Intraperitoneal cysts in infancy and childhood

“An overview and sonographic differentiation”

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In general, intraperitoneal cysts can be categorized in 3 groups:

I. Ovarial cysts mostly observed in the postnatal period or later life.

II. Lymphogenic cysts including, mesenterial, omental as well as lymphangiomatous cysts elsewhere intra- or retroperitoneal.

III. Esophagogastro-intestinal duplication cysts.
Patient material

• 67 cases were reviewed.
• The characteristic sonographic findings of different cystic lesions were analyzed with an attempt to differentiate them from each other in relation to their organ of origin.
I. Ovarian cysts

- Cysts account for most ovarian masses in infants and children.
- Sonography can afford an accurate assessment of the presence, size, location and internal echogenicity of an ovarian mass.
- Depending on the age the ovarian cysts should be divided in:
  - Neonatal cysts
  - Functional cysts, postmenarchal in girls
Neonatal ovarian cysts

• Results from exaggeration of the normal follicular development secondary to excessive maternal hormonal stimulation in the utero.
• May be an incidental finding on sonography or symptomatic with abdominal distention.
• An uncomplicated neonatal ovarian cyst resolves mostly spontaneously within the first 5 – 6 months.
• An adnexal torsion is often a common complication of ovarian cyst.
Patient material: neonatal ovarian cyst (n=26)

- Uncomplicated neonatal ovarian cysts were resolved spontaneously in 9 cases.
- Complication following torsion or hemorrhage were found in 10 cases.
- Surgical resection was performed in 17 cases with complicated and unresolved cysts.
Sonographic findings

The simple uncomplicated neonatal ovarian cyst was usually unilocular and has anechoic content with an imperceptible wall. Occasionally a thin septation was observed.
Sonographic findings

The complicated cysts were frequently septated, occasionally with a retracting clot or fluid-debris and often with an echogenic wall.
Sonographic findings

A few huge cysts were extended to the upper abdomen.

2 cases of uncomplicated large ovarian cysts.
Postmenarchal functional cysts

- Result of continuous growing of follicle after failed ovulation or if corpus luteum fails to involute after ovulation.
- Pathologic if the diameter of the cyst exceeds the limit of 3 cm.
- Ovarian cysts in adolescent girls can be symptomatic or asymptomatic.
- Our patient material includes only four uncomplicated postmenarchal ovarian cysts.
- The cysts were all anechoic, thin walled and unilocular. Our material includes one case of McCune Albright syndrome with precocious puberty.
Postmenarchal ovarian cyst

Ovarian cyst by McCune Albright syndrome
II. Lymphogenic cysts

- Caused by sequestration or obstruction of lymphatic vessels.
- Anatomical manifestation as mesenteric, omental, or as intra- or retroperitoneal cysts.
- The fluid content is primarily chylus but may contain hemorrhage.
- The patients usually come to medical attention because of an abdominal mass with or without abdominal pain.
Patient material (n=16)

The reviewed patient material included:
- 5 mesenterial cysts
- 4 omental cyst
- 7 intra- or retroperitoneal cysts
Sonographic findings

- Mesenteric cysts were mostly multilocular and anechoic with variable extension.
- Omentum cysts were located in a typical position, anechoic and monolocular.
- The cysts in other locations were anechoic, mostly retroperitoneal. Some of them were located intraperitoneally with a little increased echogenicity.
3 different cases of mesenterial cysts
2 different cases of omental cyst
A case with intraperitoneal cystic lymphangiomatosis
A case of retroperitoneal cystic lymphangiomata localized in the lower pole of the left kidney.
III. Esophagogastro-intestinal duplication

- Result of multiple twinning, persistent embryologic diverticula or aberrant luminal recanalisation.
- Mostly no communication with the normal developed parts of the GI canal.
- Clinical signs and symptoms include abdominal pain, palpable mass, vomiting and rectal bleeding.
- May be a lead point for intussusception.
- May contain ectopic gastric mucousa, lymphoid aggregates, ganglion cell and lymphatic tissue.
Patient material (n=25)

The reviewed cases included:

- 3 esophageal duplication cysts
- 1 gastric duplication cyst
- 3 colonic duplication cysts
- 18 enteric duplication cysts, mostly located in the ileum (5 of them were communicating duplication cysts)
Sonographic findings

• Well defined spherical or tubular fluid-filled masses in case of uncommunicated cysts.
• Heterogenic appearance with debris and/or septation following complication.
• The cyst wall contains all normal bowel layers including mucosal, submucosal and muscularis.
• The muscular layer is typically shared with adjacent bowel wall but the mucosal layer is separated.
Esophageal duplication cyst
Cystic duplication of the stomach with hypertrophic pylorus stenosis
Cystic duplication of the duodenum
Communicated duplication of jejunum
Duplication cyst of coecum
Non communicating ileum duplication

Non communicating ileum duplication with meconium peritonitis
Uncomplicated ileum duplication with increased echogenicity
Conclusions
Ovarian cyst

• The high incidence of ovarian cysts in girls is an indication to look primarily for topographic relation of all cysts with the pelvic organs.
• Debris, septation and thickening of the cystic wall are sonographic signs of complicated ovarian cysts.
• In neonates ovarian cysts mostly resolve spontaneously. Therefore sonographic follow up and an expectative policy in treatment is indicated.
Conclusions
Lymphogenic cysts

• Uncomplicated mesenterial cysts are variable in size, thin walled, multiseptated and anechoic.

• Mesenteric cysts are located anywhere but have no anatomic relation to the pelvic organs.

• Debris and internal septation with or without wall thickening are signs of complication of lymphogenic cysts.
Conclusions
Duplication cysts

• Enteric duplication cysts manifest frequently as a non-communicating cysts and rarely as a communicating cyst.
• Enteric duplication cysts are mostly spherical or tubular fluid filled masses with incidentally peristaltic activity.
• The combination of echogenic (mucus) and hypoechoic (muscle) are specific signs of duplication cysts.
• A large and complicated duplication is mostly thin walled without mucosal layers.