Radiodiagnostic examination of the large intestine

Template:Zkontrolováno

Anatomy of the colon

🔎 *For more information see Large intestine.*

Native abdomen imaging

Native abdominal imaging is the basic examination method for acute conditions - to exclude ileitis , **pneumoperitoneum** (e.g diverticulum perforation), colon distension in pneumonitis, toxic megacolon. The image of edematous hauster (so-called "thumbprinting") can be found in inflammatory or ischemic changes. A serious symptom is the **finding of gas** in the intestinal wall, which, however, is usually more visible on CT. The amount of stool formed is found in constipation.

Ultrasound

Ultrasound is a **first-line method** for acute conditions, but its informative value is often limited by the patient's investigability (obese patients with pneumatosis are practically unexplained). Ultrasound can detect:

- **Inflammation of the colon wall (colitis):**widening of the intestinal wall over 3-4 mm, infiltration of the submucosa (hyperechogenic layer), increased vascularization in the color record.
- **Diverticulitus:** segmental edematous changes usually in the sigmoid or the aboral descendant. Inflammatory altered diverticulum ev. with the reaction of the surrounding fat.
- **Epiplonic appendicitis:** a district of hyperdense leaked fat on the antimesenteric side of the large intestine (usually the sigmoid) at the site of maximal pain.
- **Appendicitis:** the appendix wall and its thickening (diameter over 6 mm)
- **Ileus:** only **sometimes** can fluid distension of the colon be seen - usually more gas is present and the large intestine cannot be examined well.
- **Tumors:** only **rarely** manage to show ev. colon tumor , most colorectal cancers are located aborally (rectum, sigmoid colon) and out of reach. However, ultrasound shows, for example, liver metastases.

Irrigography

Irrigation is a **two-stage examination of the large intestine** . The patient must be emptied or flushed before the examination - preparation with Fortrans or MgSO 4 solution (as before colonoscopy).

After insertion of the rectal tube, a **barium suspension** is applied and then **air is insufflated** . The patient must be positioned during the examination - the BaSO 4 solution is liquid and "water flows downhill" - so that there is an even two-contrast filling of the entire large intestine. A sign of filling the entire colon is the reflux of the contrast agent into the terminal ileum or filling the appendix (if any).

The examination is suitable for **imaging tumorous changes , polyps** , it can also be used to visualize post-inflammatory changes and the extent of disability in diverticulosis. The superior method is, of course, classical (fibro-optical) colonoscopy and the examination is therefore performed on patients who do not agree with classical colonoscopy, or this cannot be performed completely due to unfavorable anatomical conditions (sharp bending, adhesion). In workplaces where CT colonography is available, CT colonography should be preferred because it has a higher yield.

Defecography

Defecography is a sciascopic examination of the defecation mechanism. The rectal tube is filled with the rectal ampoule and part of the aboral sigmoid with a contrast agent which is thickened.

The examination monitors:

- pelvic floor movements
- rectal wall arching during defecation: ventral and dorsal rectocele,
- rectal mucosal prolapse
- anorectal angle: underdevelopment in puborectal spasticity
- residue after defecation: significant above 1/3 of the initial filling.

Defecography: second degree intussusception, pelvic floor drop (http://atlas.mudr.org/Case-images-Rectal-intususception-second-degree-defecography-382)

CT Colonography

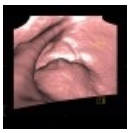
This is a CT examination of the abdomen and small pelvis with a special prior preparation of the large intestine . The patient must be "flushed" again (preparation with Fortrans, MgSO 4 solution or other laxatives). In some workplaces, so-called "fecal tagging" is done, where an orally administered contrast agent increases the density of the residual colon content, which can thus be better distinguished from polyps. Prior to the examination itself, the colon is insufflated with air or CO 2 by rectifying the tube. The

examination can be performed either natively (as a screening with the question of the presence of polyps) or with the administration of an iodine contrast agent, also for other indications. A total of two scans are performed, first on the back, then on the abdomen - there is usually some fluid left in the large intestine, which in one position could cover the ev. pathology. The evaluation is performed by an experienced radiologist (at least 50 examinations are performed under the supervision of another radiologist).

The basic method of CT colonography evaluation is the method of virtual endoscopy, the found lesions are further evaluated in 2D (multiplanar reconstruction, thin sections). The disadvantage of CT colonography is the radiation exposure (however, the second scan is usually performed in low-dose mode, in the case of a screening indication both scans) and the inability to perform a biopsy . The advantage is the display of extraintestinal structures (mesenterium, nodes, liver - staging), the display of a slightly larger area of the intestinal wall than allowed by optical colonoscopy and greater comfort during examination (than during optical colonoscopy).

CT colonography is not an acute examination. If Crohn's disease and incomplete colonoscopy are suspected, it is more appropriate to indicate CT enterography, which shows both the small intestine and, in many cases, the large intestine - but it is not possible to evaluate ev. polyps.

CT colonography should be performed no earlier than one and a half months after the end of acute diverticulitis due to the increased risk of perforation in insufflation.

 CT colonography: rectal tumor (http://atlas.mudr.org/Case-images-Rectal-tumour-virtual-colonography-1113)

CT of the abdomen and pelvis (routine)

Routine CT of the abdomen and pelvis works well in acute conditions. Prior to the examination, an **iodine contrast agent solution** (10–20 ml in 500–1000 ml) is administered orally; During the examination it is possible to display:

- Even a minimal amount of free air (pneumoperitoneum).
- Distension of the large (but also small intestine) by fluid and gas in ileosal conditions.
- Zone of transition between distended and undistended intestine: site of obstruction.
- Infiltration of the colon wall: colitis, ischemia.
- Larger colon tumors (but not smaller polyps, difficult even flat lesions).
- Gas in the intestinal wall, absence of saturation of the intestinal wall, occlusion of arteries and veins (according to the examination phase) in intestinal ischemia.
- Diverticula: if more frequent or in an inflammatory infiltrate in **diverticulitis**.
- Appendicitis in otherwise healthy individuals.

MRI of the large intestine

MRI is indicated in the staging of rectal and rectosigmoid tumors. There is also an examination similar to CT colonography - MR colonography, which is not routinely performed.

Links

External Links

- **Pictures on the topic atlas.mudr.org**
  - Native abdominal x-ray: ileus of the large intestine (http://atlas.mudr.org/Case-images-Large-bowel-ileus-761)
  - CT of the abdomen: ileus on the large intestine (http://atlas.mudr.org/Case-images-Large-bowel-ileus-760)
  - Native abdominal X-ray, abdominal CT: lien flexure carcinoma, colon ileus (http://atlas.mudr.org/Case-images-Carcinoma-of-colon-lienal-flexure-large-bowel-ileus-lung-metastasis-450)
  - CT of the abdomen: colon perforation, peritonitis (http://atlas.mudr.org/Case-images-Peritonitis-perforation-of-large-bowel-195)
  - Irrigography: sigma diverticulosis (http://atlas.mudr.org/Case-images-Diverticular-disease-of-the-sigmoid-colon-on-Irriography-5)
  - Irrigography: Colitis in Crohn's disease (http://atlas.mudr.org/Case-images-Crohn%27s-disease-colitis-305)
  - Irrigography: rectovaginal fistula (http://atlas.mudr.org/Case-images-Rectovaginal-fistula-diverticular-disease-of-the-sigmoid-colon-224)
  - Irrigography: ulcerative colitis (http://atlas.mudr.org/Case-images-Ulcerative-colitis-barium-enema-451)
  - Ultrasound: mild colitis (http://atlas.mudr.org/Case-images-Mild-colitis-170)
- **Teaching portal of the 1st Faculty of Medicine, Charles University - Radiodiagnostics**
  - Lecture Diagnostic imaging methods in the examination of the digestive tract (https://el.lf1.cuni.cz/p37383696/)