



UH põletikuliste soolehaiguste diagnostikas lastel

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Sissejuhatus

- ▶ IBD: UC, CD
 - ▶ UC mucosa, pindmine submucosa
 - ▶ CD kõik kihid
- ▶ **Lastel perekondlik 19-41%** juhtumitest (vs 5-10% täiskasvanutel)
- ▶ 25% enne 20 ea
- ▶ Lastel 4% enne 5 ea, 18% enne 10 ea
- ▶ CD ainult jämesooles lastel sagedamini
- ▶ 22% lastel esialgu soolevälised nähud
- ▶ Mida varasema algusega IBD, seda tõsisem kulg ning tüsistused
- ▶ **Klassika: kõhulahtisus (UC verine), valu**

Sissejuhatus

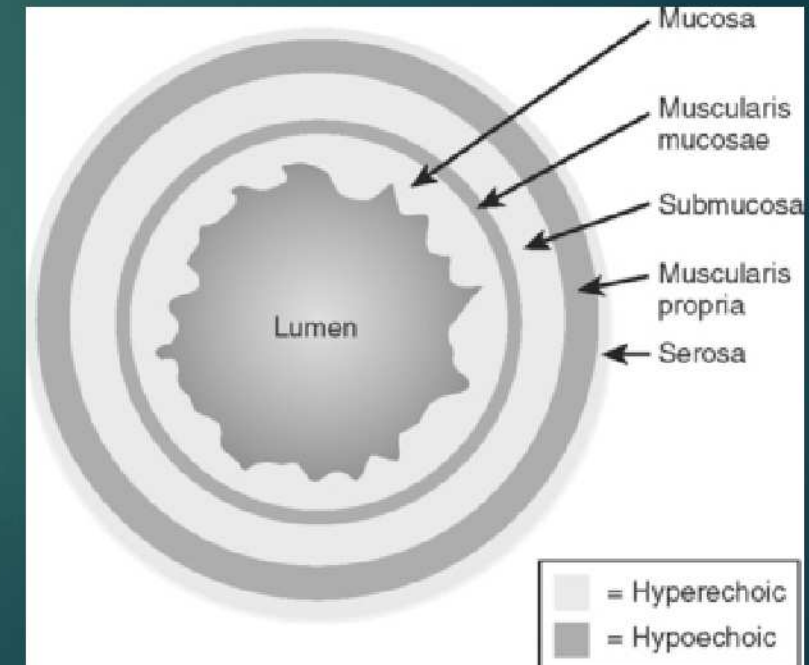
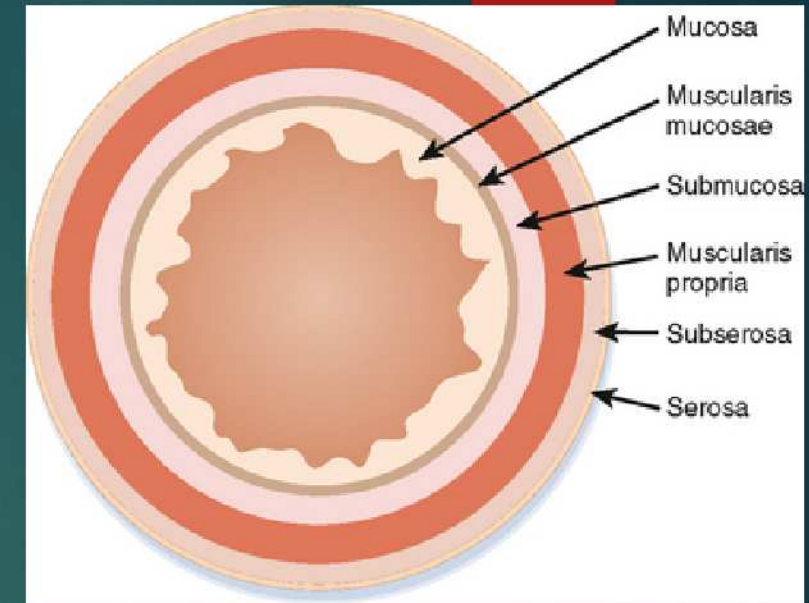
- ▶ Lastel sageli **esimene uuring**
- ▶ Kõhuessein tavaliselt õhem
- ▶ Standartsed UH eelised
- ▶ **Ei vaja sedatsiooni** (vs MRE)
- ▶ **Anatoomiline + funktsionaalne pilt** (peristaltika)
- ▶ Saab hinnata transmuraalseid muutusi (vs endoskoopia)
- ▶ Sobib nii sümptomaatiliste kui ka asümptomaatiliste patsientide jaoks
- ▶ Sensitiivsus 74-88%, spetsiifilisus 78-93% (>90% term. ileum)
- ▶ →
 - ▶ Pindmine andur sobib paremini
 - ▶ Uuritud kontraktsioonita soolelinge kerge survega
 - ▶ **Kas valmistada ette?** Nt nil p.o 4 t enne uuringut → gaas ↓
 - ▶ 30 min pärast 300 Kcal sööki
 - ▶ terminal ileum seinte paksus $1.1 \pm 0.2 \rightarrow 1.2 \pm 0.2$ mm
 - ▶ sigmoid colon $1.2 \pm 0.3 \rightarrow 1.4$

Millal kasutada? Ekspertide arvamus:

- ▶ Skriining
- ▶ Diagnoosi kinnitamine
- ▶ Haigus lokaliseeritud term. lileumi piirkonda
- ▶ Haiguse jälgimine peale MRE/CTE
- ▶ Abstesside/ tüsistuste ravi

Mida uurida?

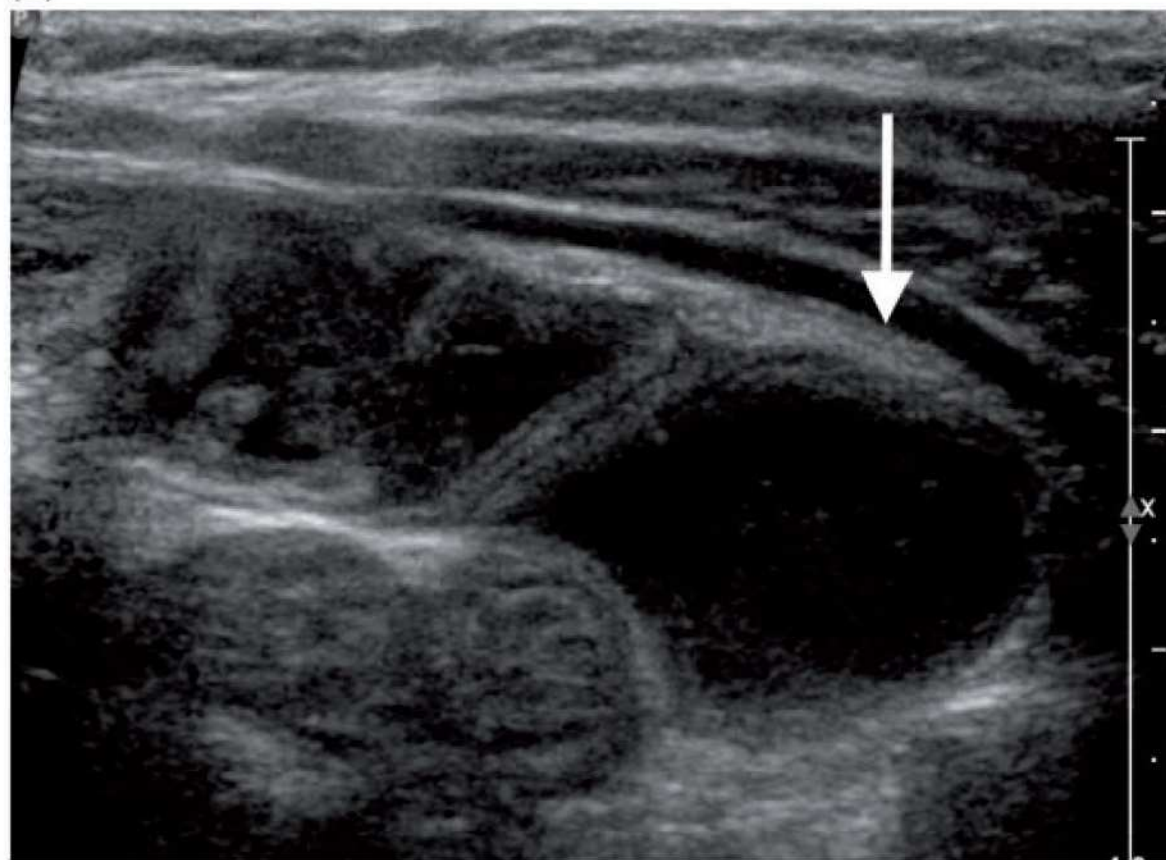
- ▶ Mõõtmine: **serosa** / muscularis propria → **mucosa** / lumen
- ▶ Millele pöörata tähelepanu?
 - ▶ Eelkõige:
 - ▶ Seinä muutused
 - ▶ Vaskularisatsiooni muutused
 - ▶ Suurenenud lümfisõlmed
 - ▶ Lisaks
 - ▶ Soole peristaltika
 - ▶ Mesenteeriumi muutused
 - ▶ Fistulid
 - ▶ Vaba vedelik
 - ▶ Kotistunud vedelik



Mis on norm?

- ▶ Normi väärtused
 - ▶ Jejunum 0.5 mm - 1.1 mm
 - ▶ Ileum 0.6 mm - 1.9 mm
 - ▶ Cecum 0.7 mm - 1.9 mm
 - ▶ Colon 0.7 mm - **1.9 mm**
- ▶ Imikutel kuni 12 kuud ileum 2.0 ± 1.0 mm, terminaalne ileum 2.8 ± 0.8 mm
- ▶ Lümfisõlmed nähtavad tervetel 0-13 av 62–69%. Vaba vedelik 23%.
- ▶ Üldiselt **jämesoole seinad paksemad vanematel lastel**
 - ▶ 0-4 av vs 15-19 av 0.3 mm - 0.5 mm paksemad
 - ▶ Diagnoosimisel ei ole oluline
 - ▶ Bonus fact: korrelatsioon 23–79 av populatsioonis
 - ▶ max colon 2.0 mm 20-29 av
 - ▶ max ileum 1.5 mm 10 – 14 av.

(a)



(b)

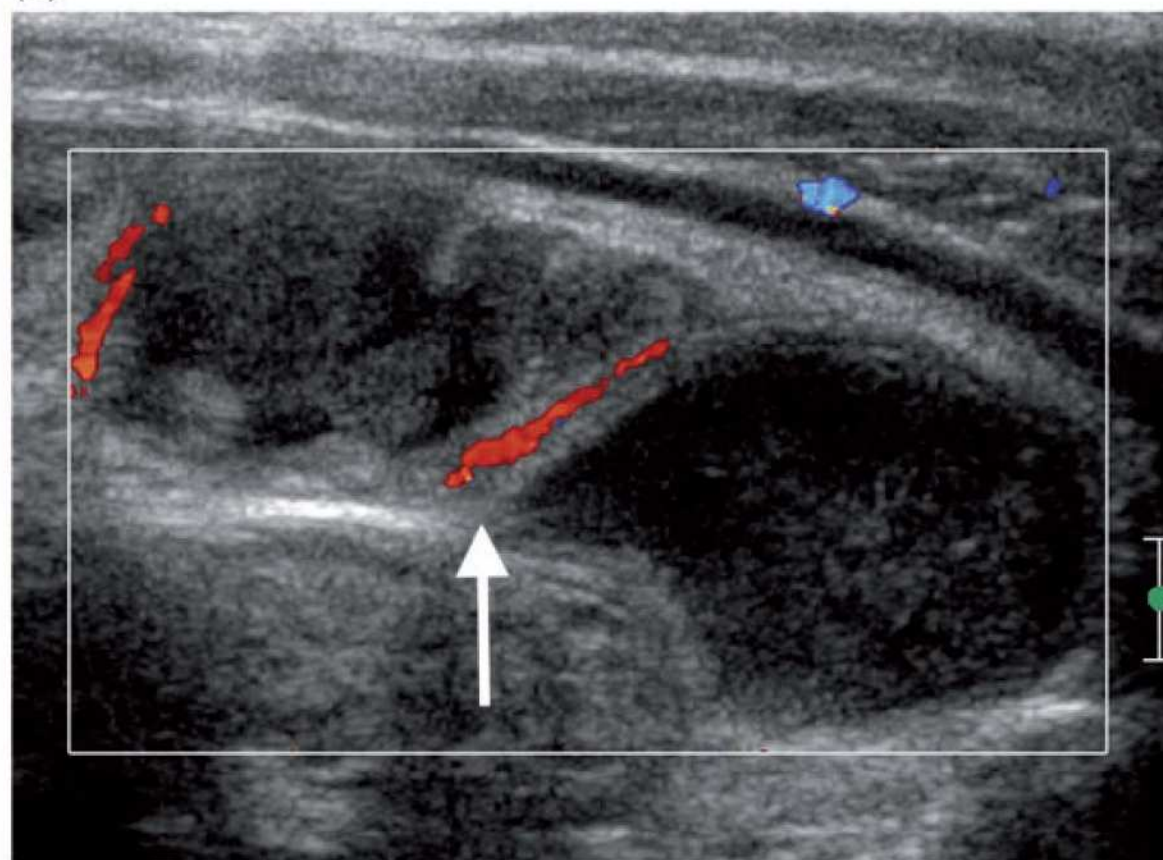


Figure 1. Ultrasonographic appearances of normal bowel. This nine-year-old girl presented with abdominal pain. (a) US of the bowel loops (arrow) showed no mural thickening, increased echogenicity or intramural gas. Mural thickness in a loop of bowel is better assessed when it contains hypoechoic fluid as shown. (b) Preserved bowel perfusion was demonstrated (arrow). Bowel peristalsis was observed under real-time ultrasound.

Tulemused

- ▶ **CD** 9-18 av ileum 5.6 ± 1.8 mm
 - ▶ sümptomaatilistel pt-l soolte seinad paksemad
 - ▶ 5.2 ± 2.1 mm vs 4.7 ± 0.75 mm
- ▶ **UC** 2-18 av colon >3 mm

Table III. Sonographically determined intestinal manifestation in children with Crohn's disease.

Sonographic findings	
Bowel wall thickening [mm]	5.1 ± 1.9 [3.0 - 10]
Transmural inflammatory reaction (TMR)	3/30 (10 %)
Interenteric fistula	3/30 (10%)
Gastrocolic fistula	1/30 (3.33%)
Vesicoenteric fistula	1/30 (3.33%)
Ascites	4/30 (13.33%)

The results are expressed in mean $\pm$ standard deviation [minimum – maximum] or percent.

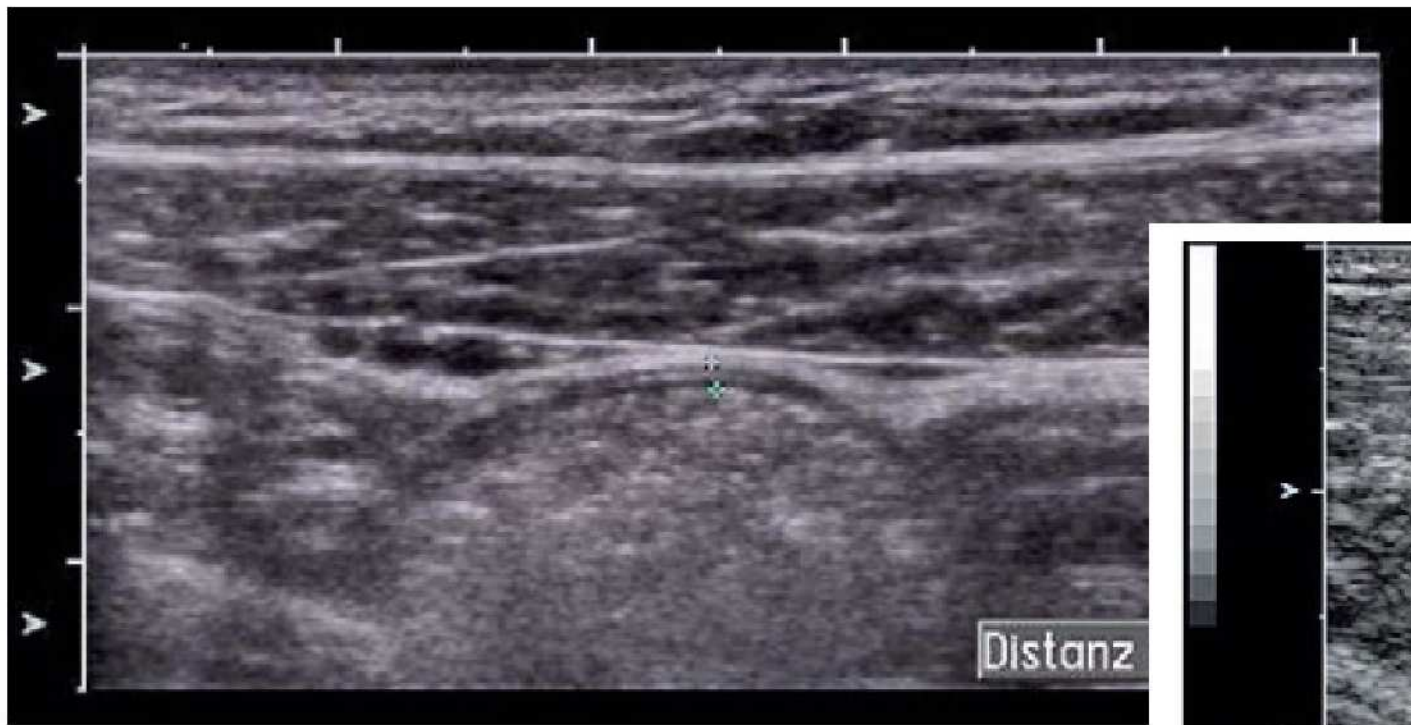
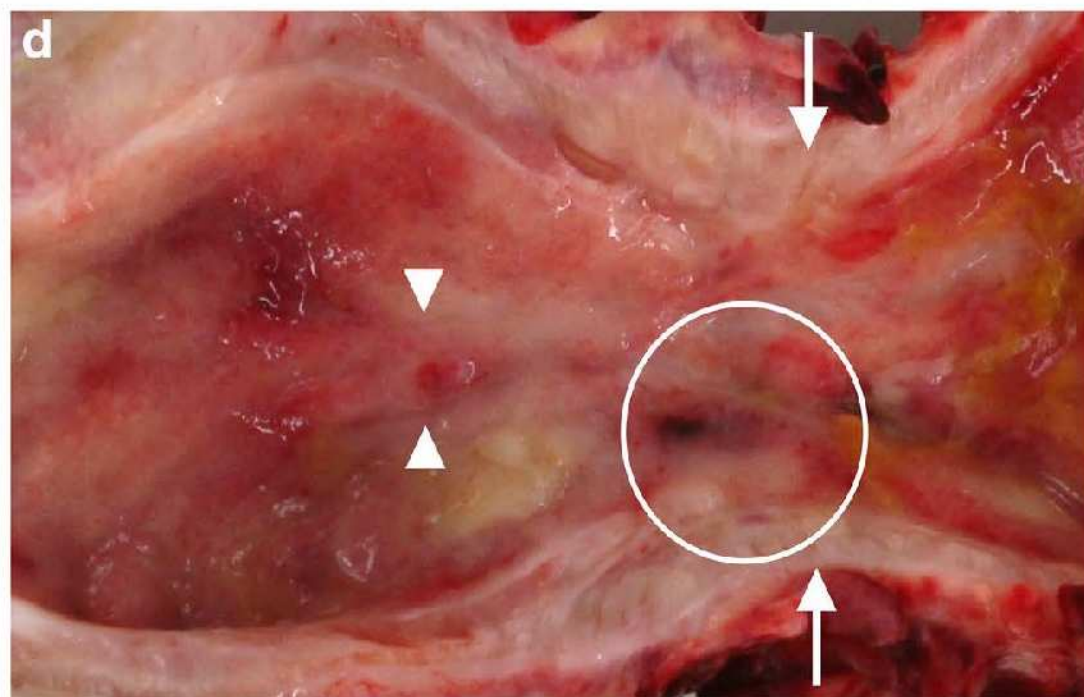
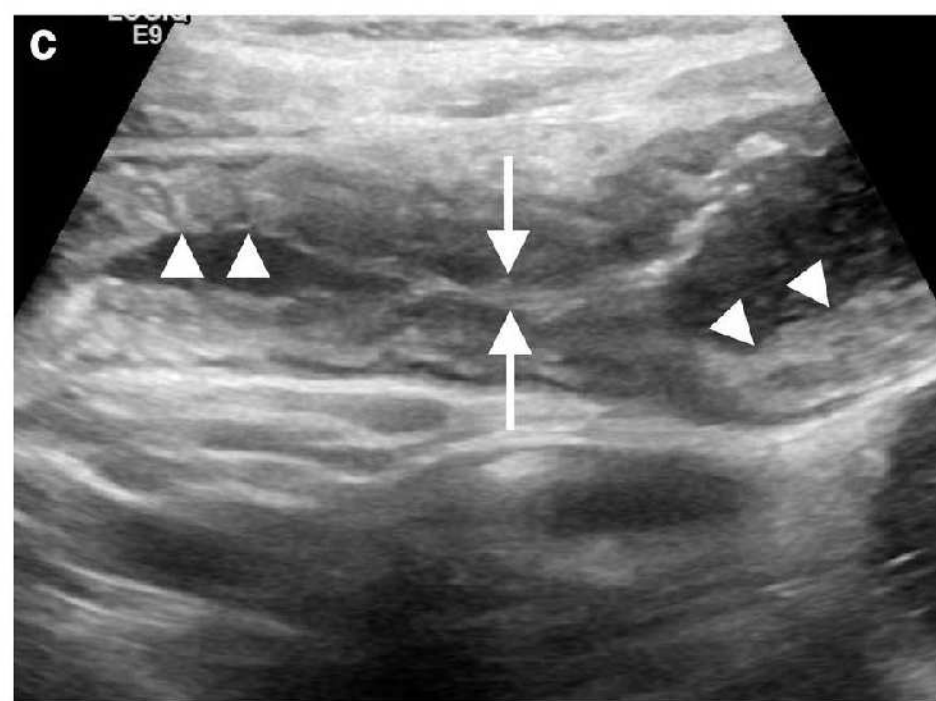


Fig 1. Normal bowel wall of the cecum in a healthy subject between markers.



Fig 2. Slightly asymmetric bowel wall thickening (between markers, 4.7 mm) in a patient with Crohn's disease. IV: iliac vessels.



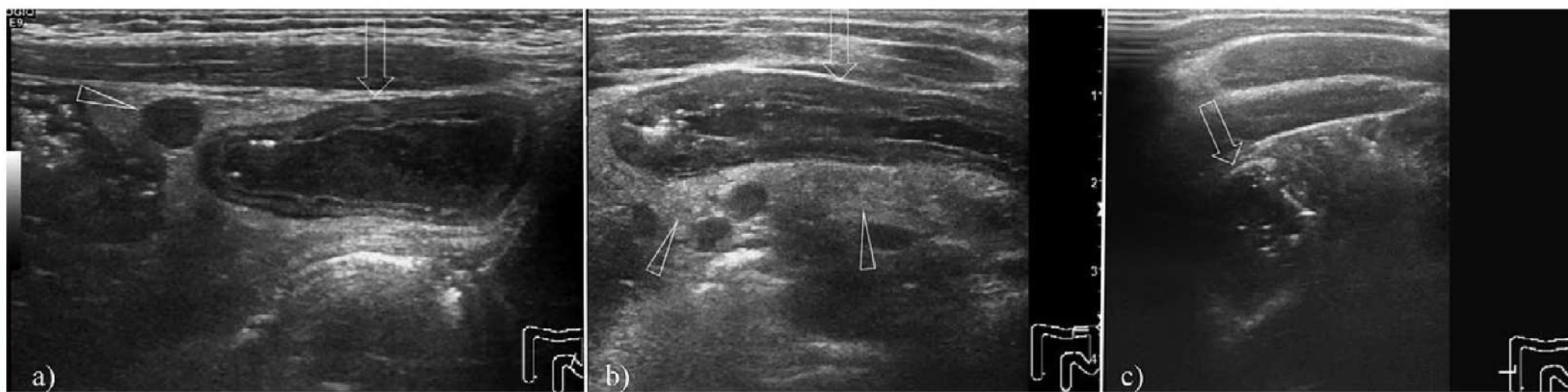


Fig 2. Two-year-old boy with X-linked inhibitor of apoptosis protein: a) the wall thickness was >4 mm on the sigmoid colon (arrow), echogenicity around the sigmoid colon was high and lymph node swelling was evident (arrowhead); b) wall stratification was destroyed in the transverse colon, the wall thickness was >4 mm (arrow) and echogenicity around the sigmoid colon was high (arrowheads); c) normal ascending colon (arrow).

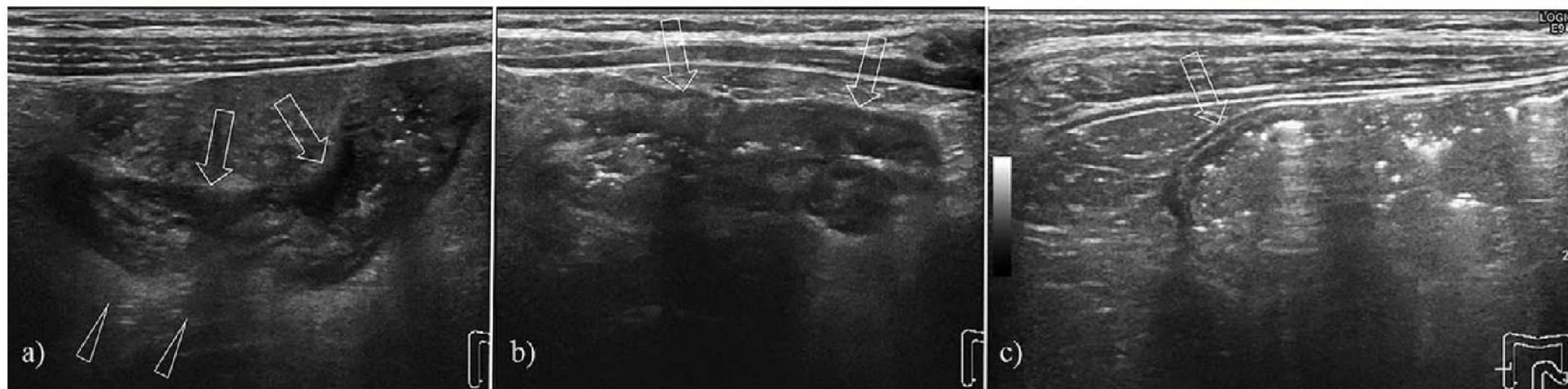


Fig 1. Three-year-old boy with Wiskott-Aldrich syndrome: a) the bowel wall thickness was >4 mm on the side of the sigmoid colon (arrow). Wall stratification disappeared at the sigmoid colon. Echogenicity around the colon was high and lymphadenopathy was detected (arrowheads); b) wall stratification also disappeared at the transverse colon and the wall thickness was >4 mm (arrow); c) normal ascending colon (arrow).

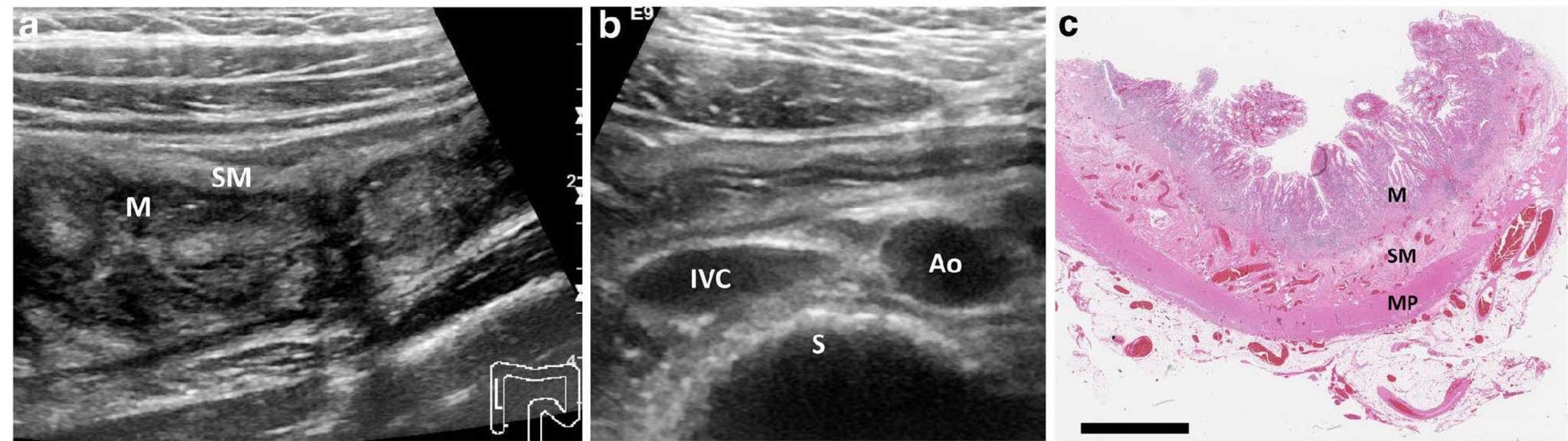


Fig.6 Ulcerative colitis requiring total colectomy in a 13-year-old boy. **a** Sagittal gray-scale US image of the ascending colon demonstrates mural thickening affecting the hypoechoic mucosa (*M*) to a slightly greater degree than the echogenic submucosa (*SM*). **b** Transverse gray-scale US at the level of the transverse colon shows complete loss of haustration (“lead pipe” appearance). *Ao* aorta,

IVC inferior vena cava, *S* spine. **c** Hematoxylin and eosin stain from colectomy specimen (bar=4 mm) shows inflammation and thickening disproportionately affecting the mucosa (*M*). The deeper submucosa (*SM*) and muscularis propria (*MP*) show little to no inflammation or fibrosis

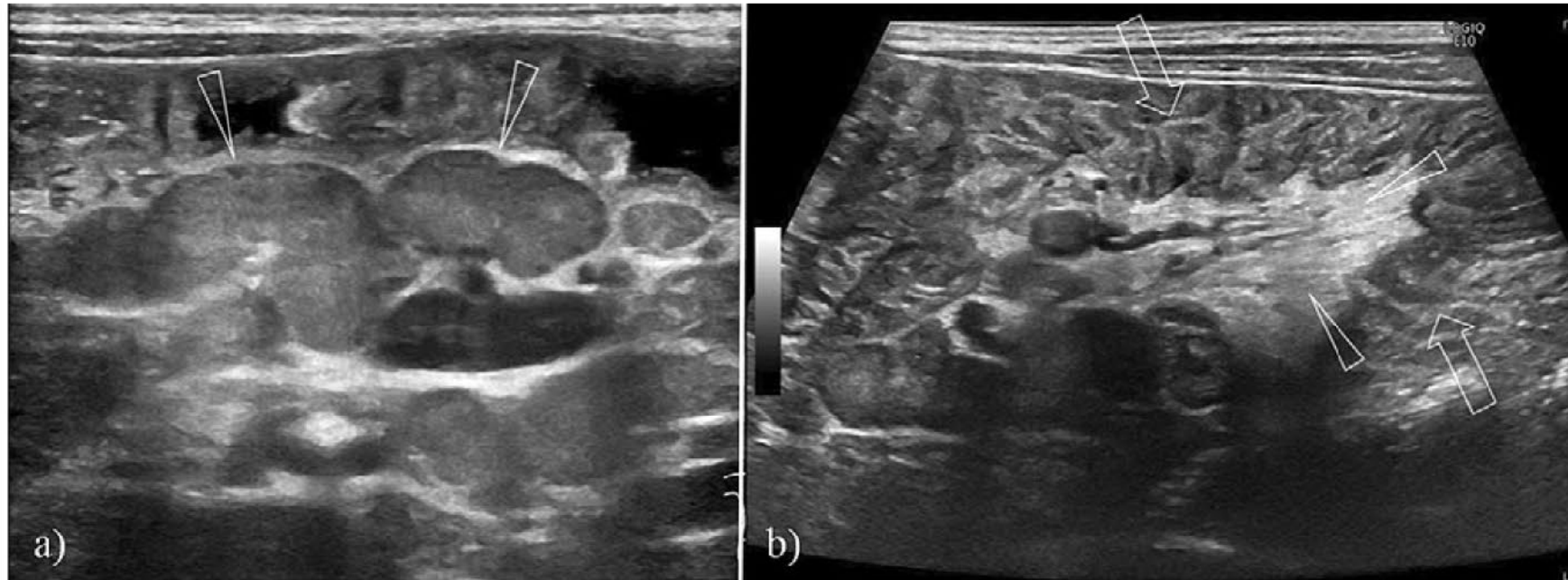
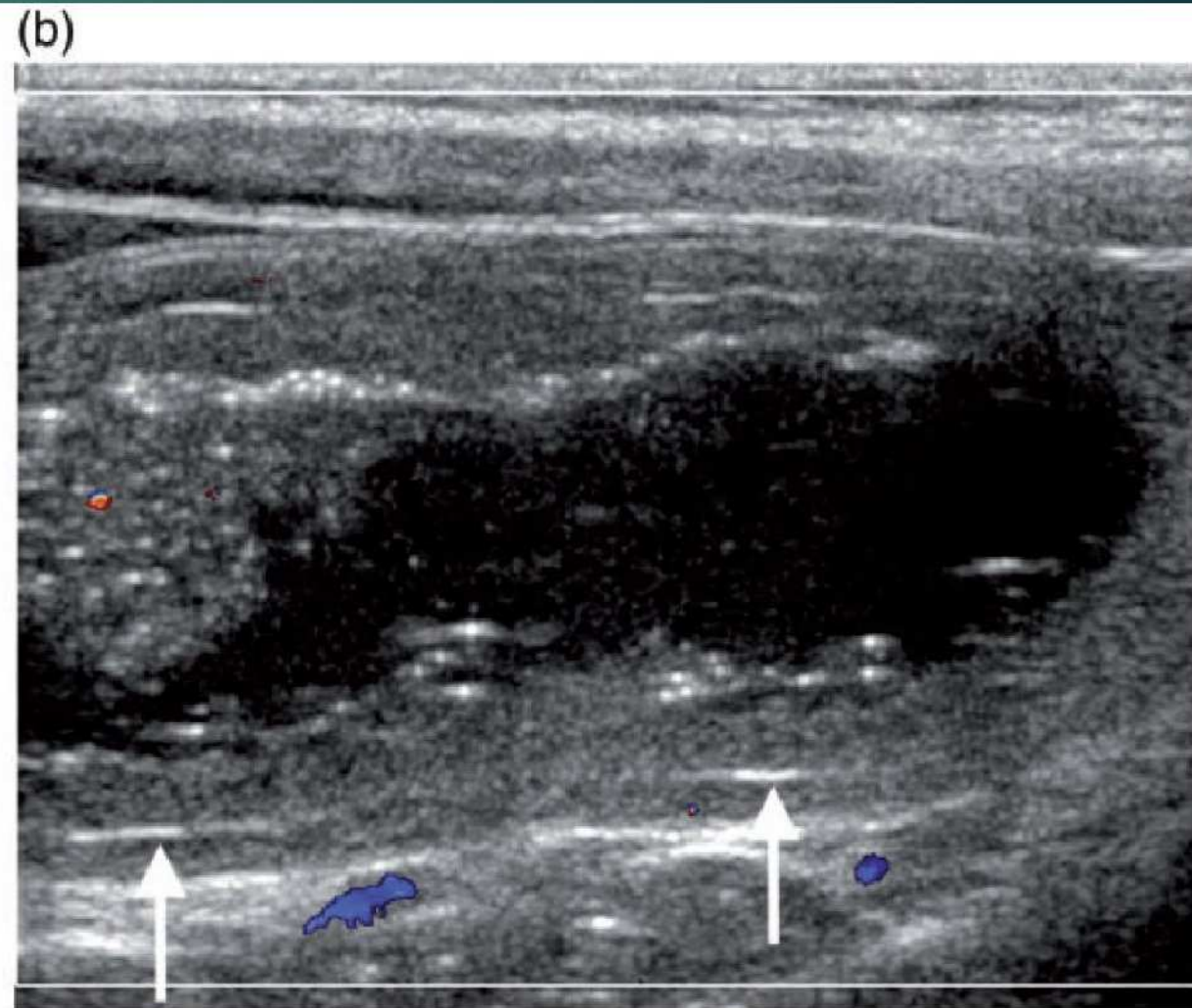
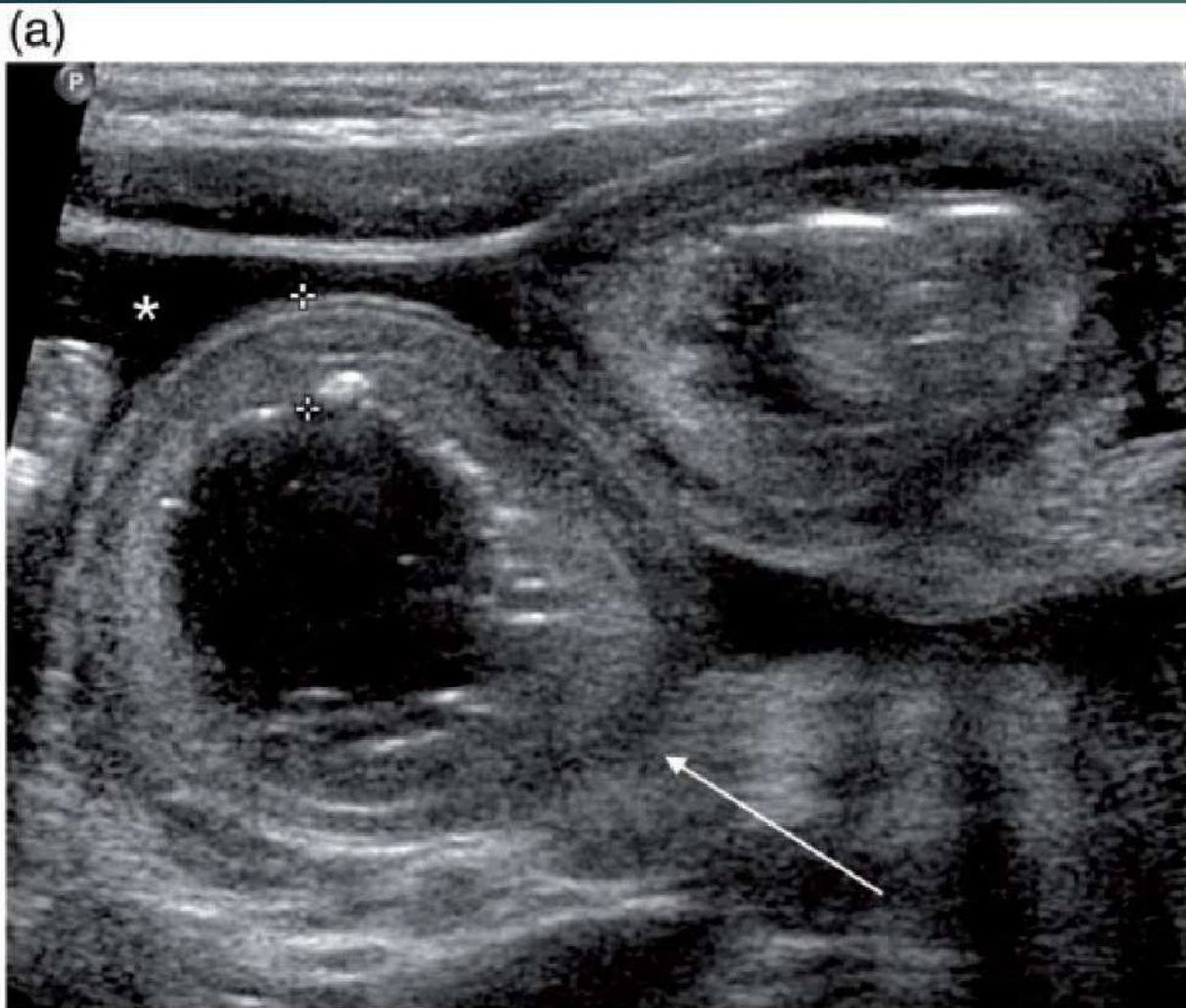


Fig 3. One-year-old boy with very early-onset inflammatory bowel disease not associated with a monogenic disorder: a) enlarged mesenteric lymph node (arrowheads); b) high echoic change in the mesentery (arrowheads), small bowel was not distended (arrow), wall thickness was 2.7 mm and wall stratification was preserved.

Diagnoos

- ▶ Kuldne standard - **endoskoopia**
- ▶ Piltagnostika peale endoskoopiat
- ▶ **CT/MR enterograafia**
- ▶ Konrastainega enterograafia ei ole esiplaanil
- ▶ **Vaagna MR, rektaalne UH** perianaalsete abstsesside/fistulite diagnostika

Vajalik süsteemne lähenemine



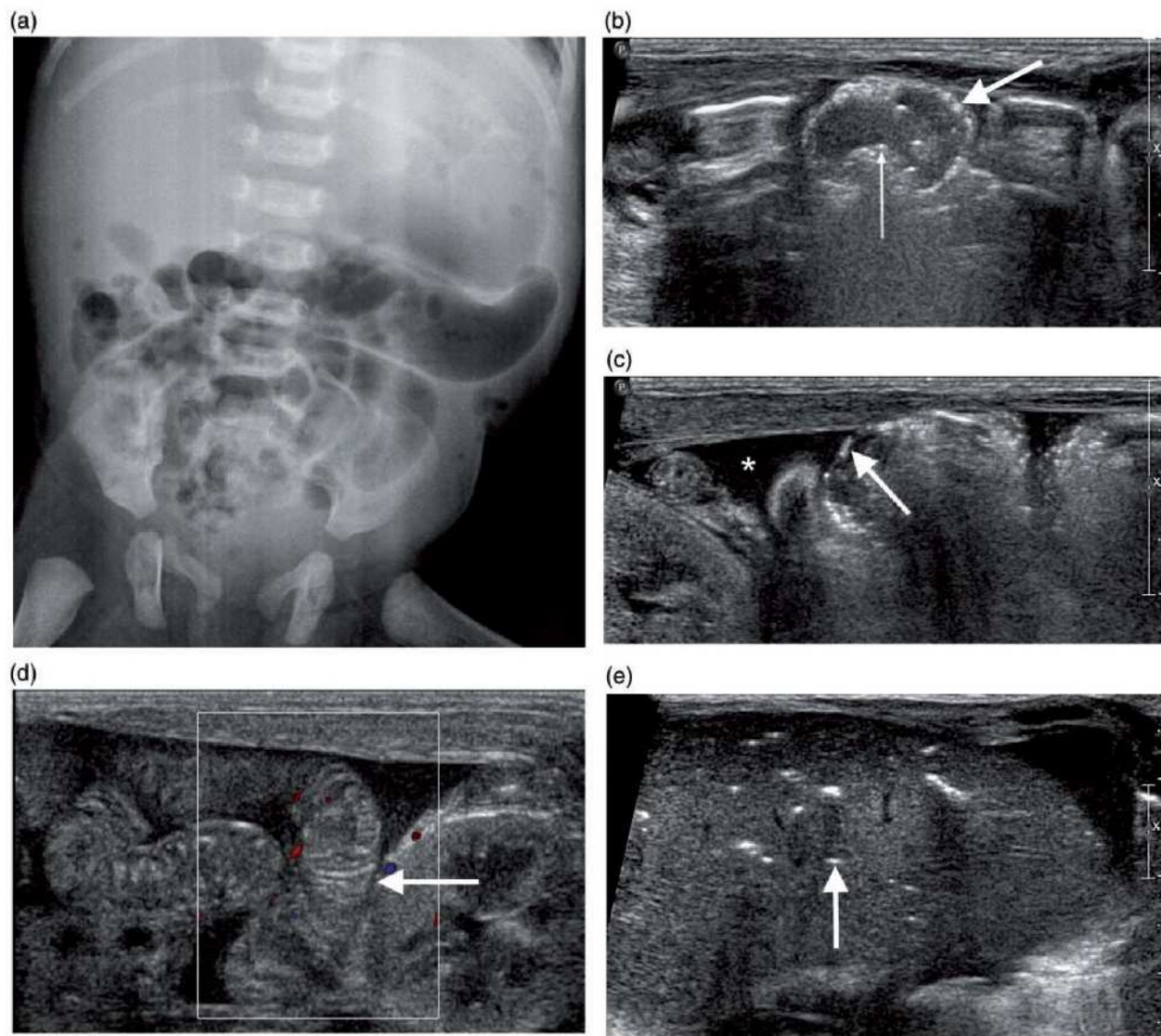


Figure 3. Eight-day-old premature neonate (35 weeks' gestational age) developed septic shock and bowel distension. (a) Plain AXR shows persistently dilated bowel loops throughout the abdomen. No definite intramural, free intraperitoneal or portal venous gas is seen. (b, c) US shows the presence of intramural gas as hyperechoic, granular foci with posterior reverberation artefacts (arrows). Intraluminal gas is also seen (thin arrow) and can be distinguished from intramural gas by its location. Peritoneal fluid is also noted (*). (d) US shows hyperechogenicity of the valvulae conniventes (arrow) known as the 'zebra' or 'herringbone' pattern. (e) Portal venous gas is also noted (arrow). A large amount of clear peritoneal fluid was found at surgery. Two areas of NB with impending perforation were noted in the jejunum, 90 cm from the DJ junction and in the terminal ileum, 15 cm from the ileocaecal valve.

Kokkuvõtte

- ▶ Kui uurid, siis uuri pindmise anduriga
- ▶ Uuri kontraktsioonita soolelinge, kerge survega
- ▶ **Lastel** norm: kuni 2 mm tervetel lastel
- ▶ **Täiskasvanutel** norm: peensooles kuni 3 mm, jämesooles kuni 5 mm.
- ▶ Imikutel iileum paksem kui lastel
- ▶ CD: 5.1 ± 1.9 mm, haaratud terve sein
- ▶ Normaalne anatoomia kadunud
- ▶ Ära unusta teisi haigusi, mis mõjutavad sooleseina
- ▶ Käsitle pt-i terviklikuna

Kasutatud kirjandus

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2. *Med Ultrason* 2014, Vol. 16, no. 4, 319-324 DOI: 10.11152/mu.201.3.2066.164.dsd2
3. *Pediatric Radiology* (2020) 50:501–508
4. *JAMA Pediatr.* 2015 November ; 169(11): 1053–1060. doi:10.1001/jamapediatrics.2015.1982.
5. *Pediatric Radiology* (2022) 52:1786–1798

► Tänan tähelepanu eest!