Echo-Doppler et maladies inflammatoires chroniques de l'intestin(MICI)

MC, RCUH, formes non classées

Maladies inflammatoires chroniques intestinales

Clinique: Douleurs abdo., diarrhée, selles sanglantes, anorexie, retard de croissance, anémie, uvéite, lésions périnéales, cutanée …

- Bio

Hb

VS

CRP

Calprotectine fécale

- Histologie

Oedème

Inflammation

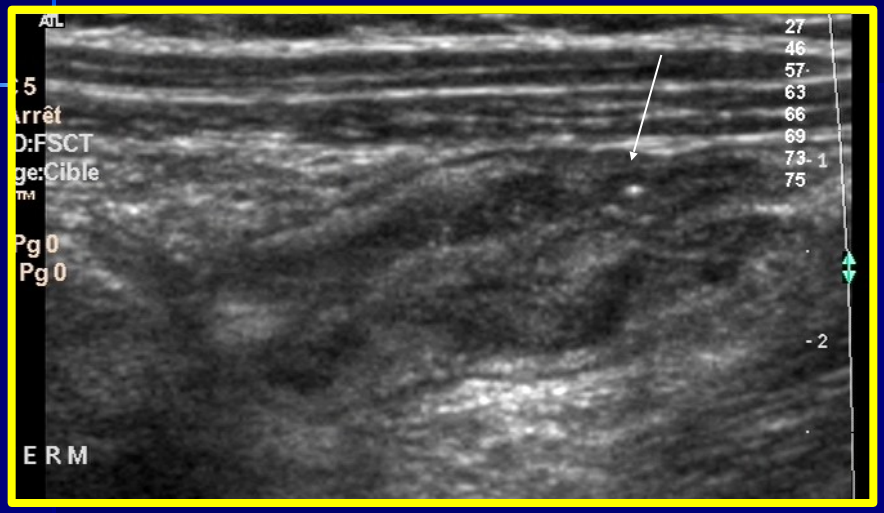
Fibrose-granulome

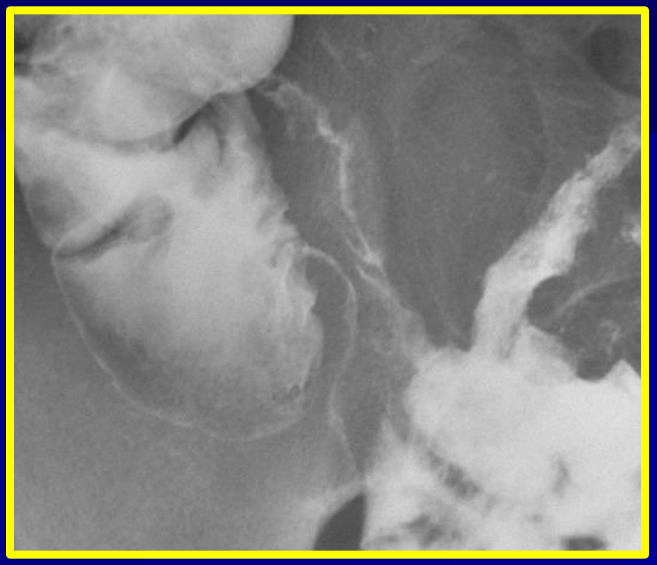
- Vidéo capsule
- Endoscopie

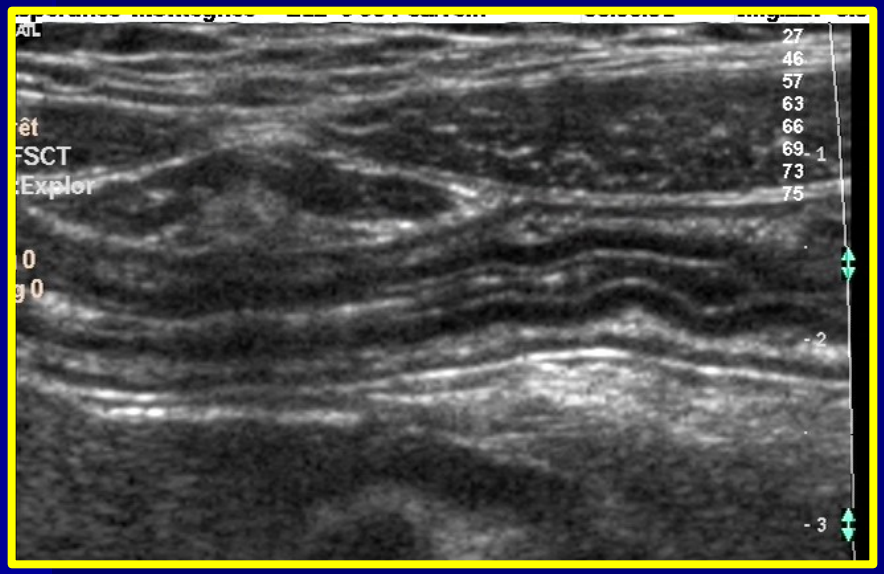
Oeso-gastro-colique

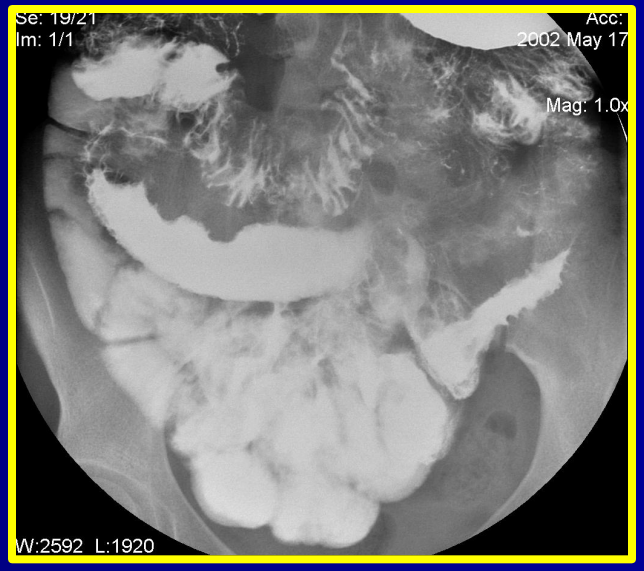
Imagerie

Musée de l'imagerie



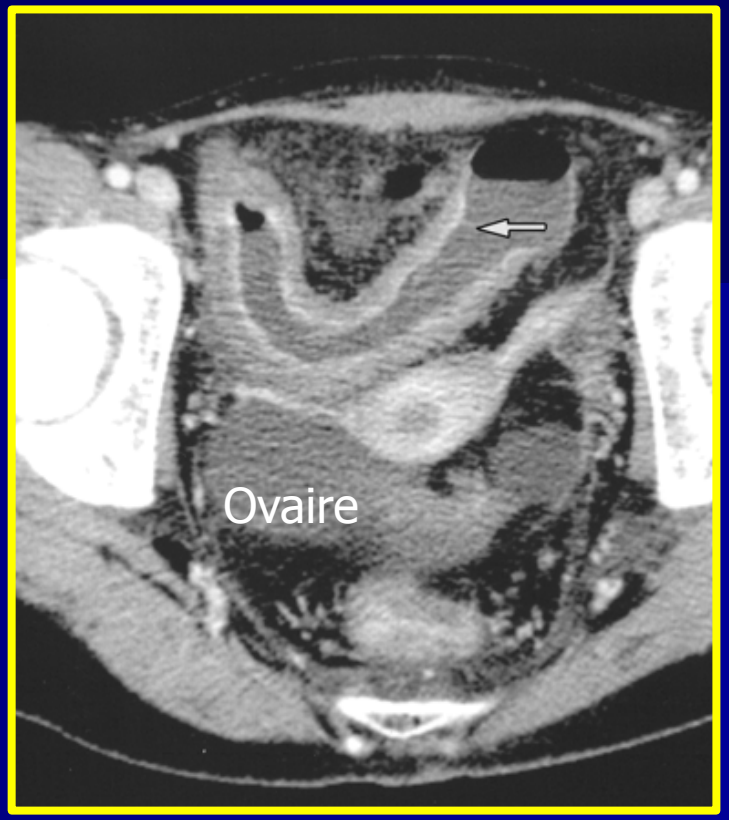






MICI - CT

- Rapide
- Couverture complète
- MPR
- Comparaisons reproductibles
- Critères évaluation (épaisseur ,vascularisation) fiables
- Manque de contraste naturel, irradiation
- Urgence, complications, drainage



Entéro-MR - MICI

- Début de maladie: sensibilité (82-84%)

  Pédiatrie spécificité (100%)

- Evaluation activité de la maladie:

  Adulte sensibilité. 80-91%

  Spécificité. 71-89%

ECHO-Doppler
Objectifs

- Anatomie normale de la paroi intestinale .
- Critères pathologiques de la paroi et de son environnement.
- Aspect échographique des principales pathologies: MC, RCUH.

  Lésions infectieuses, vascularites, ischémiques

  sauf appendicite.

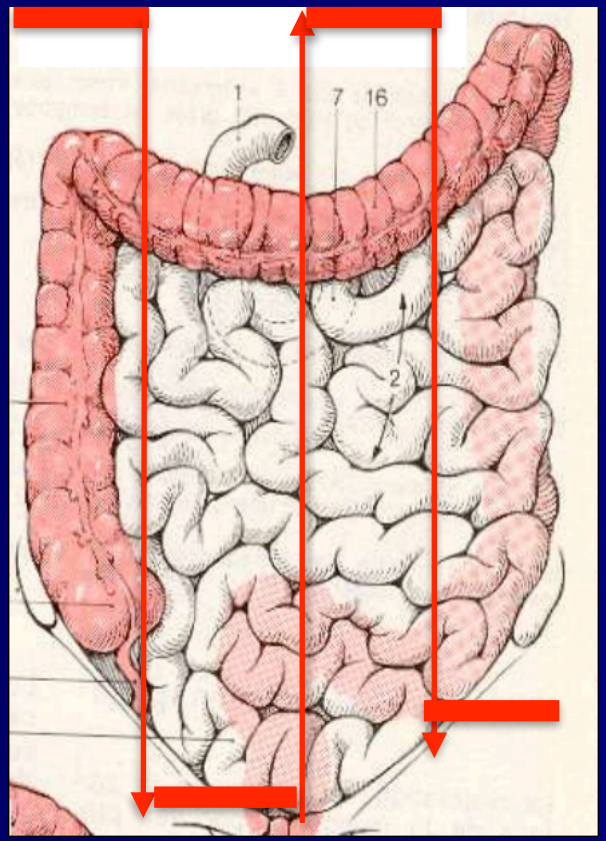
Technique Echographique

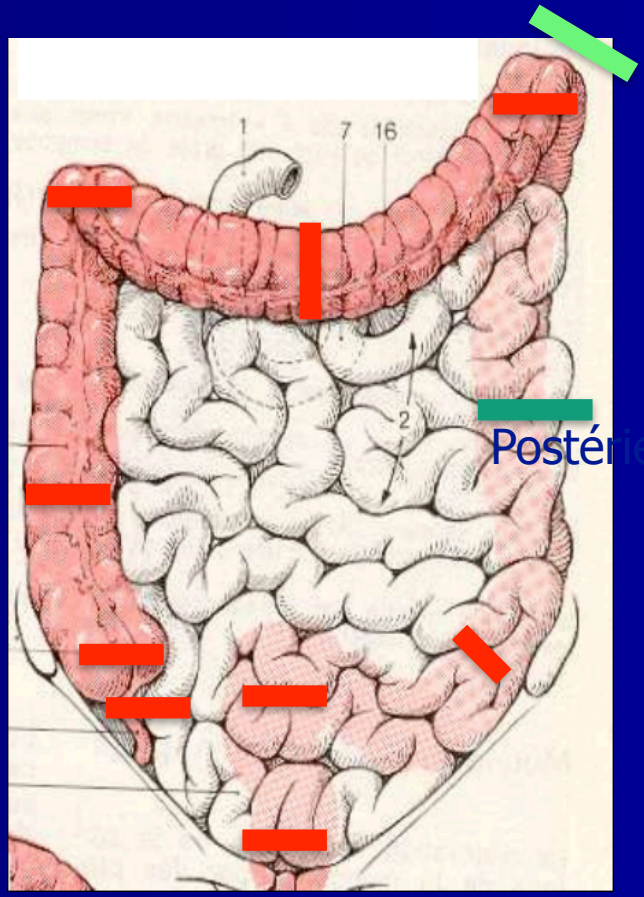
- Explorer tous les organes abdominaux
- Sonde Linéaire 5-12MHz.
- Échelle de gris et Doppler couleur
- Compression dosée et progressive
- Paroi > 3 mm

Sensibilité 74-88 %

Spécificité 78-100%

- Reconnaître le carrefour iléon caecal , suivre en coupe axiale le colon.
- Suivre en coupes axiales parallèles tout l'abdomen





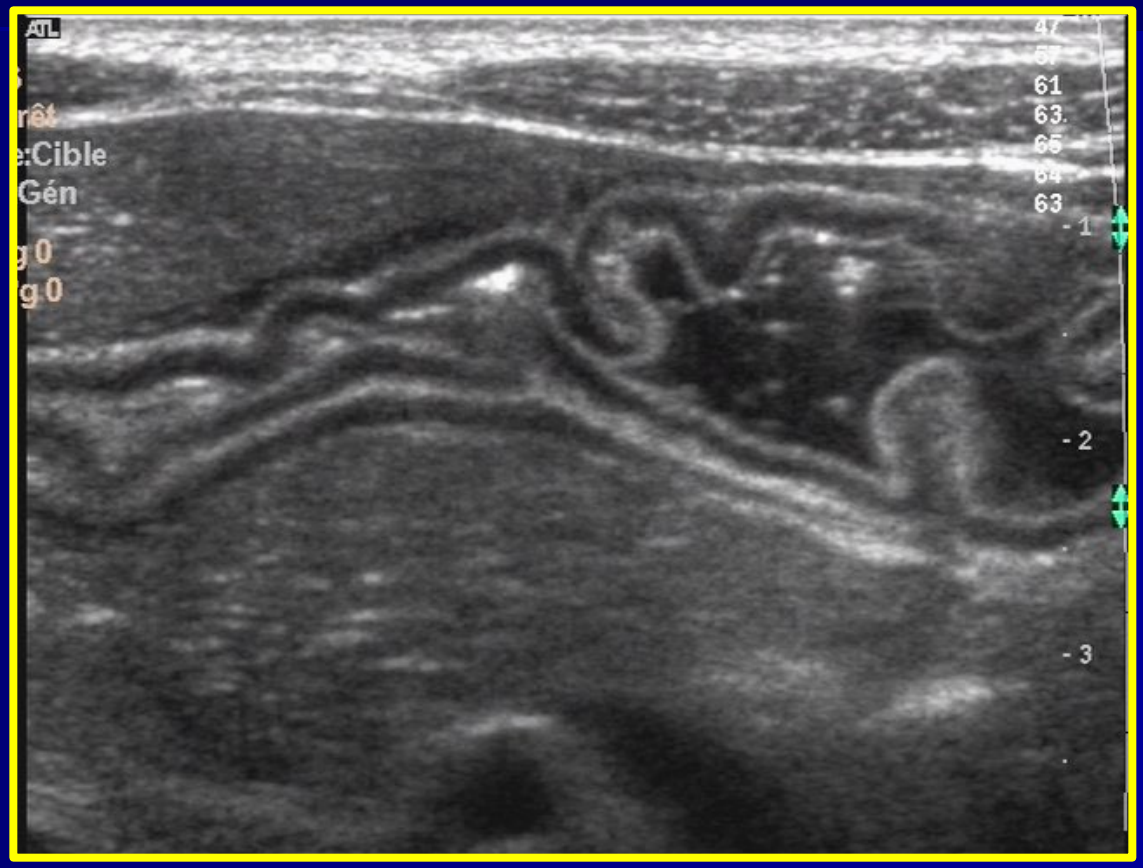
Limites de l'échographie

- Spécificité et sensibilité limitées: fistule ou sténose
- Angles morts (angle splénique, rectum..)
- Examens comparatifs difficiles >>> annotations
- Critères évolutifs (épaisseur, Doppler) controversés. Idem IRM.
- Adiposité, gaz
- N'est pas lisible par tous les cliniciens

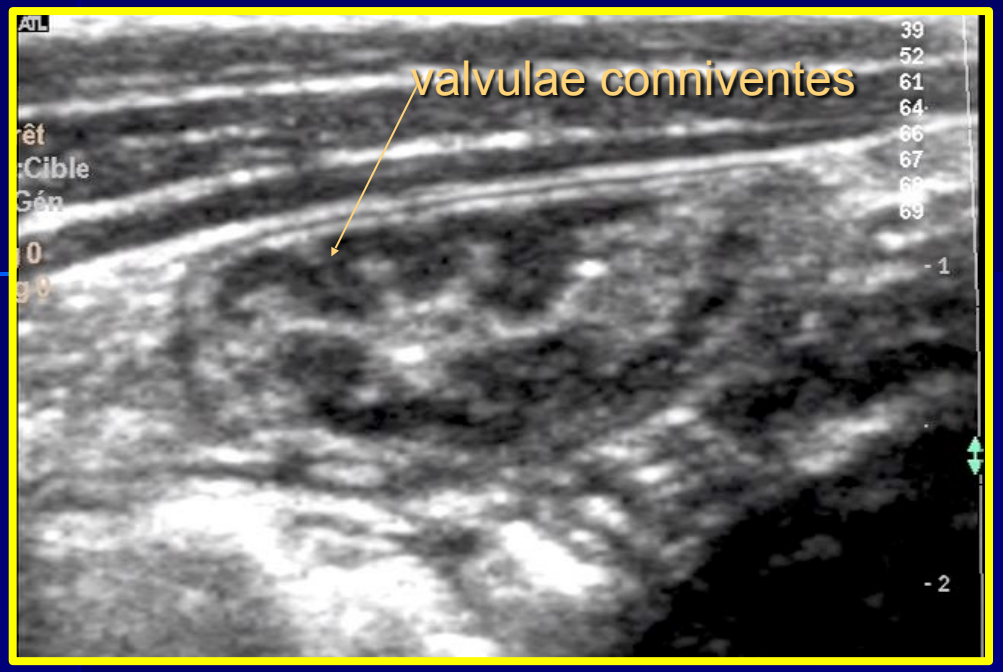
Normal GI wall

- < 3 mm
- Five Layers
  (constantly 3)

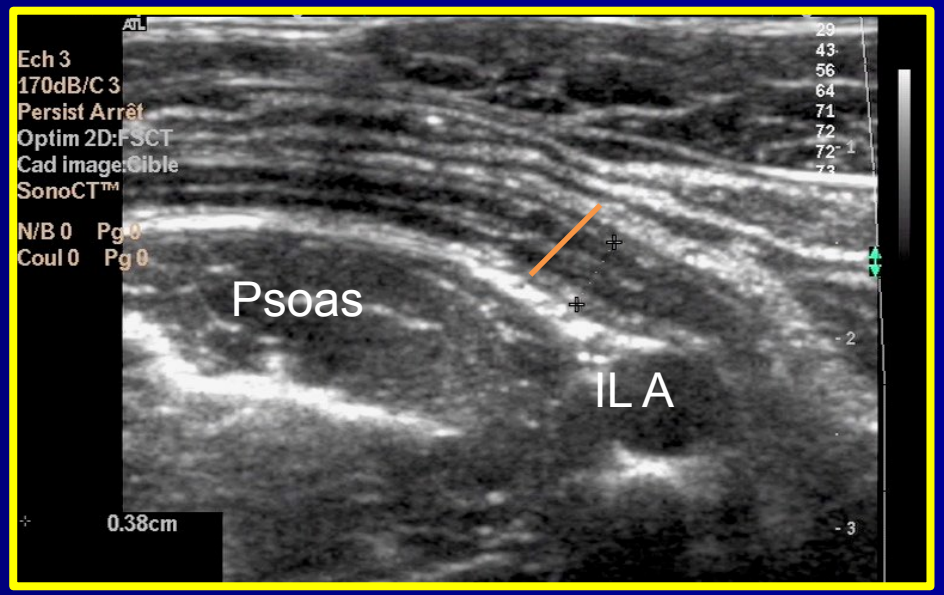
1. Interface
2. deep Mucosal layer
3. Submucosa
4. Muscular layer
5. Serosal interface



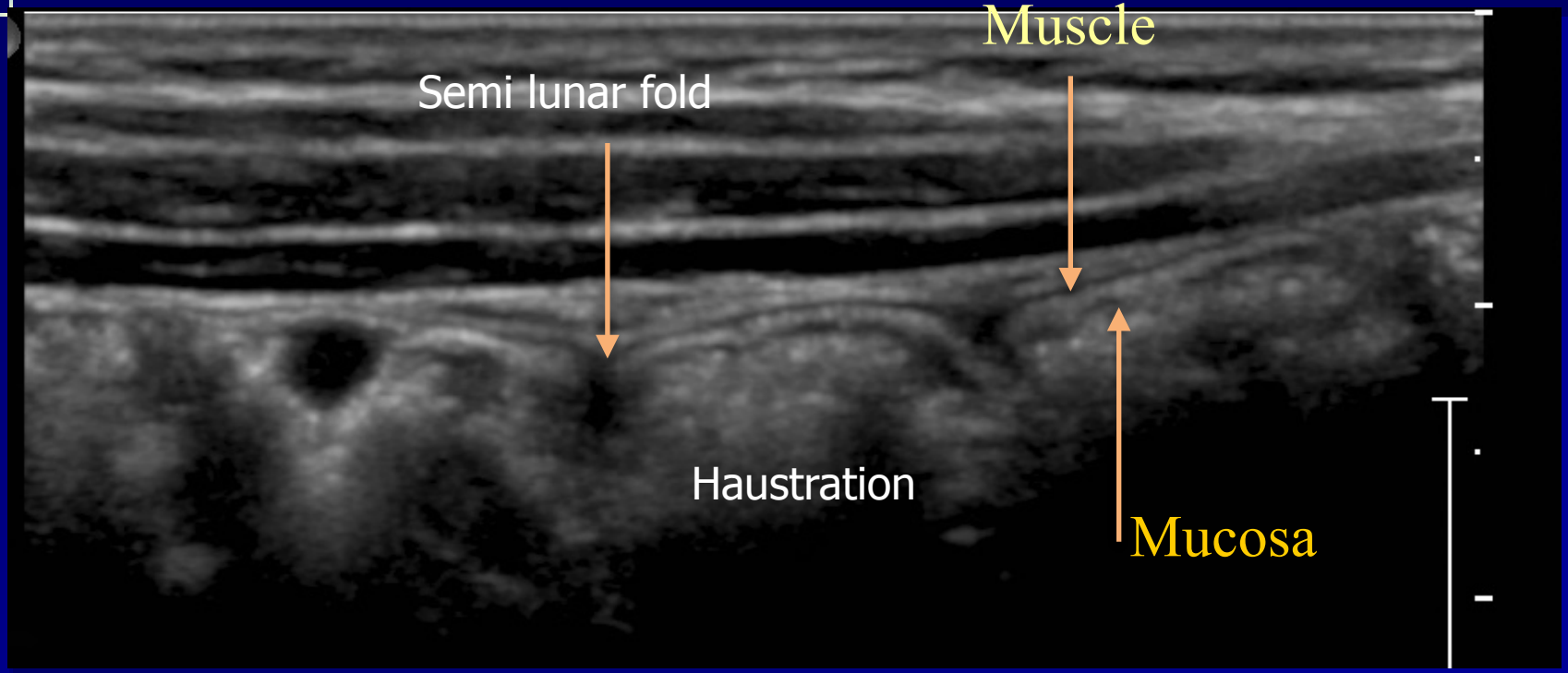
Grêle



Appendice

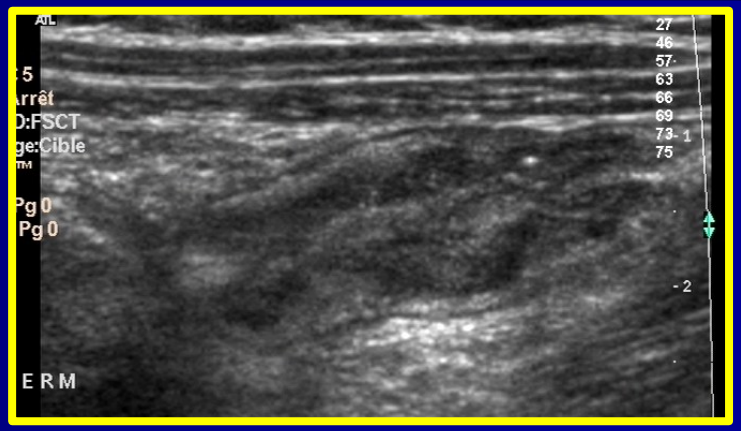


Normal Colon



Signes US: MICI

- Épaississement > 3mm, focal ou transmural
- Topograhie des lésions: duodénum , jéjunum, iléon, colon d, colon g, (appendice)
- Hyperhémie (> 5 p cm^2) et sa localisation
- Ulcérations superficielles ou profondes
- Rigidité
- Distension en amont
- Sclérolipomatose
- Fistules ou abcès



	Paroi digestive	Doppler
Crohn	Diff - Dédiff	Trans-mural / faible
Purpura Rh	Dédifférenciée	Périphérique
Infectieuse	Différenciée	Sous-muqueux
SHU	Dédifférenciée	Absent / en peigne
Lymphome	Dédifférencié	faible

Maladie de Crohn

- Autour de 10 ans
- La plus fréquente des MICI (2/3)
- Topographie: iléo-colique, grêle, pancolique +++
- Localisation unique la plus fréquente
- Rapidement évolutive : st inflammatoire >>> st. sténosant >>> st. pénétrant (ano-périneal)

Maladie de Crohn

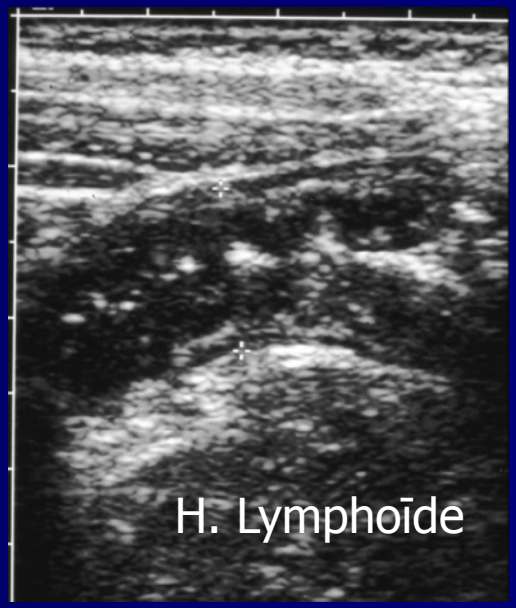
Stade initial:

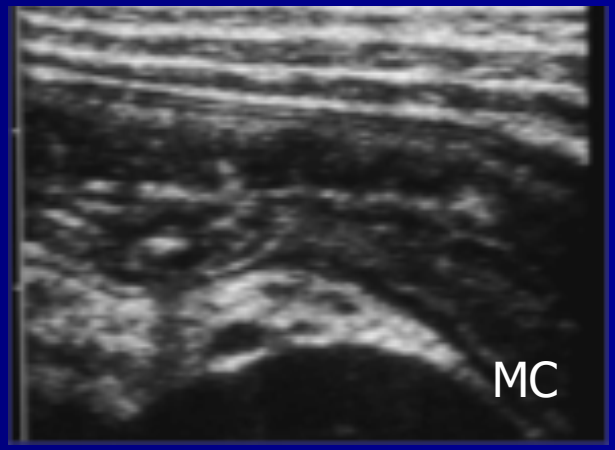
- Oedème M et S/M
  Non spécifique, RCUH, entérocolite
- Stratifiée +/- V. conniventes,
- Prolifération graisseuse périphérique possible
- Atteinte discontinue possible
- M et S/M. modérément hyper-hémiques
- Peut cliniquement mimer une appendicite aiguë

- Atteinte initiale de la muqueuse

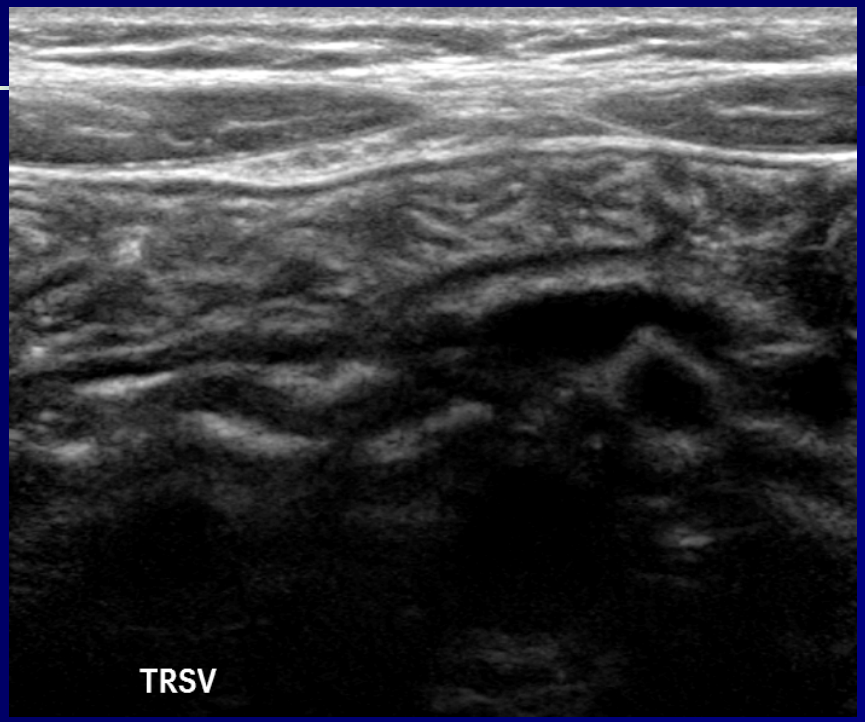
- DD

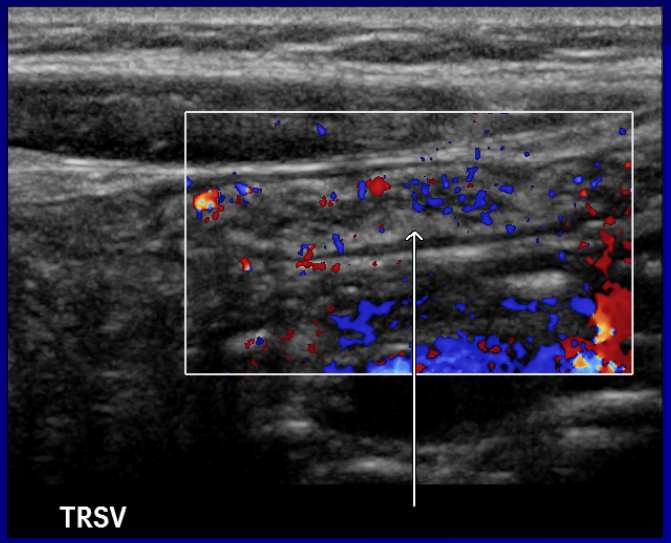
Hyperplasie Lymphoïde, entérite, Yersinia

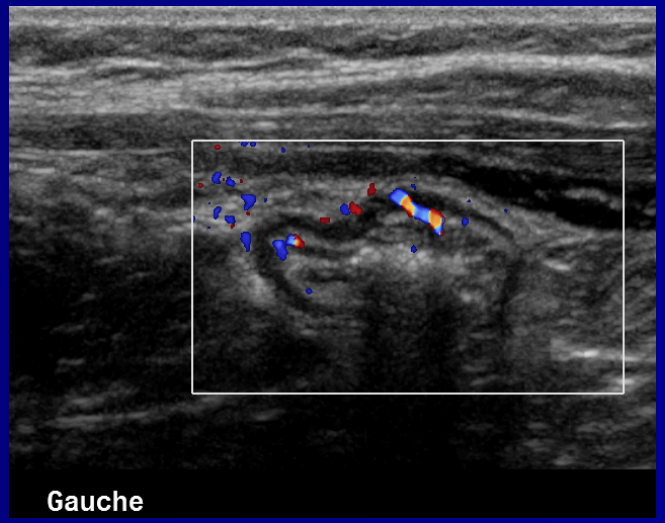




Deborah, 8 ans, diarrhée et douleurs abdo.récurrentes

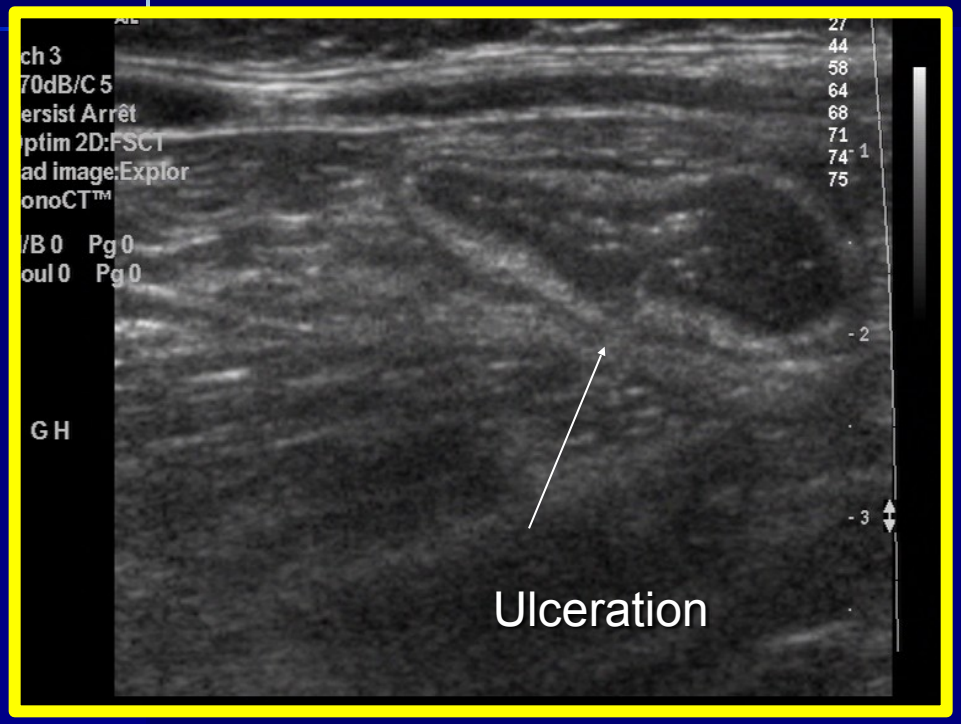


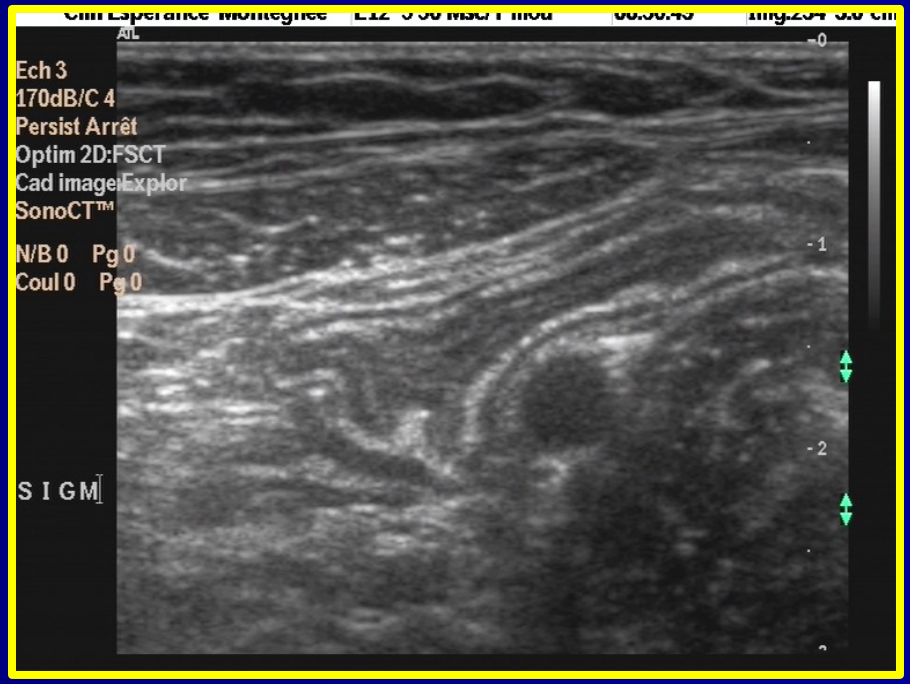




VS aug
Calprotectine +
US compatible MICI
Biopsie: oeso-gastro-colique J21
MC

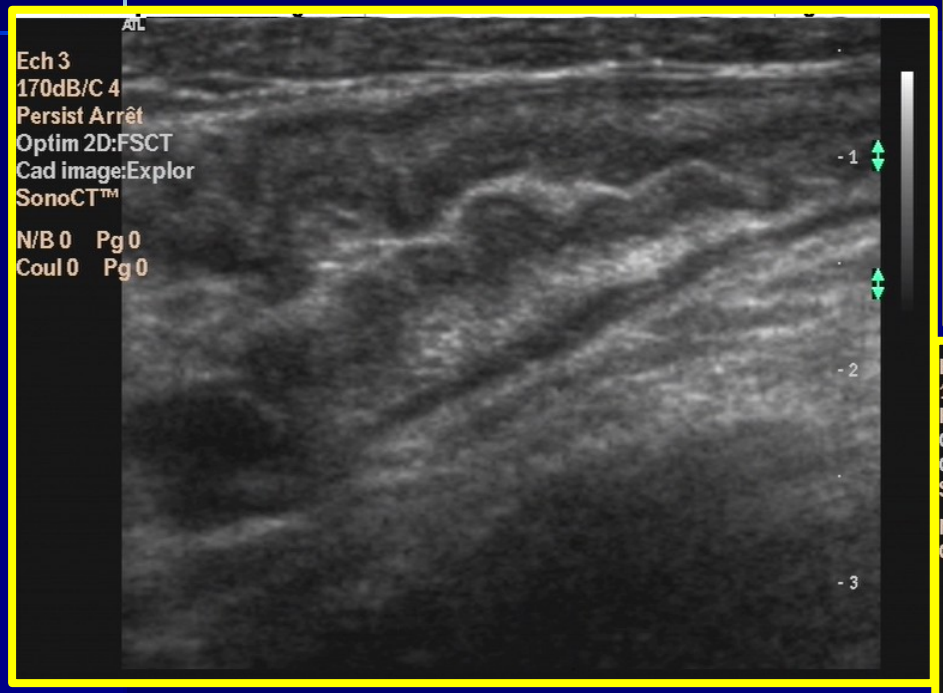
Girl, 11 Y
24 hours of bloody diarrhea (?)
VS = 3 mm/H
Pancolitis. EB day 27

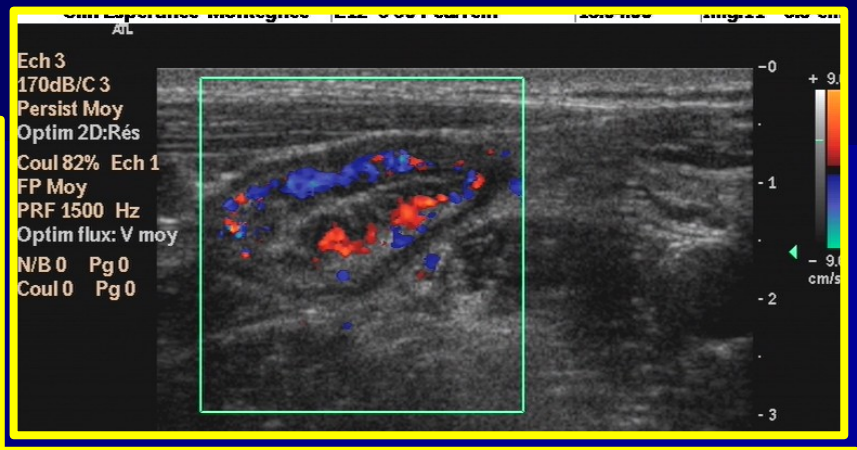


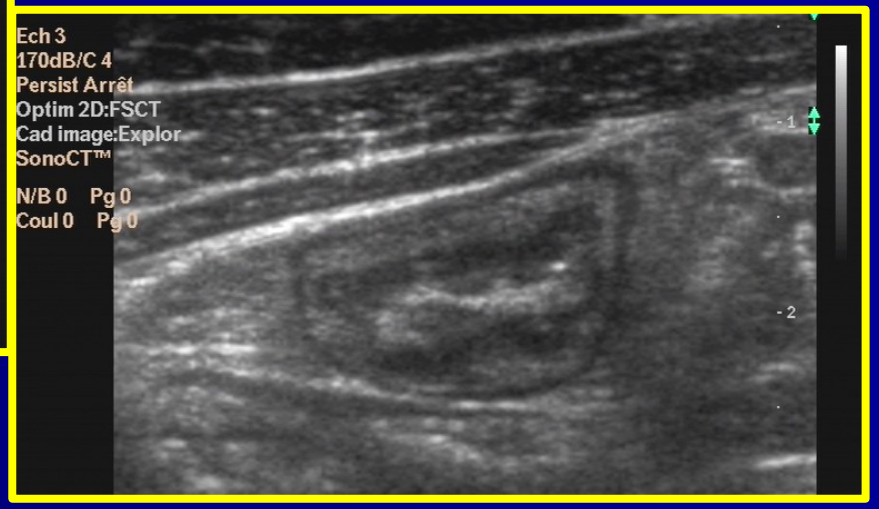


CD : Initially differentiated stage
+ focal sub mucosal disruption

CD stade intermédiaire différencié





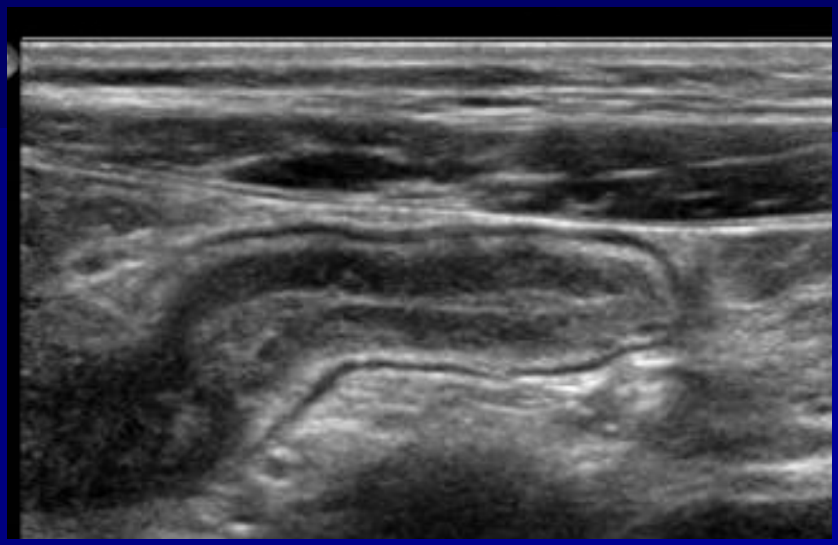


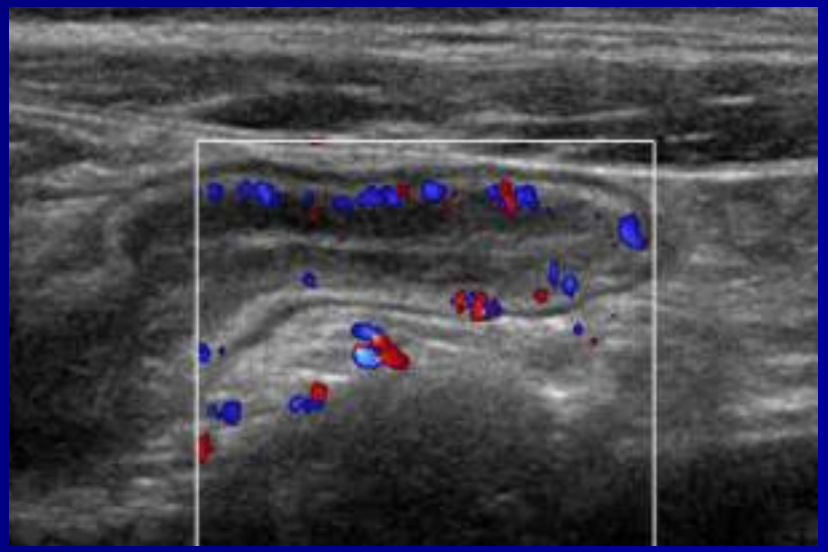
Iléon terminal
Flou M, SM
Hyperhémie entre les deux couches
Valvules conniventes
Graisse hyperéchogène

US sensible au stade débutant

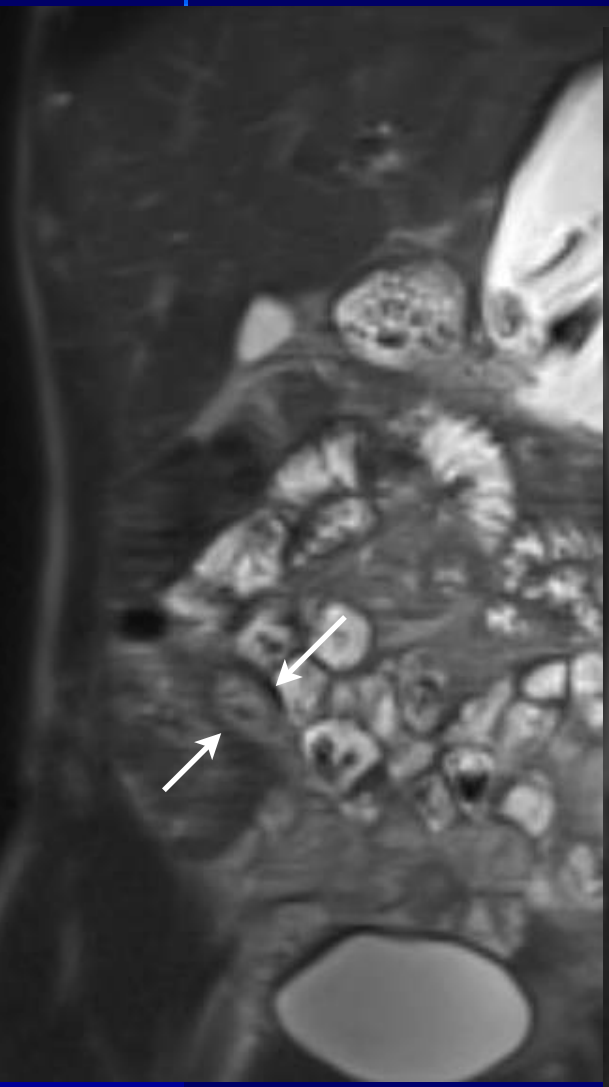
- Loic: 11 ans
- Douleur abdom. chronique

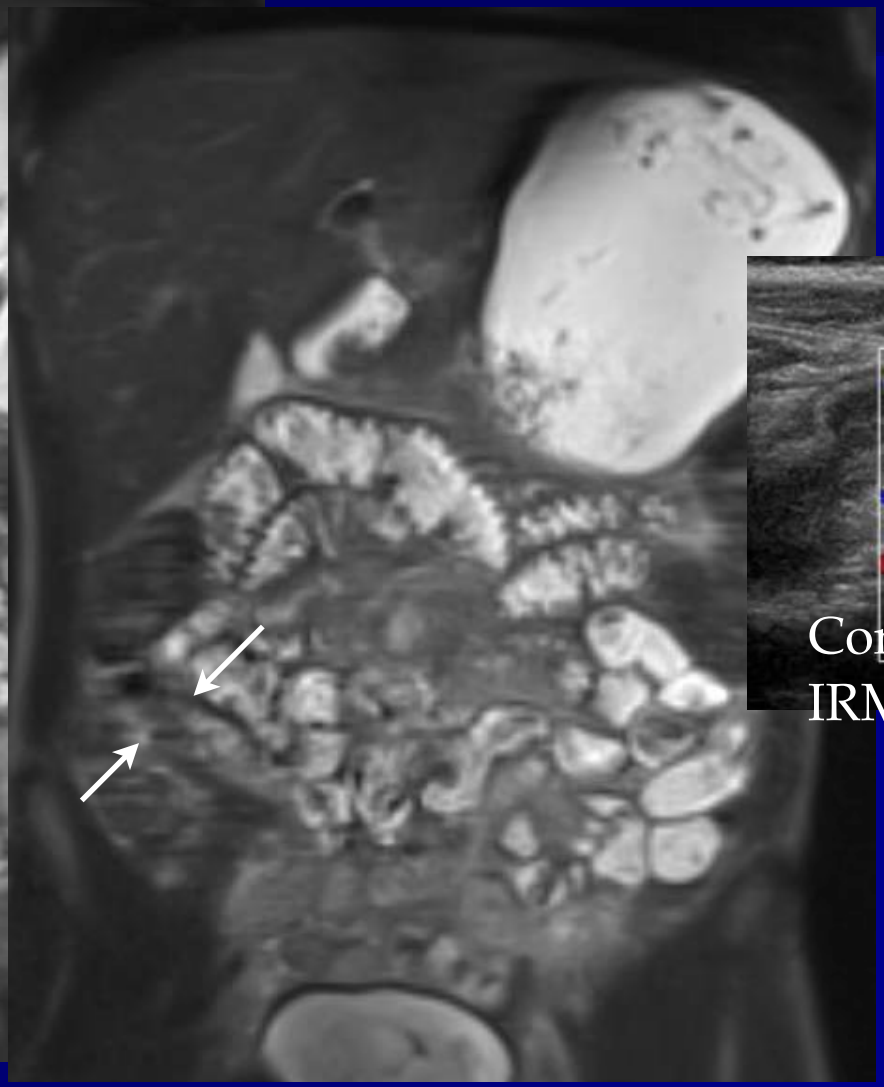
- Iléon terminal

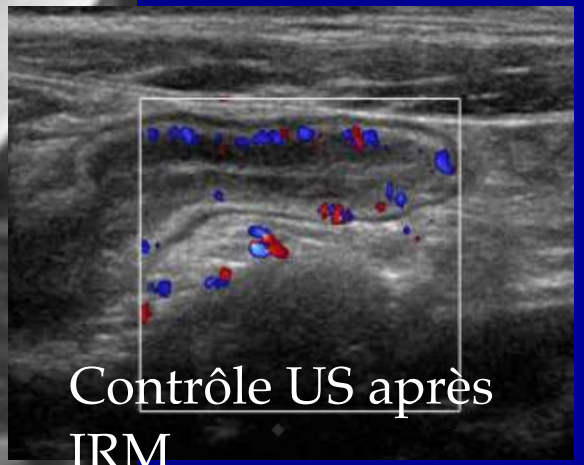




Loic, 11 ans D. Abdominale chronique







Contrôle US après IRM

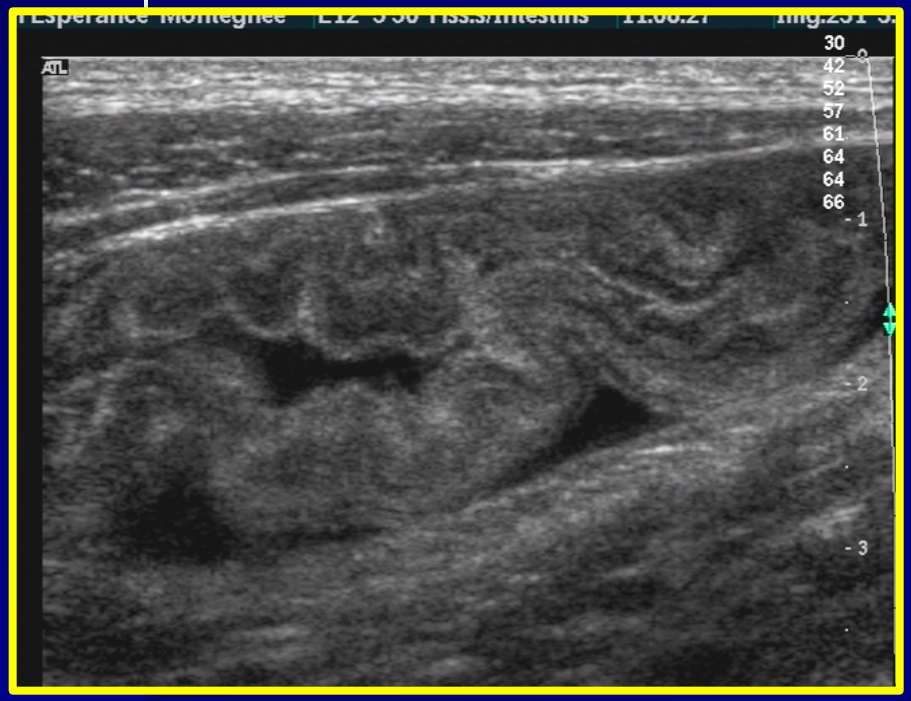
Maladie de Crohn

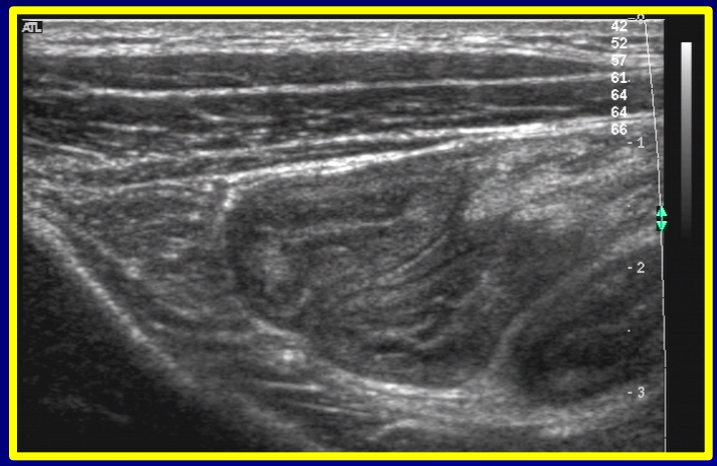
Stade évolué transmural (MC typique)

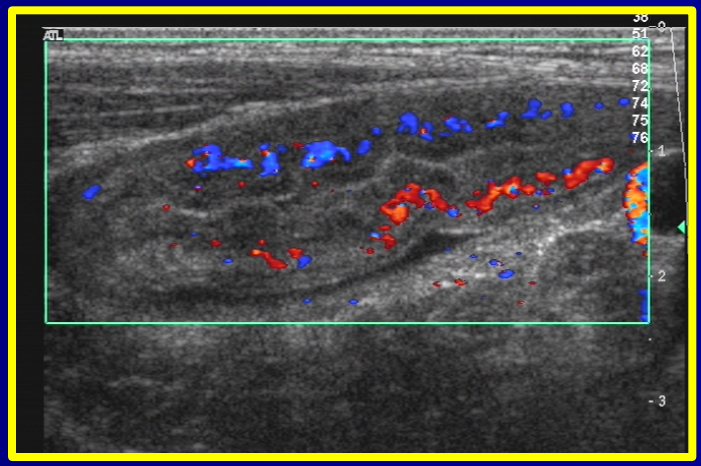
inflammation cellulaire
Dédifférenciation focale ou diffuse
Épaississement +++
Infiltration graisse péri -viscérale +++

- Perte des haustrations et v. conniventes
- Hyperhémie paroi et mésentère (aspect en peigne)
- Atteinte asymétrique de la paroi
- Lésions discontinues possibles

CD: transmural disease

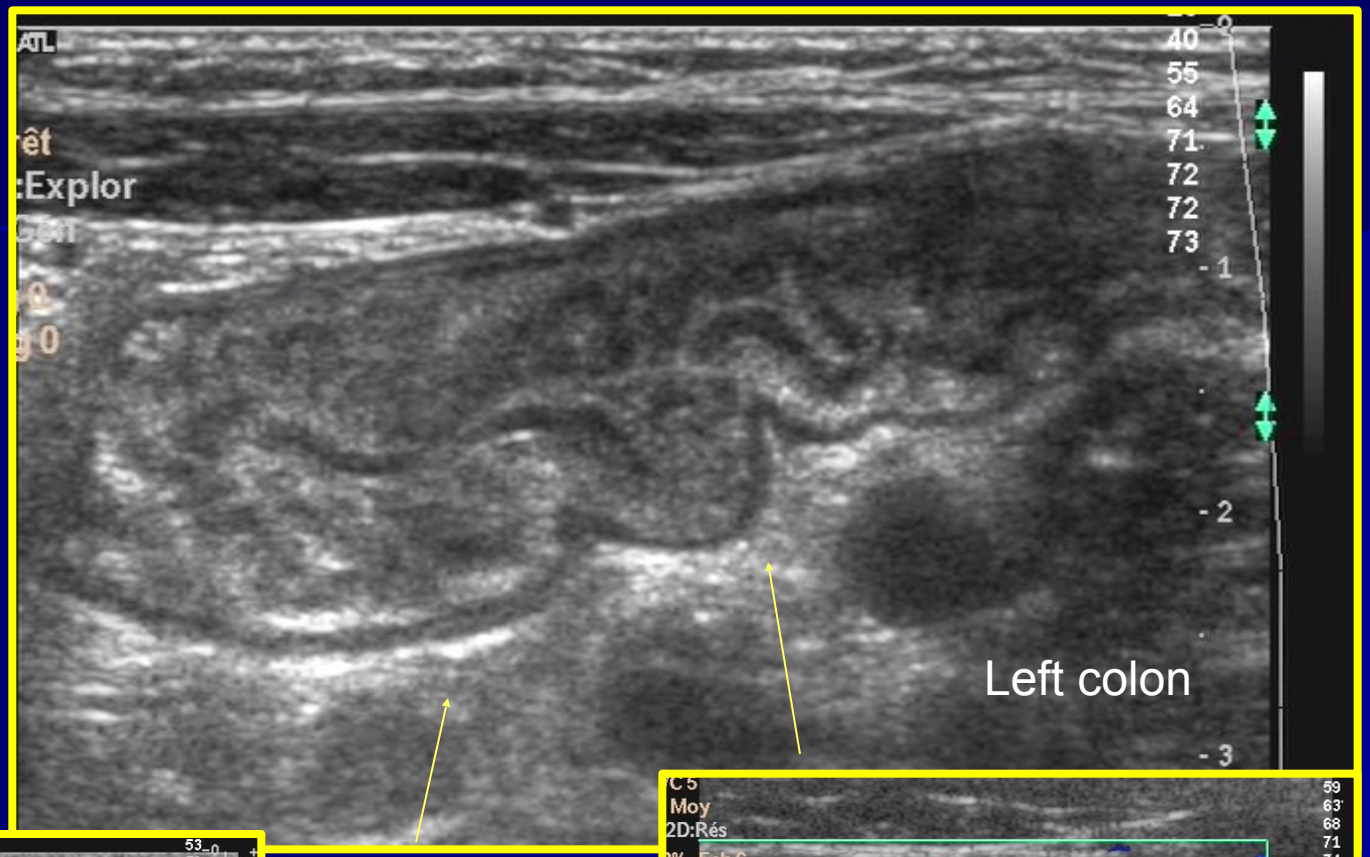


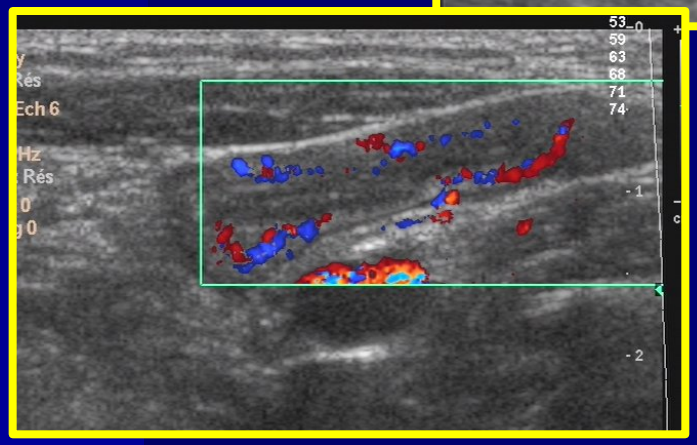


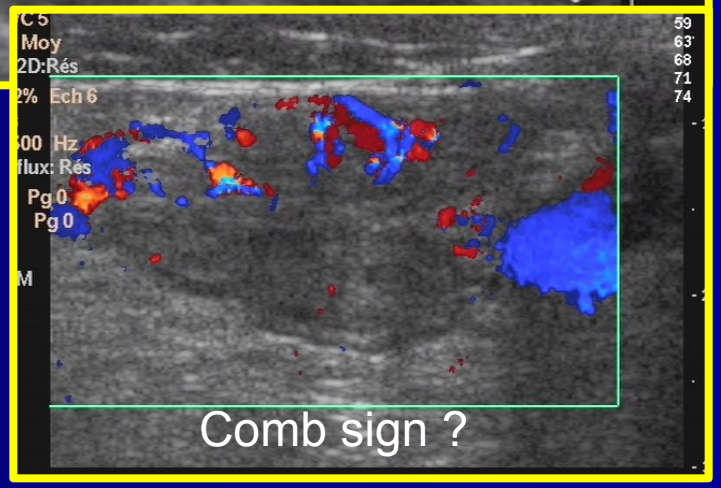


C D

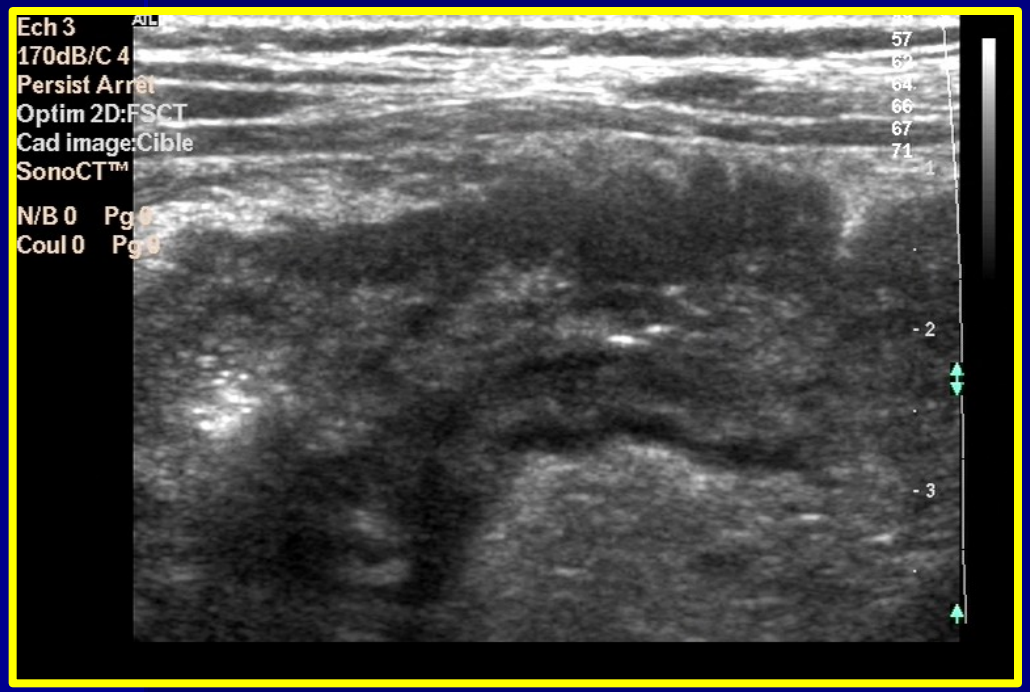
- Sclerolipomatosis
- Asymmetrical bowel wall involvement

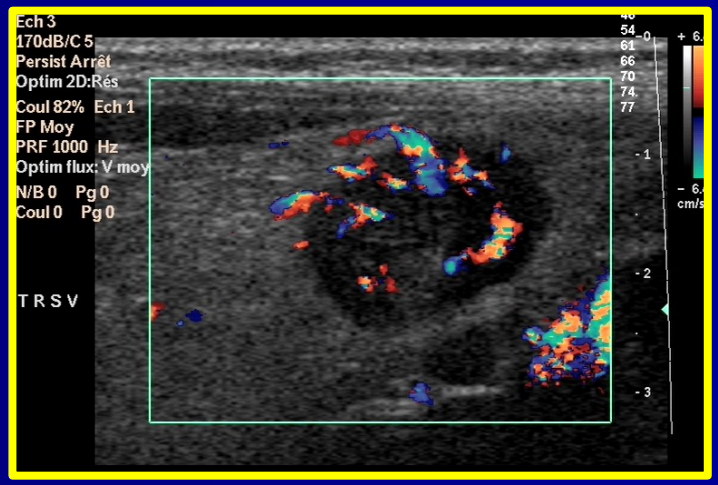






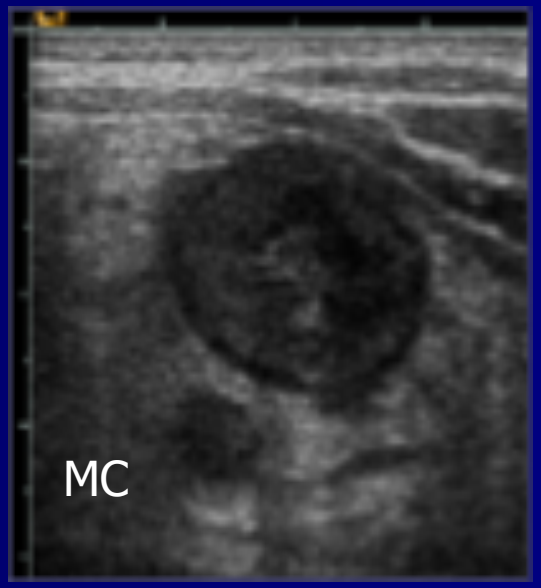
CD : advanced stage

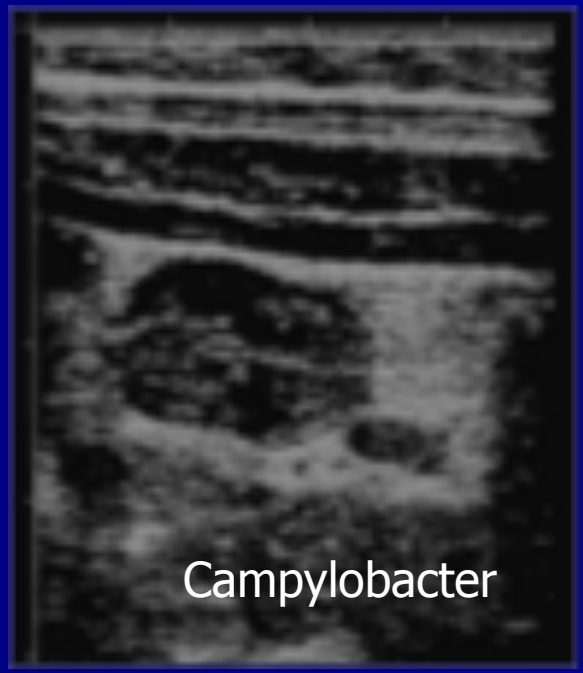




Diagnostic différentiel MC

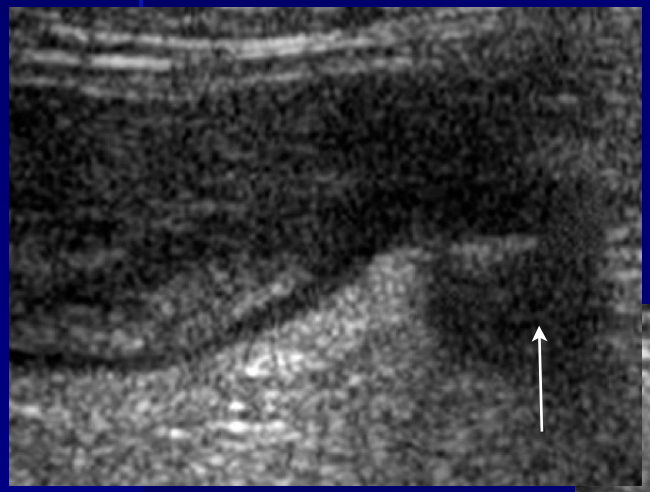
- Atteinte transmurale
- Purpura R, SHU mais contexte clinique spécifique
- Colite à Campylobacters



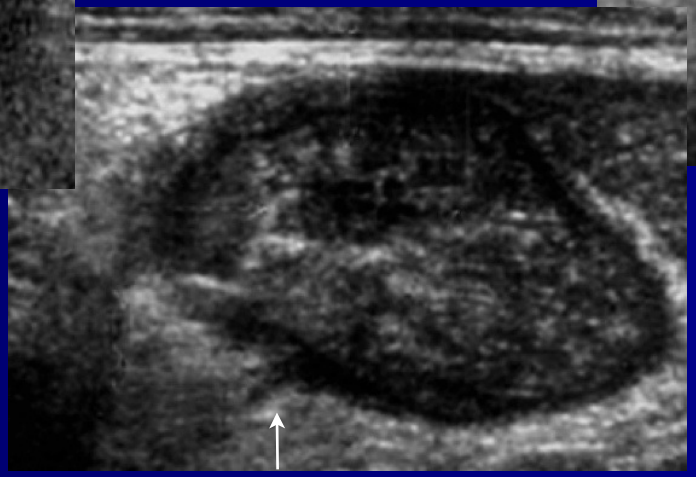


Maladie de Crohn

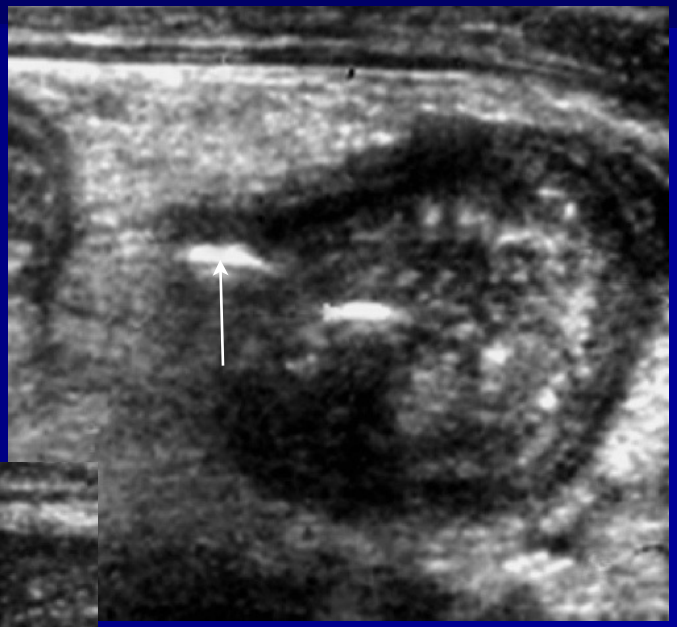
- Complications précoces:



abcès



fistules



perforation

Maladie de Crohn

- Complications tardives:

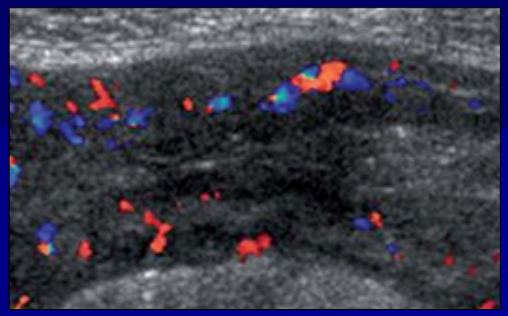
- Sténoses

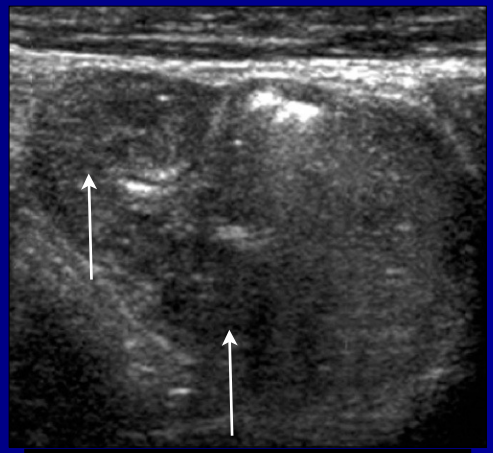
  inflammatoires:
  Dilatation hyper-péristaltique
  Réplétion liquidienne en amont
  Doppler +

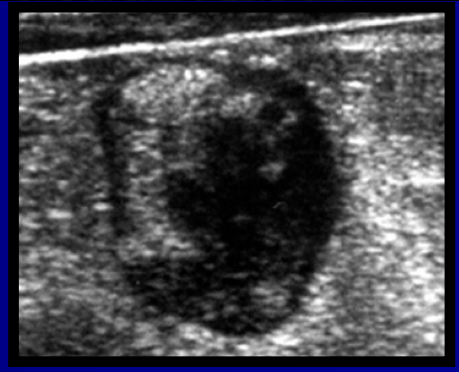
  Si fibreux:
  Court segment
  Doppler -

  IRM ?

- Lipomatose pariétale







Maladie de Crohn, suivi

Etude de la réponse au traitement:

- Régression de l'hyperhémie (densité vx) +/- j25
- Epaississement, rigidité et longueur des segments atteints
- Différenciation
- Lumière intestinale
- Ulcères et fistules

RCUH

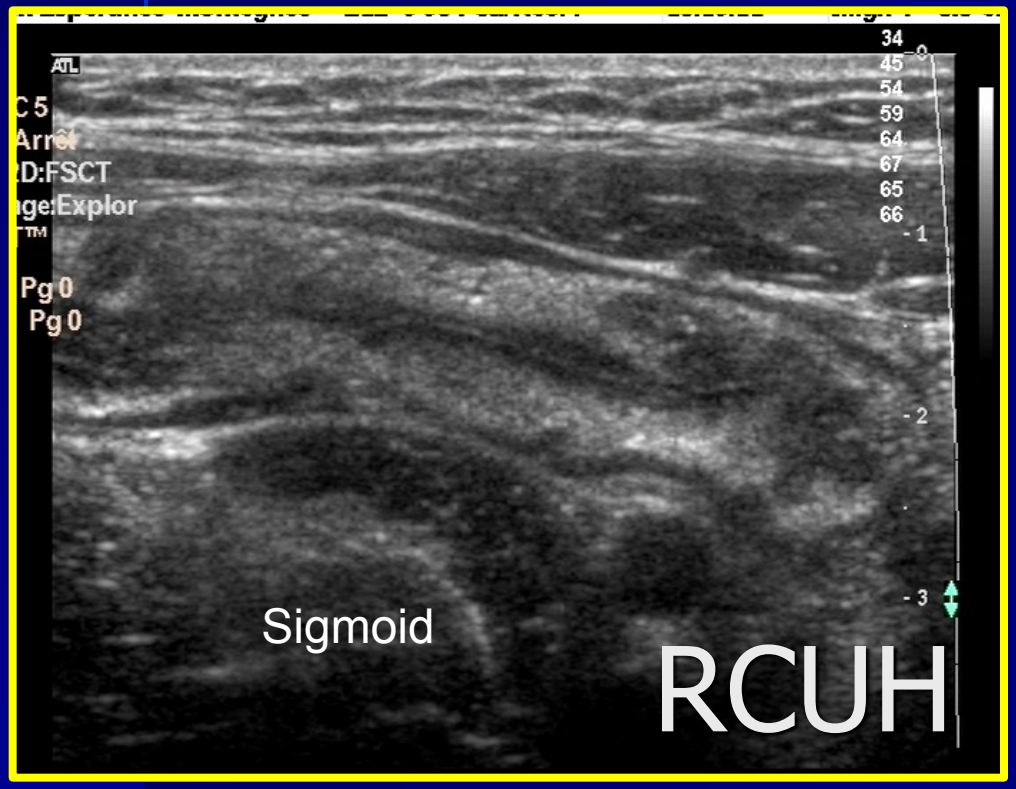
- Age idem MC
- Continue à partir du rectum
- Épaississement différenciée paroi
- Hyperhémie SM
- interface disparaît
- pas de péricolite
- Cholangite sclérosante

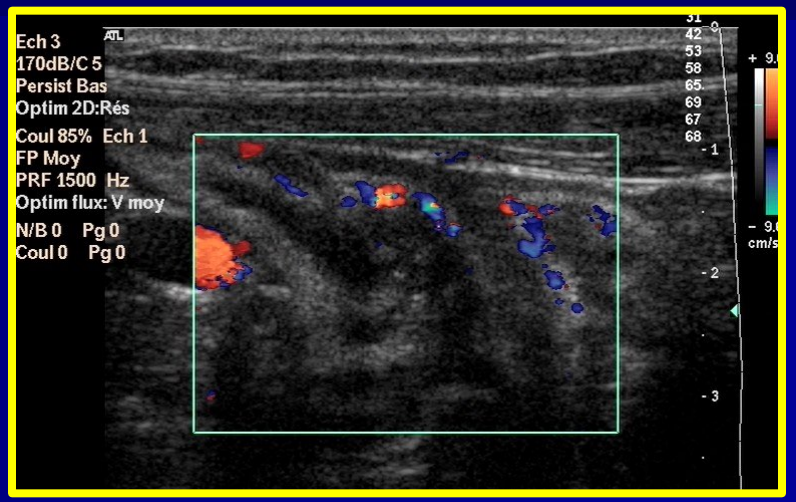
Girl, 12 years

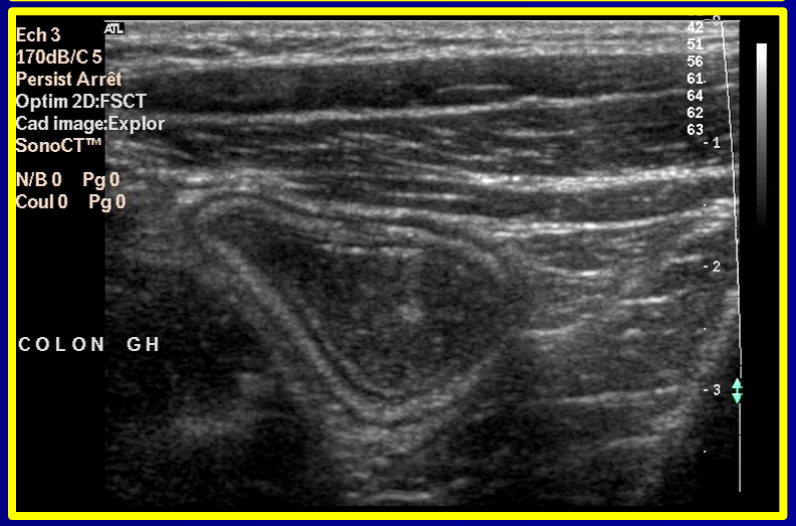
10 days of diarrhea, weight loss

Pancolitis

Day 5 , EB





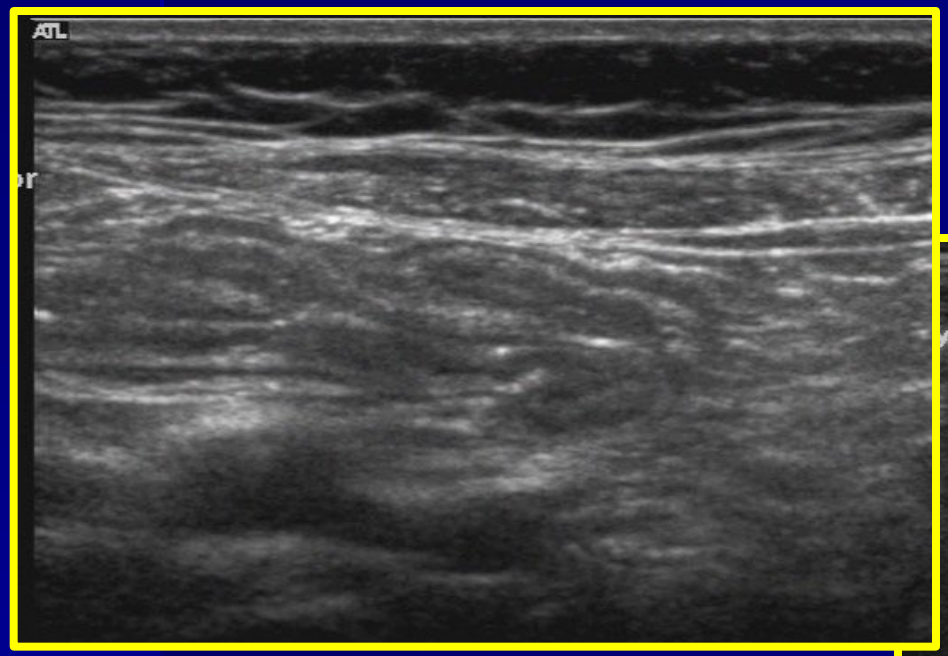


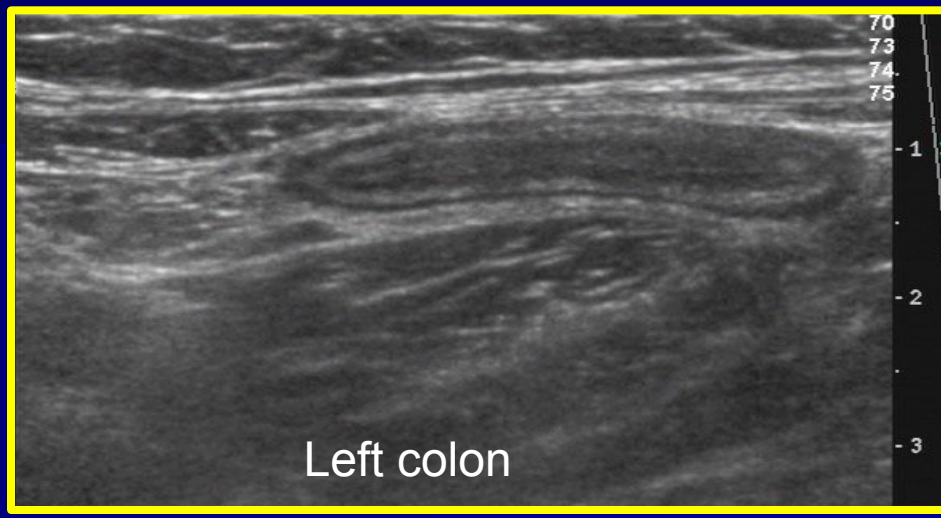
Girl, 14 y

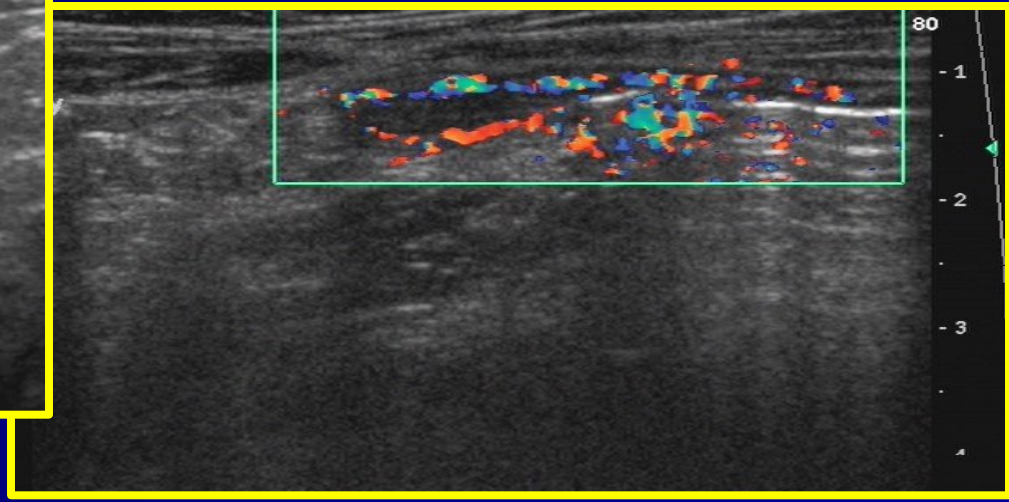
Previous history of neuroblastoma

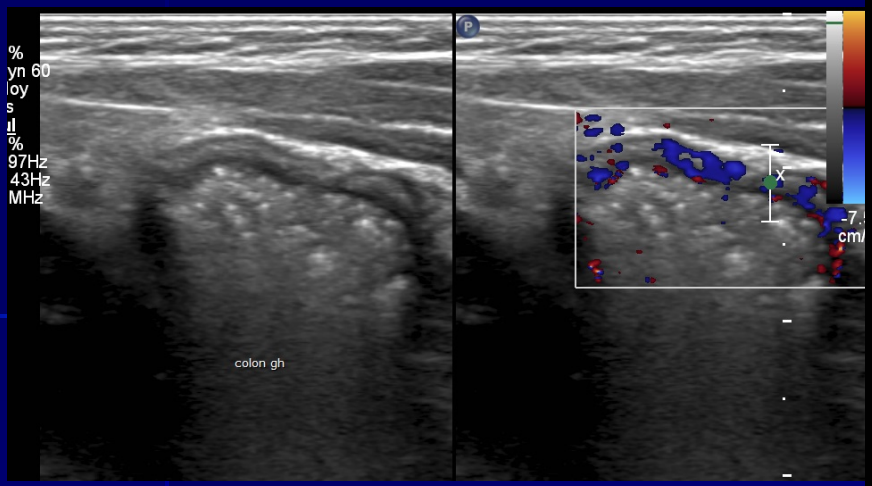
2 W of soft bloody stools, abdominal pain
US colitis / IBD

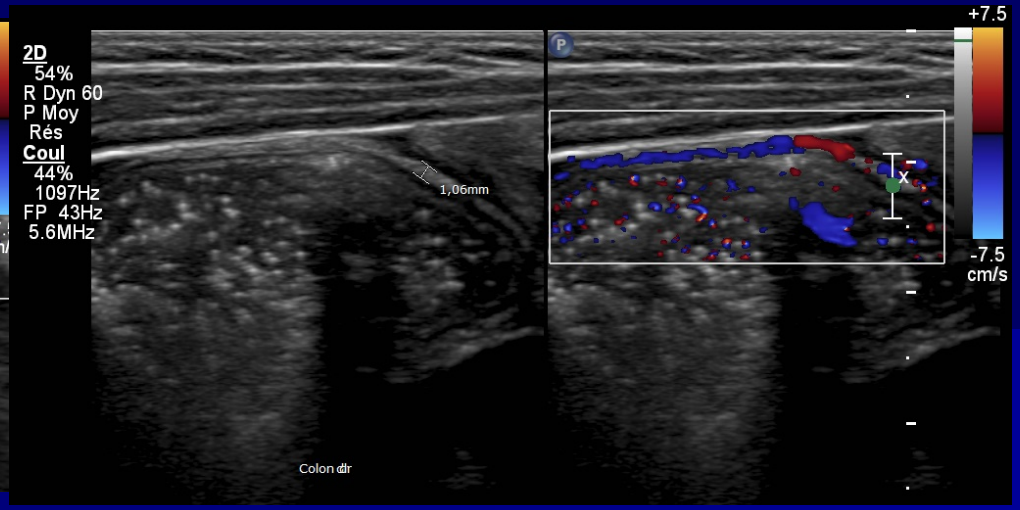
Day 4, EB ⟶ UC

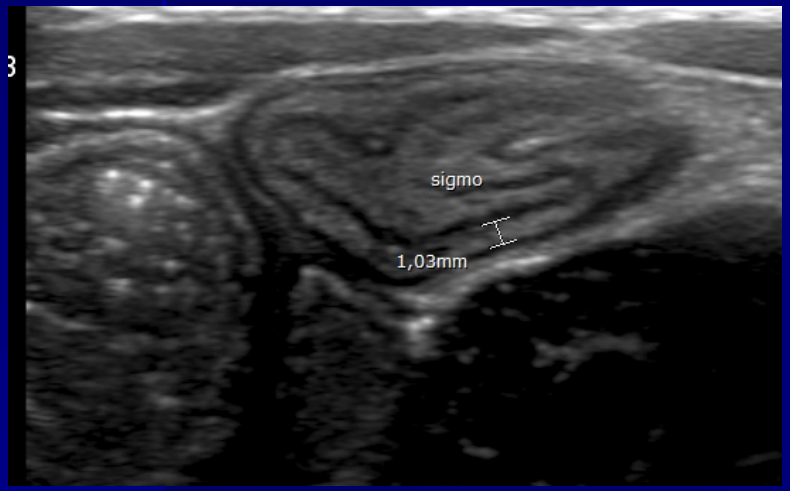




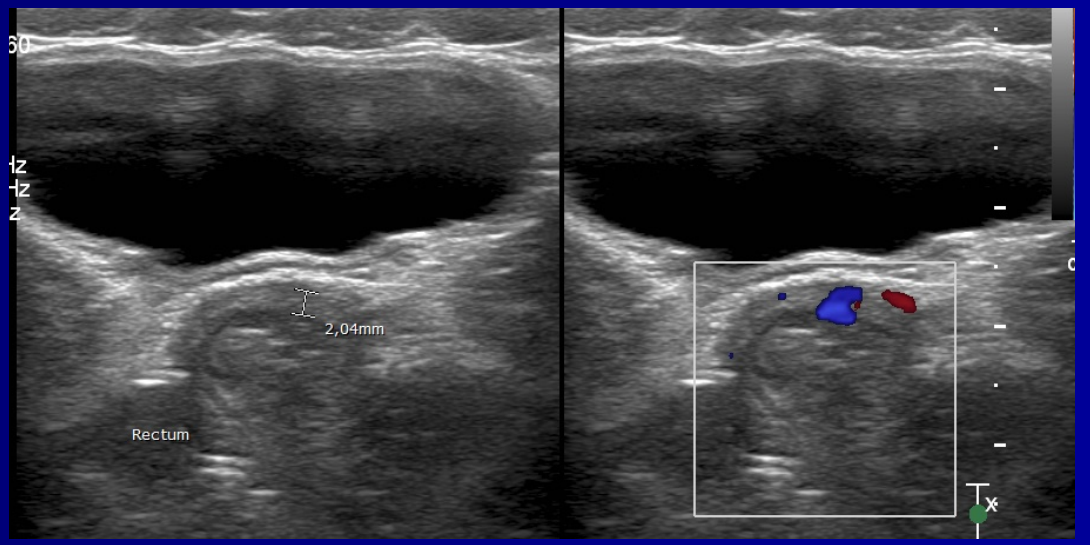



colon gh


2D
54%
R Dyn 60
P Moy
Rés
Coul
44%
1097Hz
FP 43Hz
5.6MHz
1,06mm
Colon dr
+7.5
-7.5
cm/s

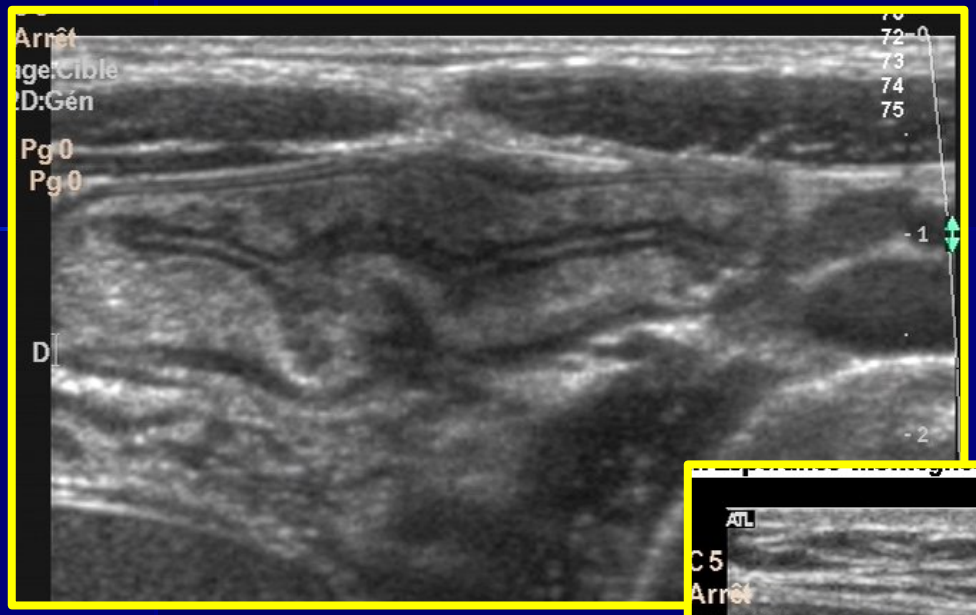

sigmo
1,03mm

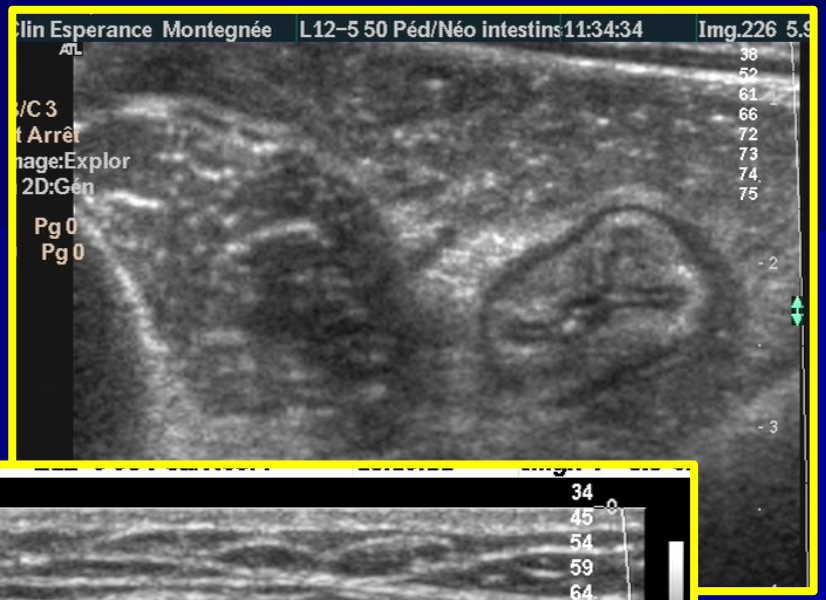
RCUH

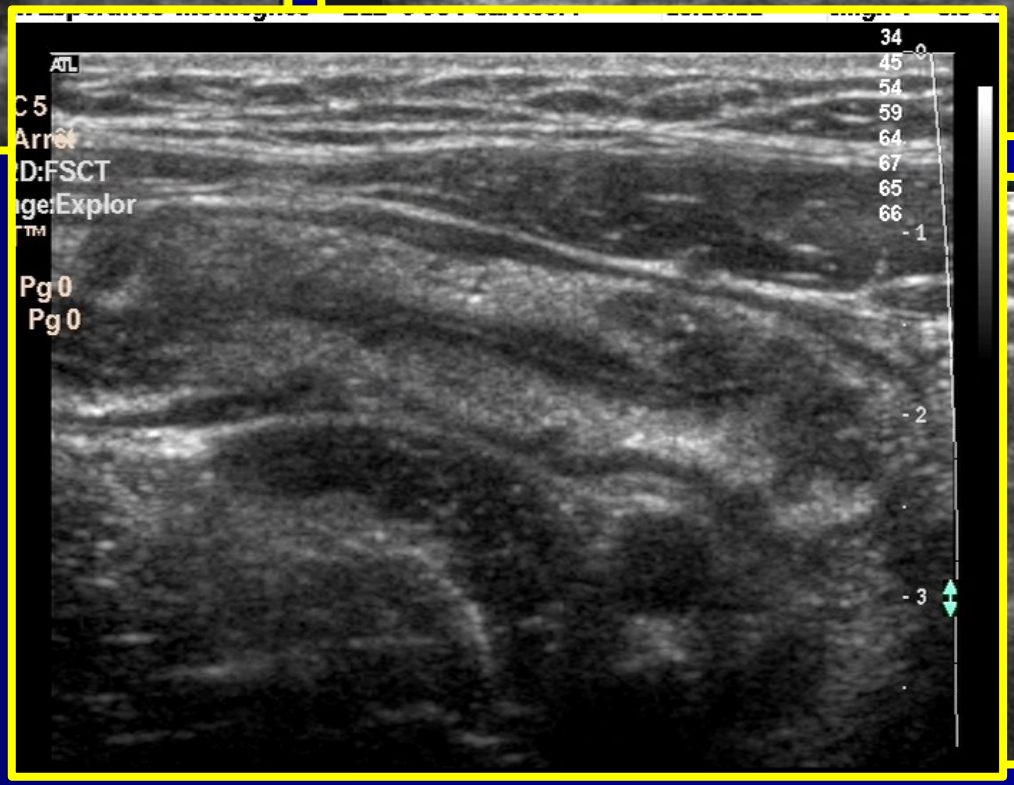

2,04mm
Rectum

MC	RCUH
Discontinues	Seul tenant du rectum
Localisées ou multifocales	Mais 2% non continu
Grêle et/ou colon	Rectum indemne 5-30%
Jejunum chez les petits	
Iléon terminal moins fréquent	Iléite de reflux
Superficielle ou transmurale	Superficielle >transmurale
■ Graisse mésentérique, fistule, abcès	■ Inflammation graisse rare

Recherche appendicite







39°

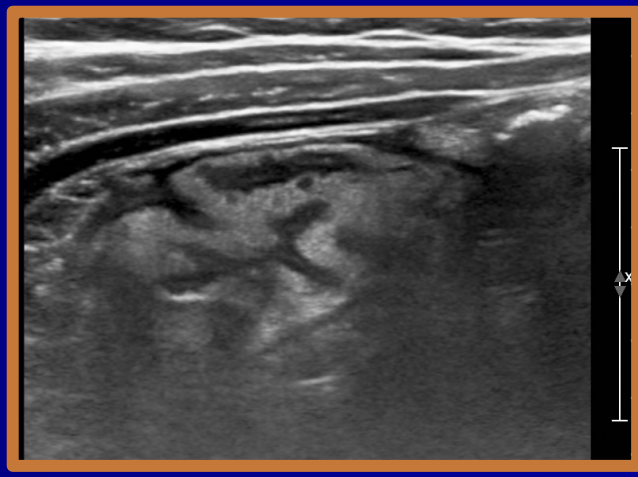
glairy stool,

Abd. Pain:

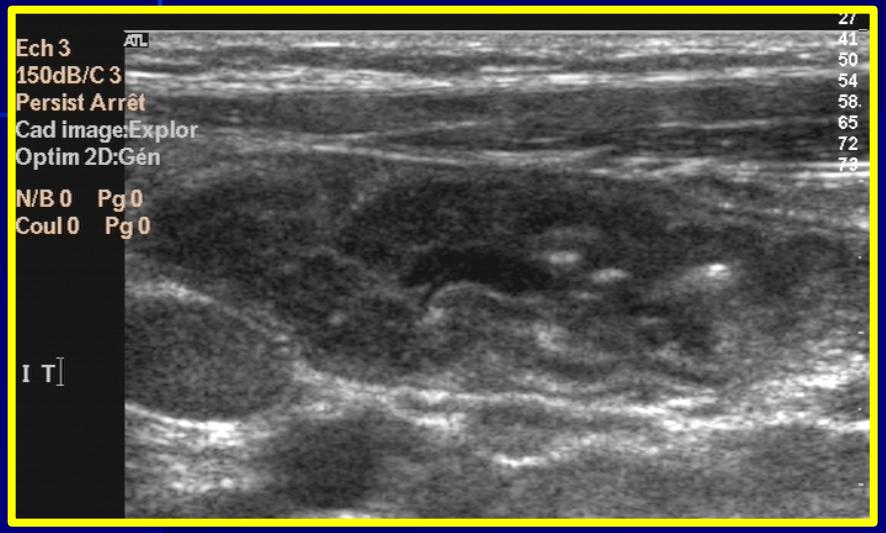
Infectious Ileocolitis and ileitis : US signs

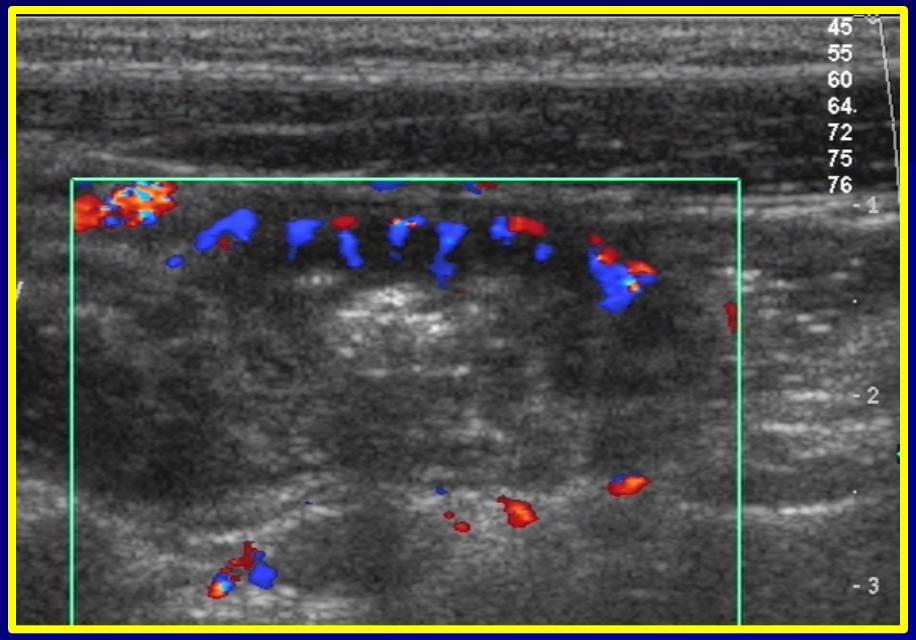
Salmonella, Shigella, Campylobacter, E.coli …

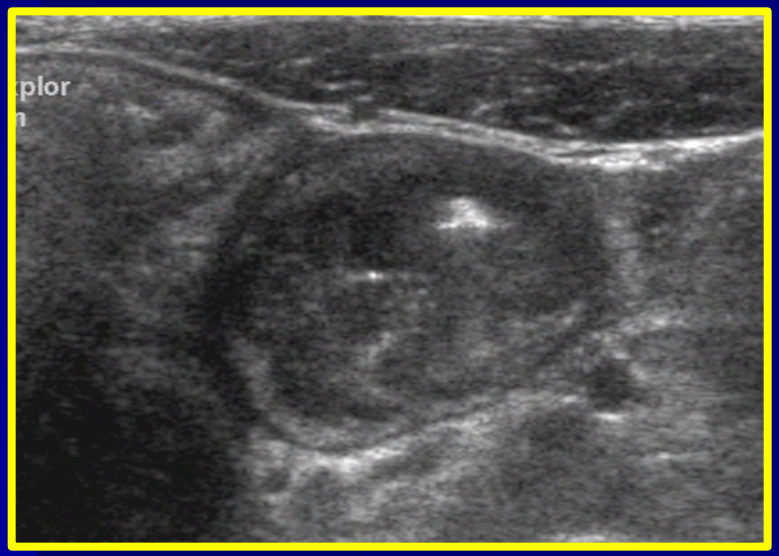
- Differentiated
- Submucosal: Hyperemic
  Empties haustrations,
  Polyploid semi lunar folds
  Blurring of valvulae conniventes
- Mesenteric and mesocolic nodes
- No perigut anomalies
- Normal appendix

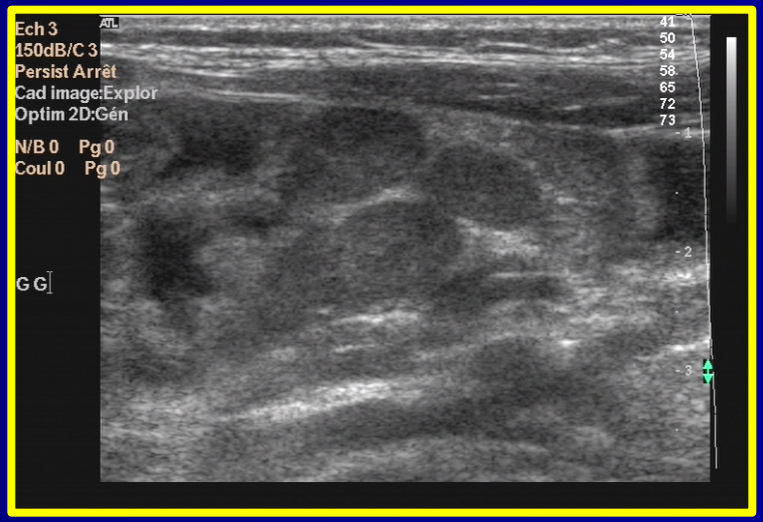


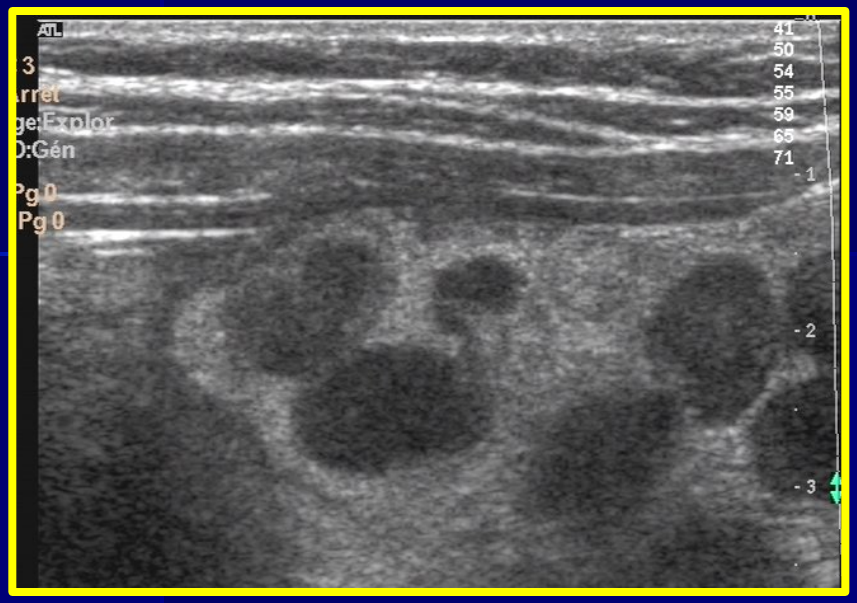
Male 9 y, abdominal pain, CD ?
Yersinia
Free of symptoms 4 m later

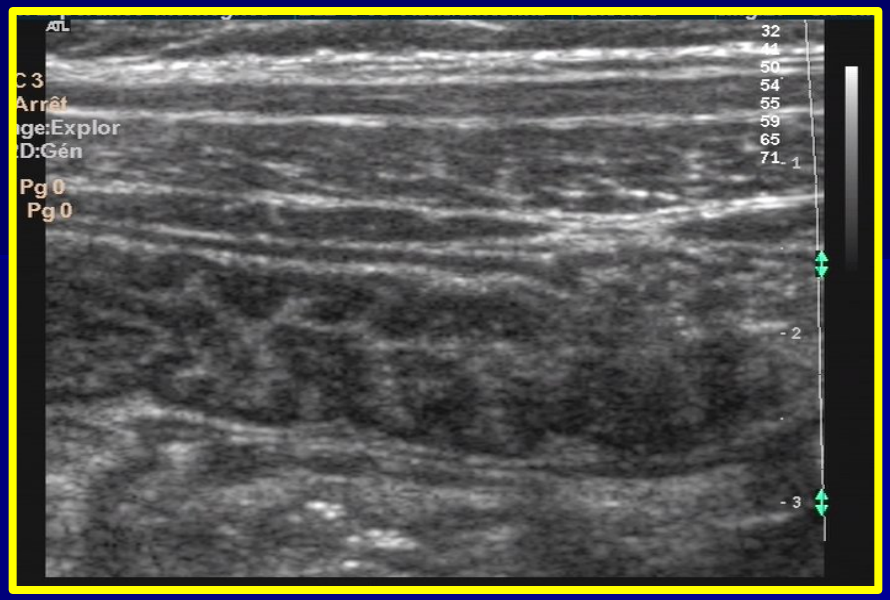


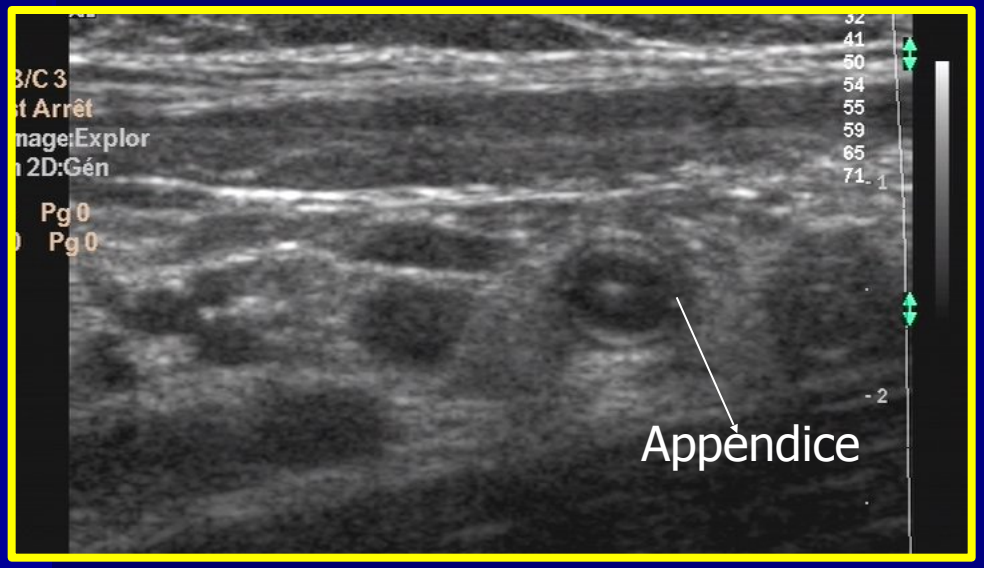












Male , 8 Y

Appendicitis ?

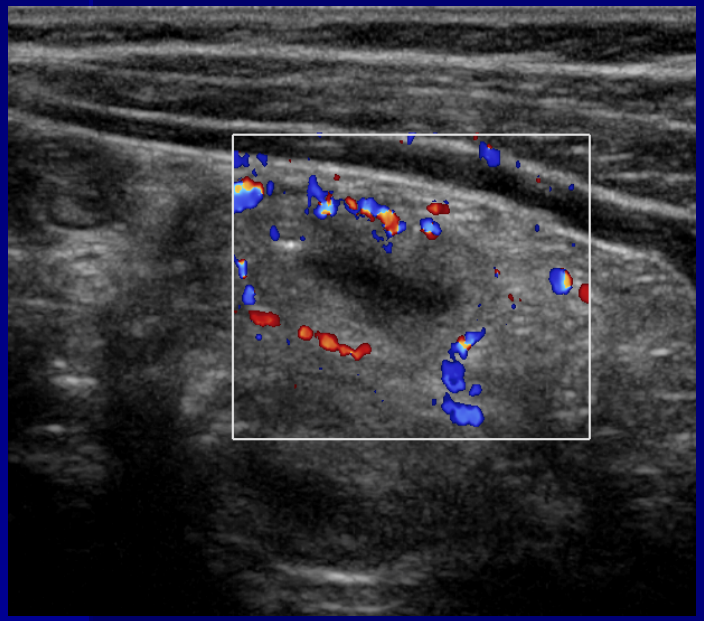
Adenitis, periadenitis : Yersinia

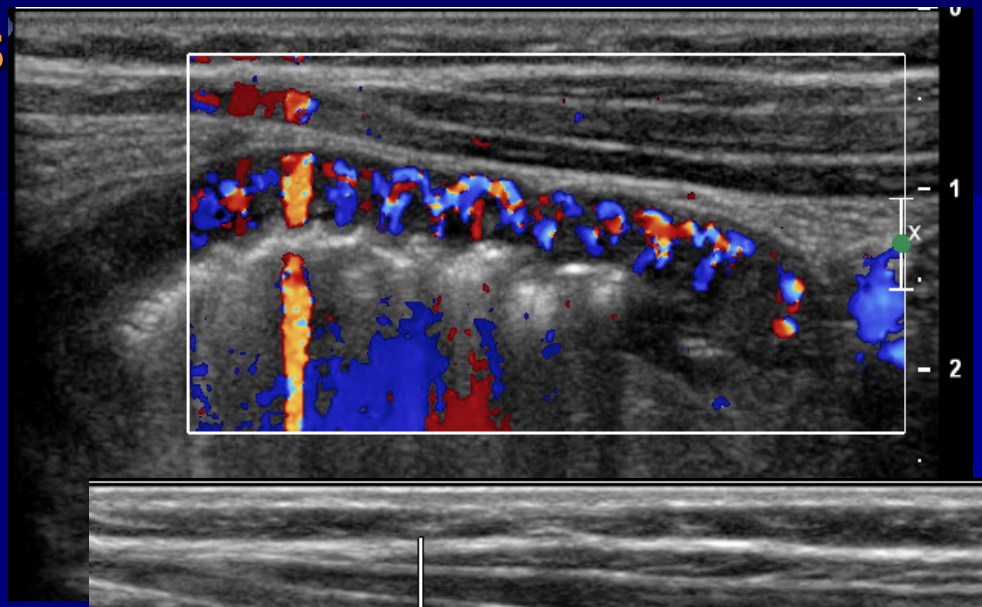
MC	Colite infectieuse
Discontinue	
Multifocale	Continue
Grêle et/ou colon	Iléocaecale - pancolique
Superficielle ou transmurale	Superficielle, transmurale?
Graisse mésentère	Possible
Fistule- Abcès	Nul
Petits ganglions	Volumineux ganglions

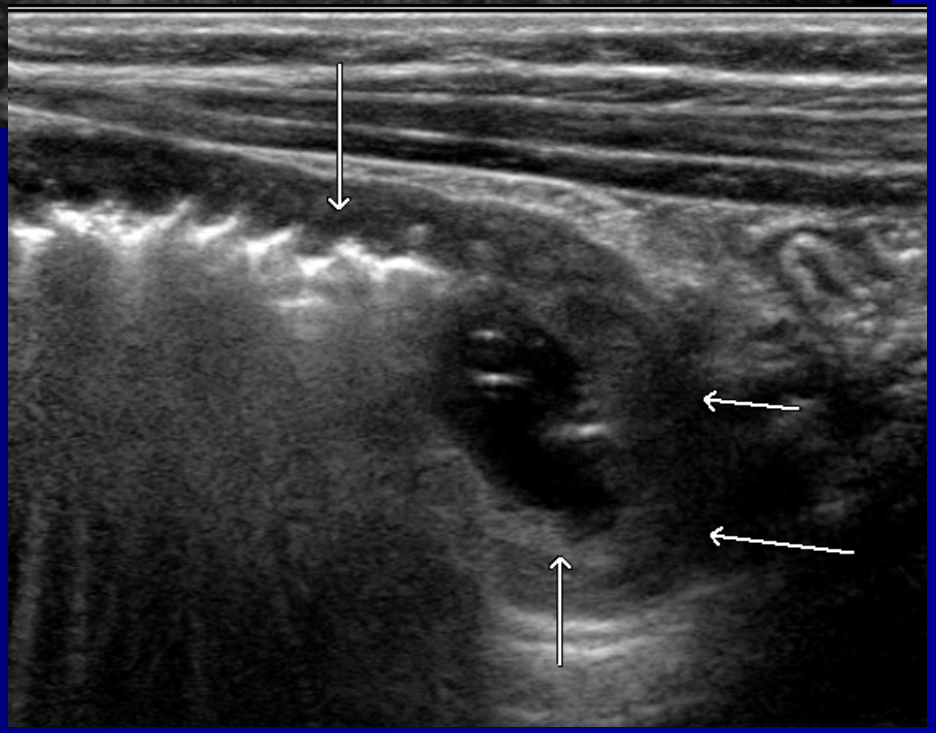
Flora, 5 ans, 38.5°c

D.abdominales, D. membres inférieurs

Jéjunum





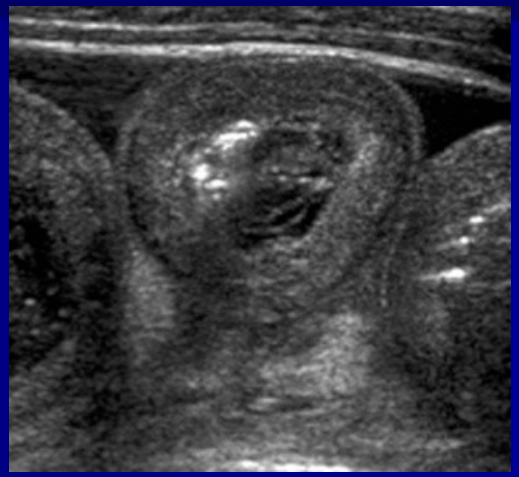


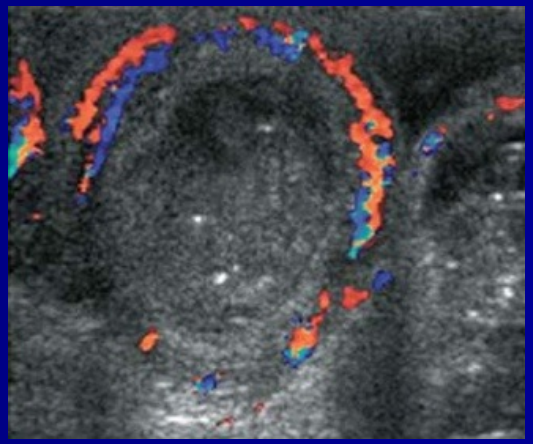
Purpura rhumatoïde

- Vascularite
- Triade : Rush cutané, arthralgie, douleur abdominale
  Parfois asynchrones
- 30 % D. Abdominales et Vomissements précèdent le rush cutané
- Infiltration labile oedémato-hémorragique S/M grêle (Jéjunum) et duodénum, possiblement pluri-segmentaire
- Protéinurie, conditionne le pronostic.

Purpura Rhumatoïde

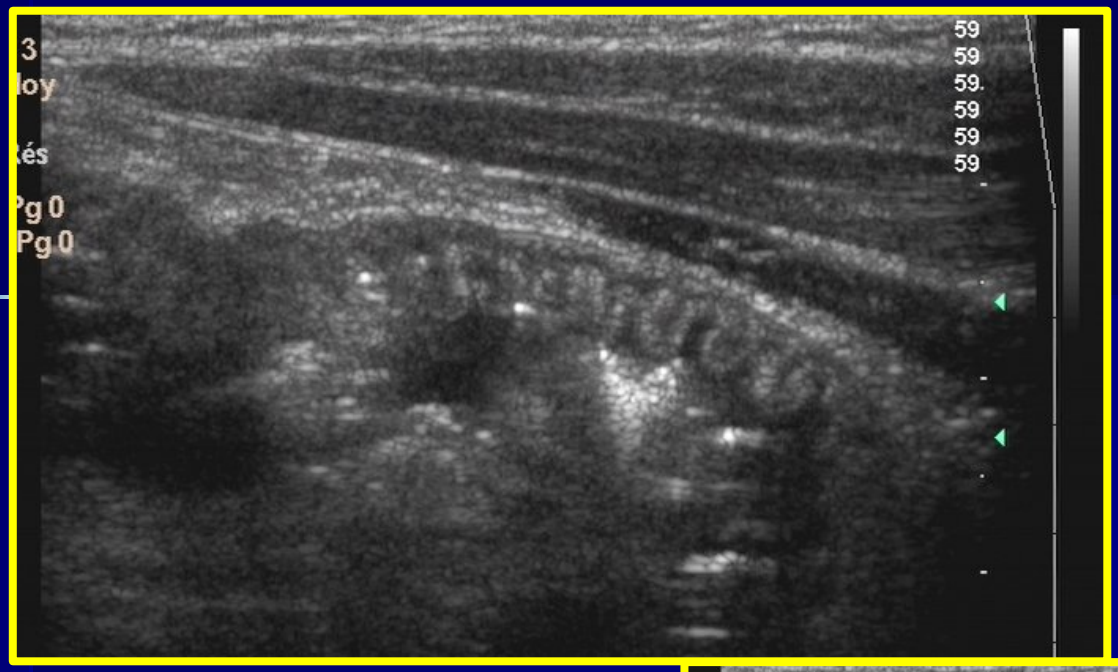
- US: Labile
- Epaississement dédifférencié homogène et circonférentiel
- Valvules conniventes, asymétriques, épaissies, effacées, lumière réduite, hypoperistaltisme
- Doppler en périphérie: S/M, séreuse, mésentère
- Complications: invagination intestinale aigüe, perforation (rarement)

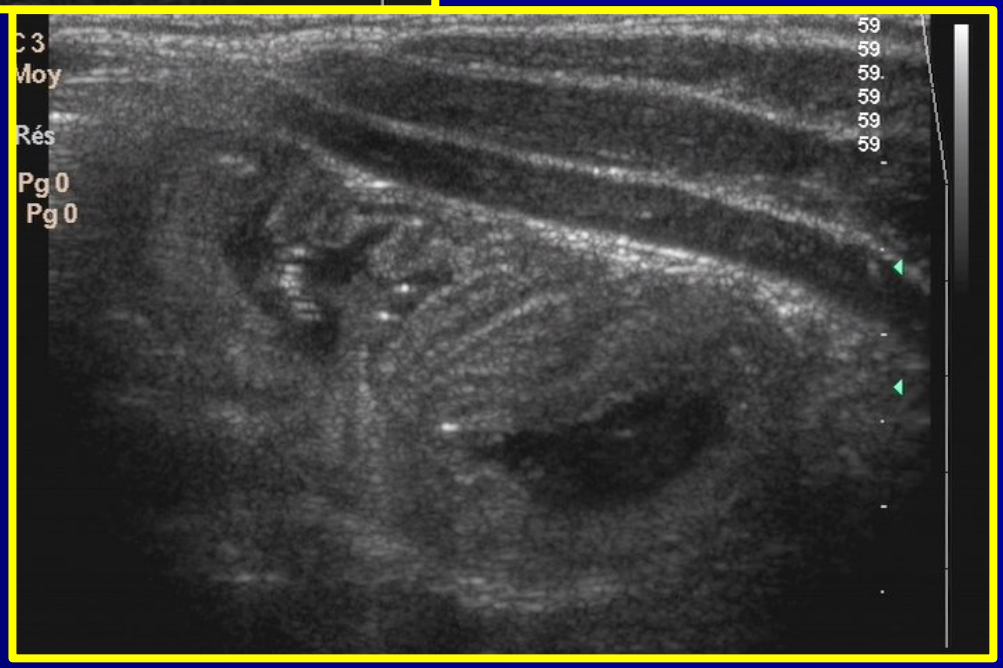




HSP

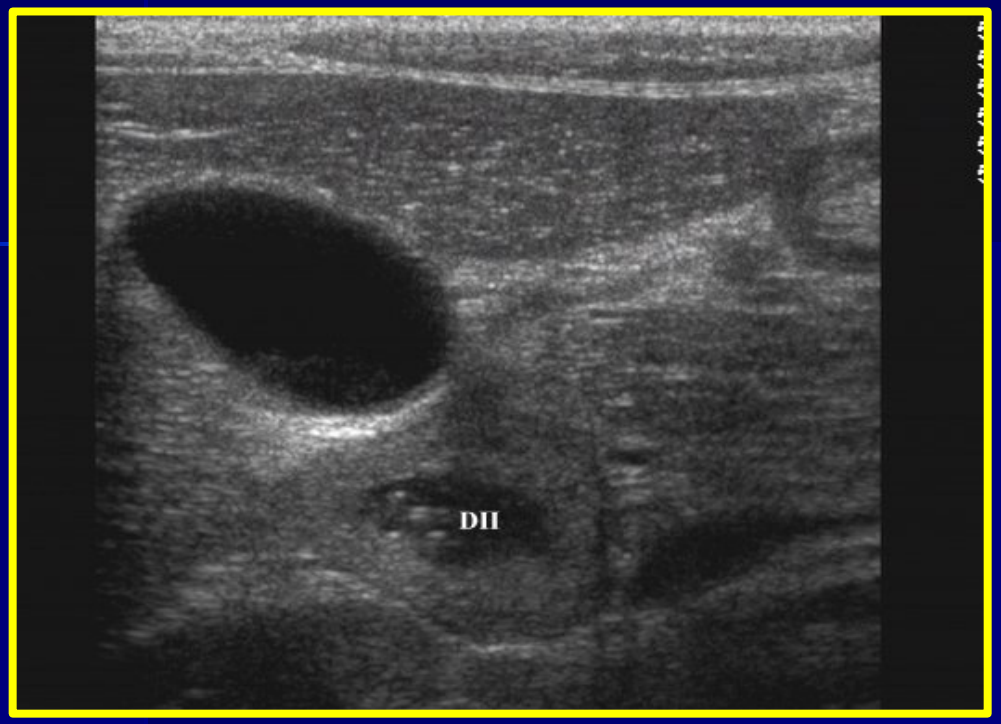
- J1

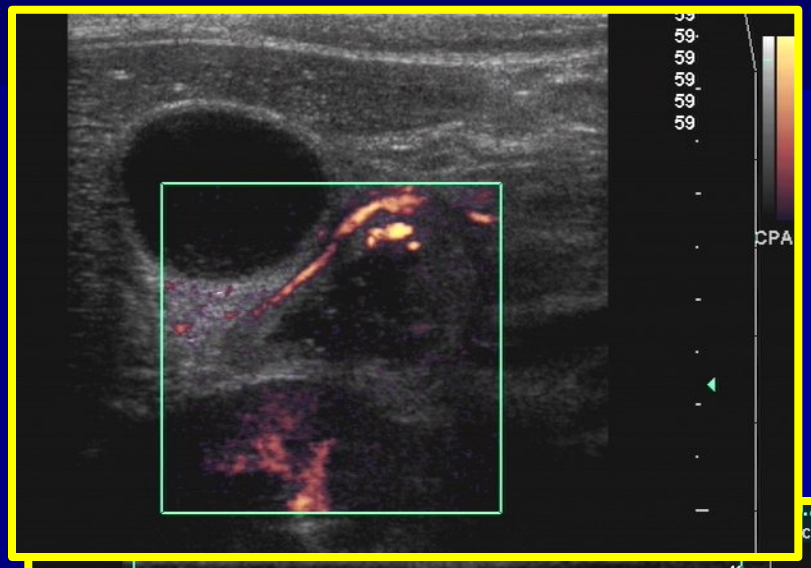


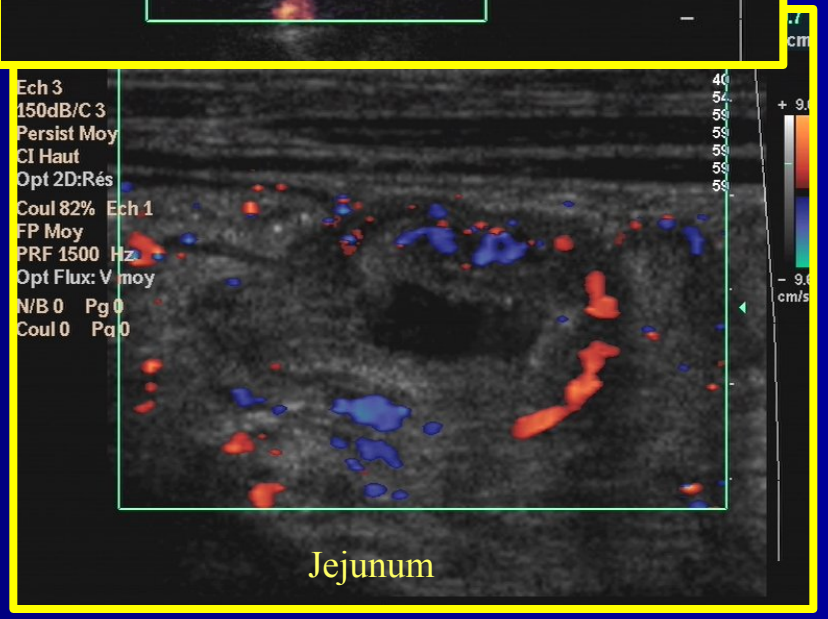


HSP

- J5



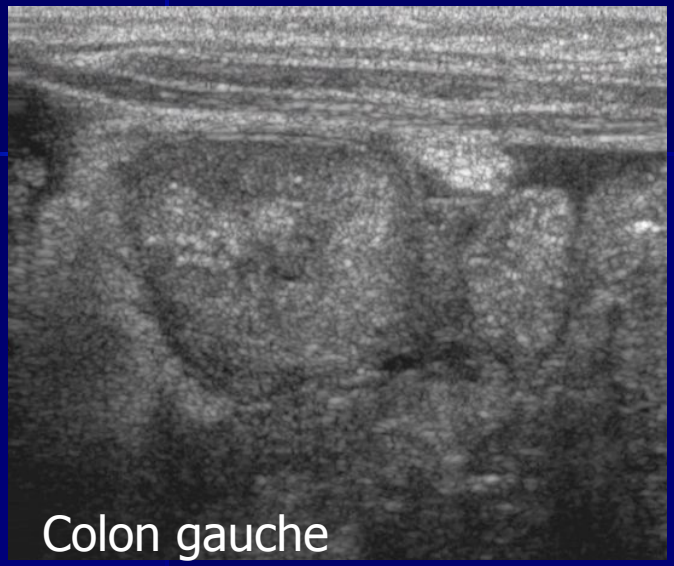




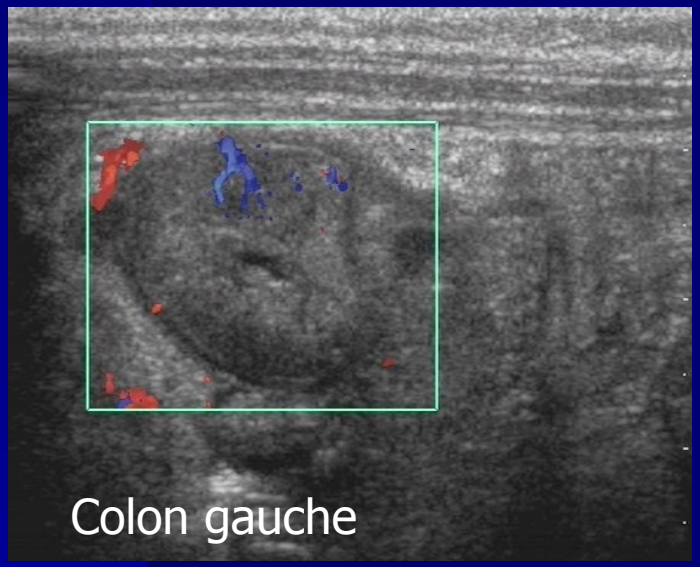
segmental circumferential submucosal thickening

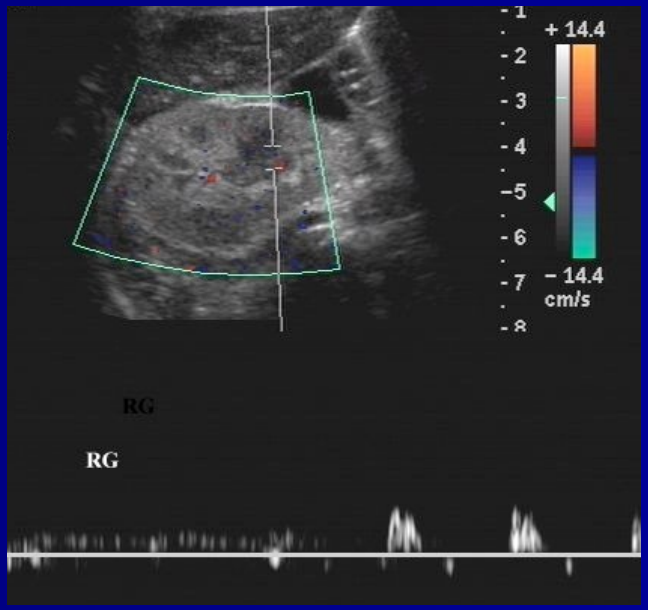
blurring of mucosal folds or haustrations

Valentine, 2 ans, selles sanglantes, Sans fièvre ni vomissement


Colon gauche

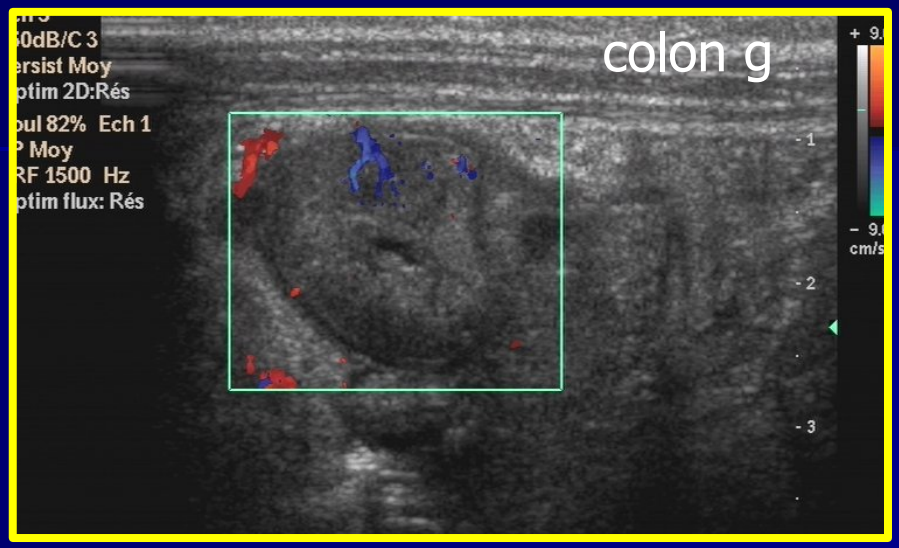
- Colite: dédifférencié, zones hyperéchogènes
- Reins hyper-échogènes
- IR augmentés

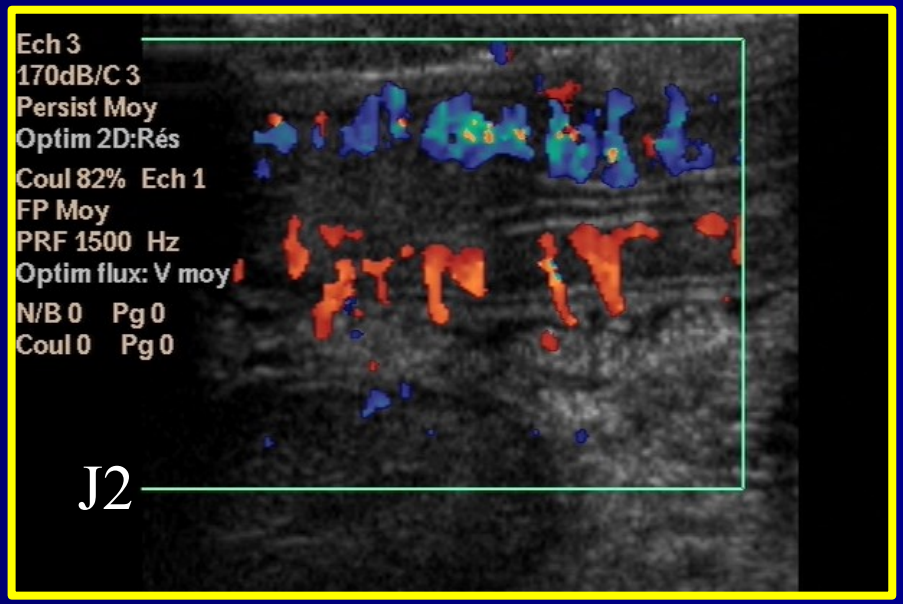

Colon gauche



Valentine

SHU

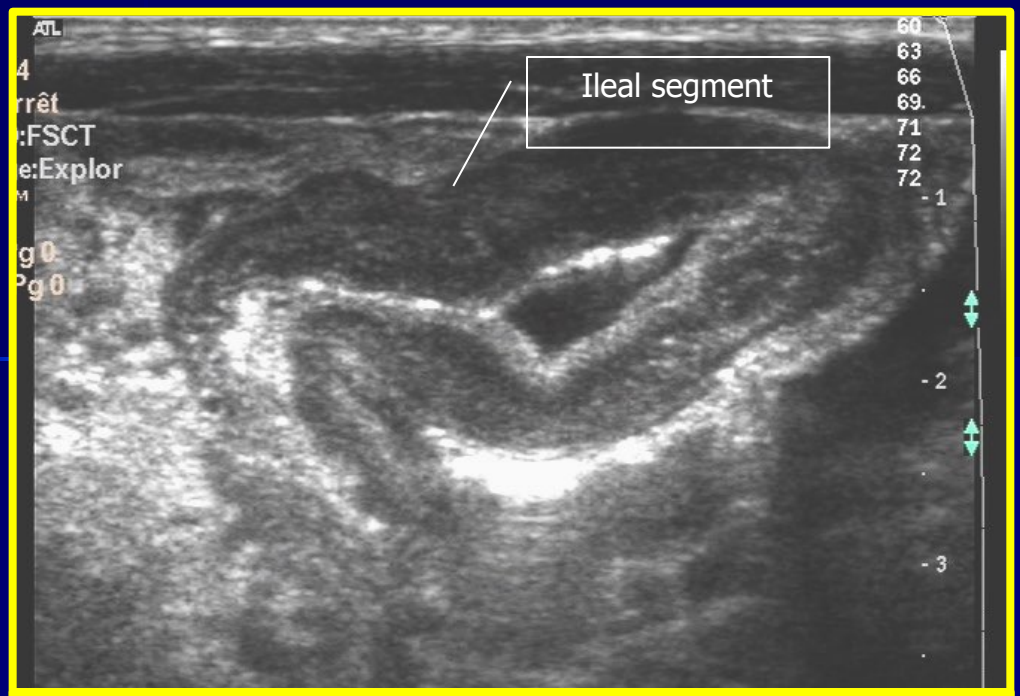


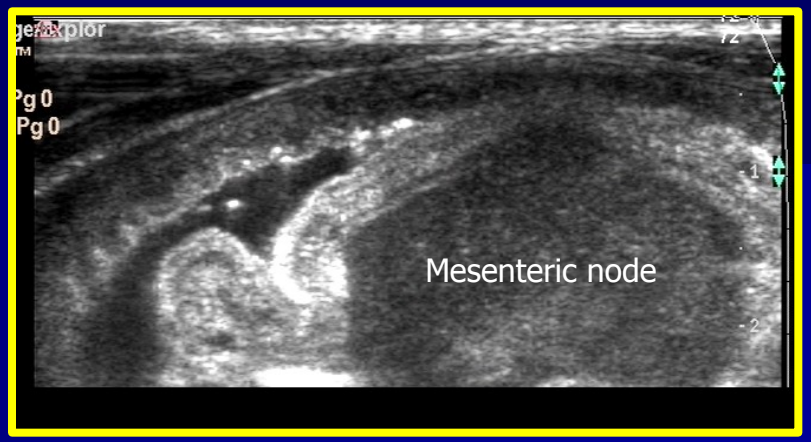


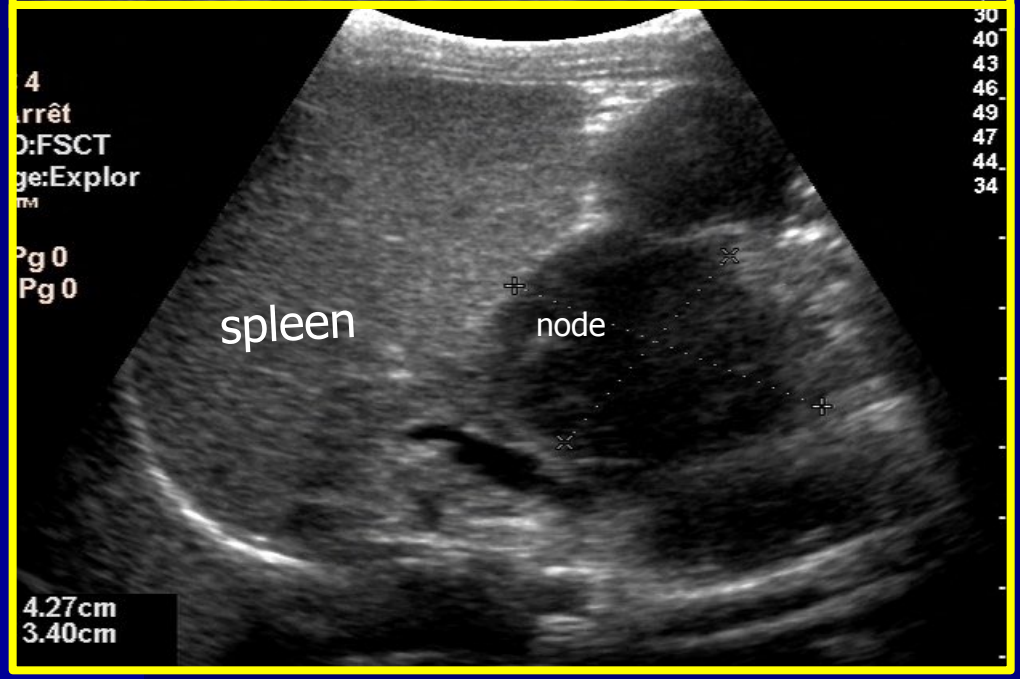
SHU

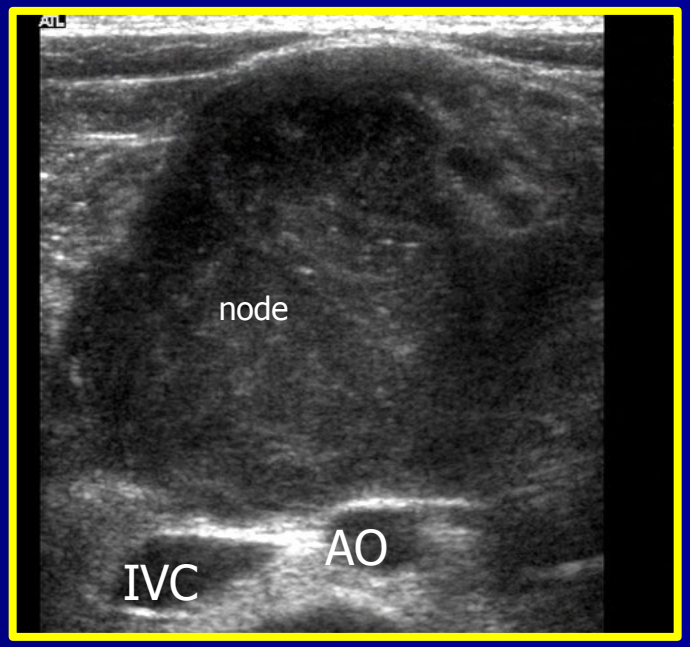
- < 10ans
- Toxine E Coli, ou Shigellae
- Micro-angiopathie : anémie hémolytique, thrombopénie, colon, rein, pancréas, coeur, SNC
- Diarrhée sanglante
- Formes SHU épargnant le colon
- Reins: Hyperéchogène
  Disparition diastole : précède et annonce l'anurie.
  Réapparition diastole : annonce le retour de la miction

Lymphoma


Ileal segment

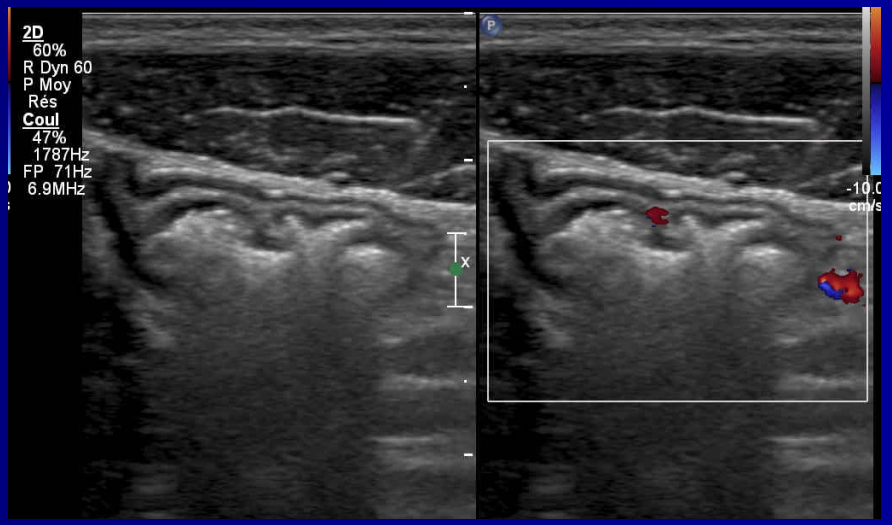

Mesenteric node

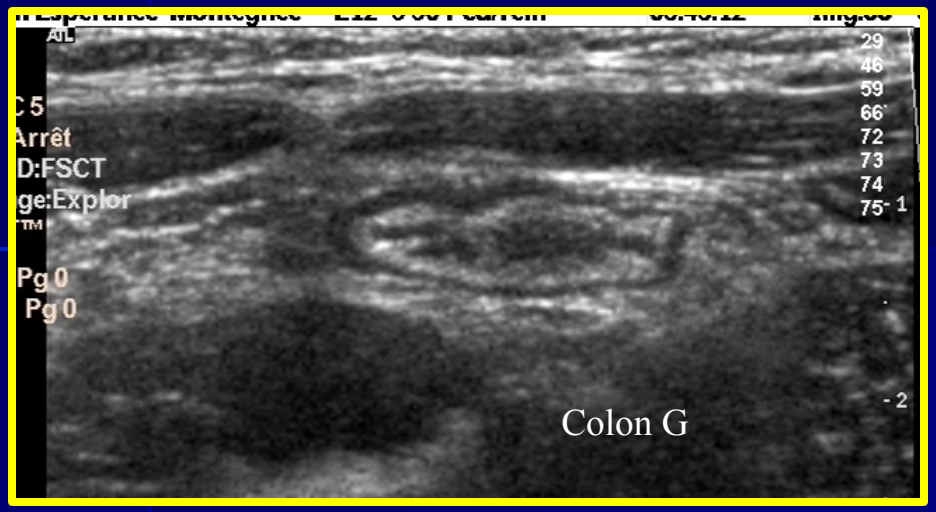

spleen
node
4.27cm
3.40cm


node
AO
IVC

Mucoviscidose digestive

- Atteinte glandulaire, mucus épais (carrefour iléo-caecal, colon, grêle)
- Différenciée
- Muqueuse et S/M
- Doppler nég.
- Tardivement: pancolique, lipomatose S/M



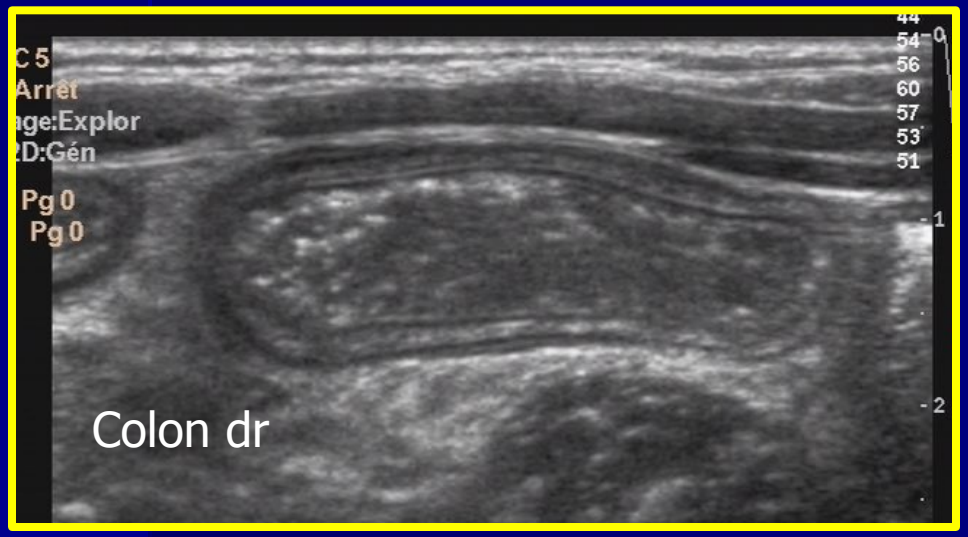


Male, 10y, 2W: anorexia,
bloody diarrhea

UC

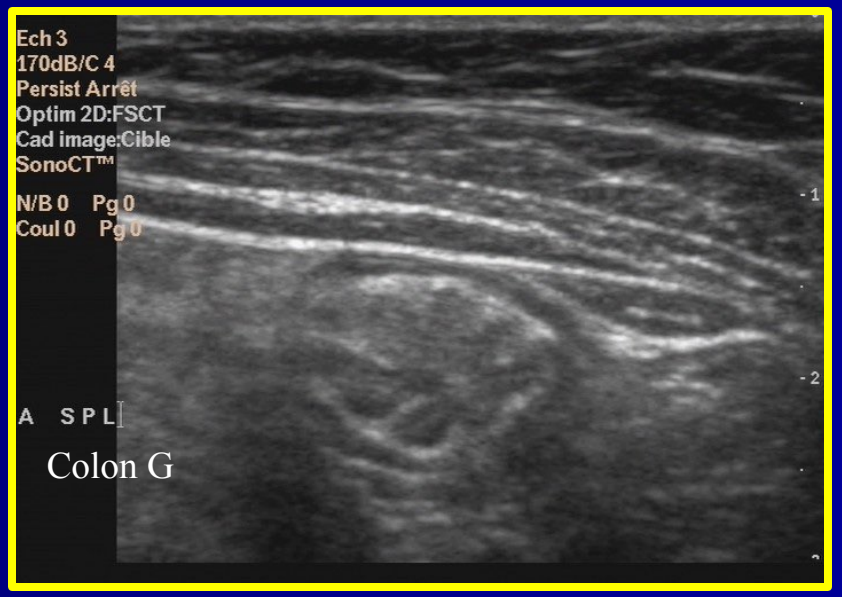
Girl, 11 y,Abd Pain, diarrhea
VS = 3 mm/H
Pancolitis

MC



Male, 4y, fever, diarrhea
Vomitting, apathic

Shigellae



Conclusion

- US and color Doppler sonography help in the differentiation of causes of bowel wall thickening in children

- But was most useful when considered with :
  - clinical situation
  - age
  - location of the disease

Siegel MJ, Freidland JA, Hildebolt CF. Bowel :wall thickening in children: differentiation with US.Radiology**1997** ;203:631–635