test – gFOBT, more sensitive immunochemical test – iFOBT, and quantitative determination of hemoglobin in stool – qi-FOBT. The activity of inflammatory diseases and tumors can also be monitored by detecting calprotectin in the stool. The development of molecular biology makes it possible to isolate DNA from a stool sample and to determine a number of genetic markers.

Links

Related articles

- Examination methods in gastroenterology
- Functional tests in gastroenterology
- Stool examination

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