

Ultrasonografické vyšetření žlučníku a žlučových cest

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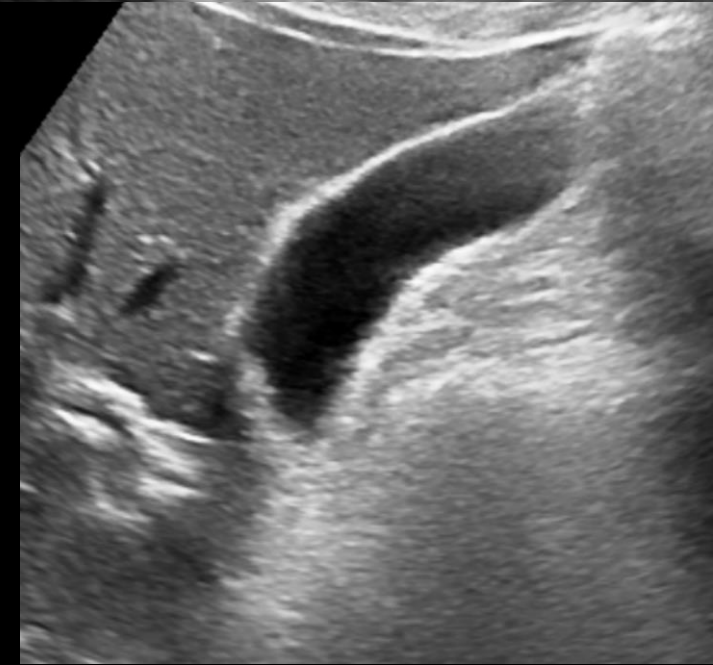
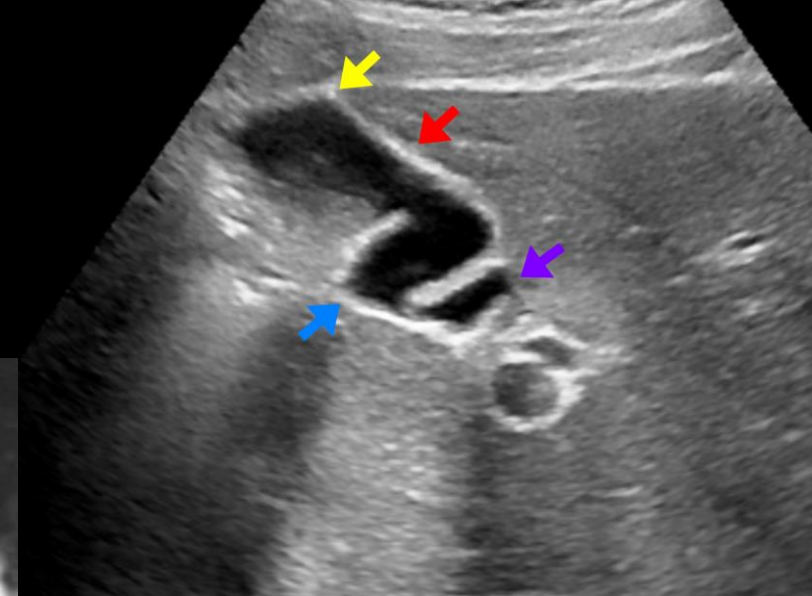
Přednosta doc. MUDr. Marek Mechl, Ph.D., MBA

Žlučník

- uložen ve fossa vesicae biliaris
- fundus, corpus, infundibulum, krček -> ductus cysticus

Žlučovody

- drenáž žluči z jater do duodena
- intrahepatální
ductus hepaticus dexter et sinister
- extrahepatální
ductus hepaticus communis
ductus choledochus



Patologie žlučníku a žlučových cest

Patologie žlučníku



patologický obsah

- sludge
- cholecystolithiáza
- polypy

zesílení stěny

- cholecystitida
- tumor
- adenomyomatóza

Patologie žlučových cest



zesílení stěny

- cholangitida
- tumor

dilatace

- choledocholithiáza
- tumor (žlučových cest, pankreatu...)

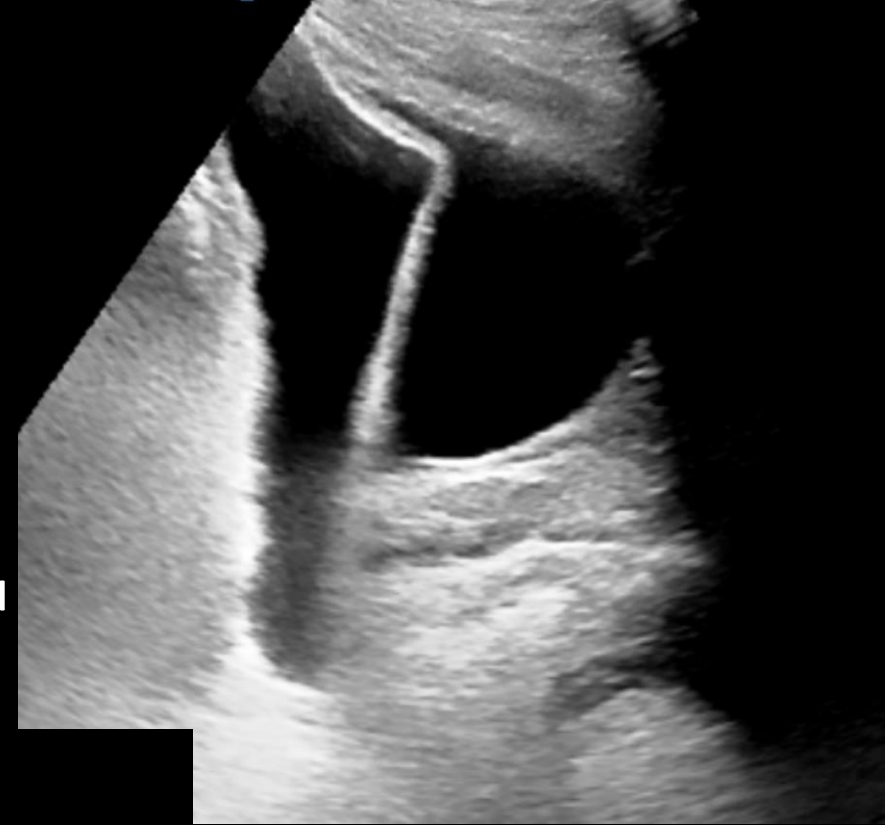
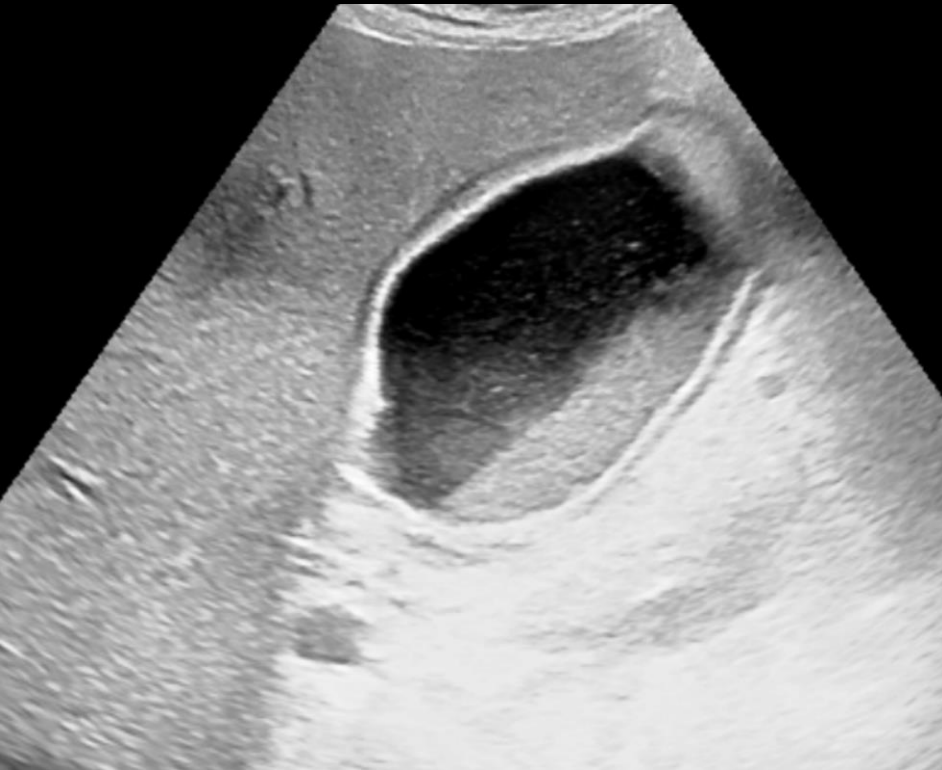


ostatní

- vrozené vývojové vady
- anomálie tvaru

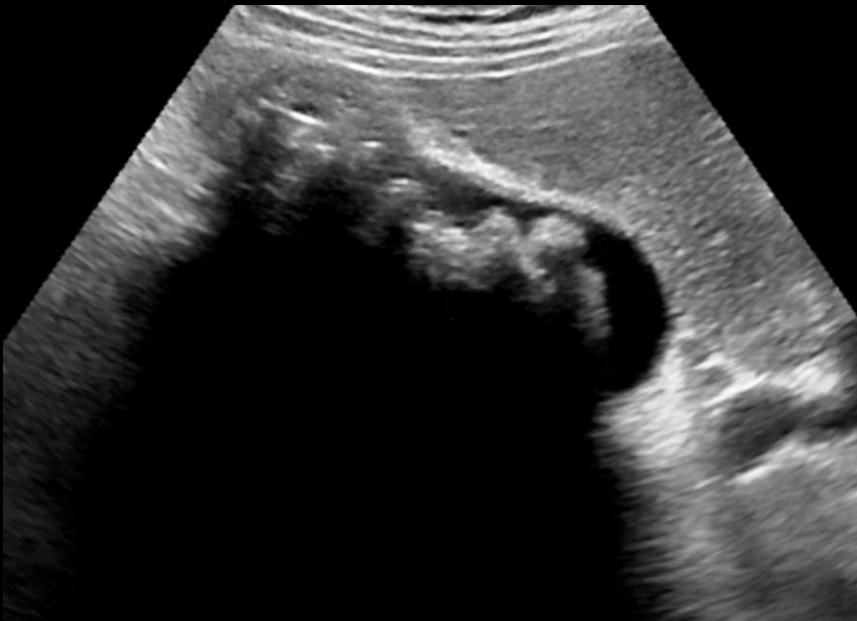
Patologický obsah ve žlučníku - sludge

- vzniká zahuštěním obsahu ve žlučníku
- hladovění, parenterální výživa
- echogenní obsah, bez vaskularizace v doppler módu



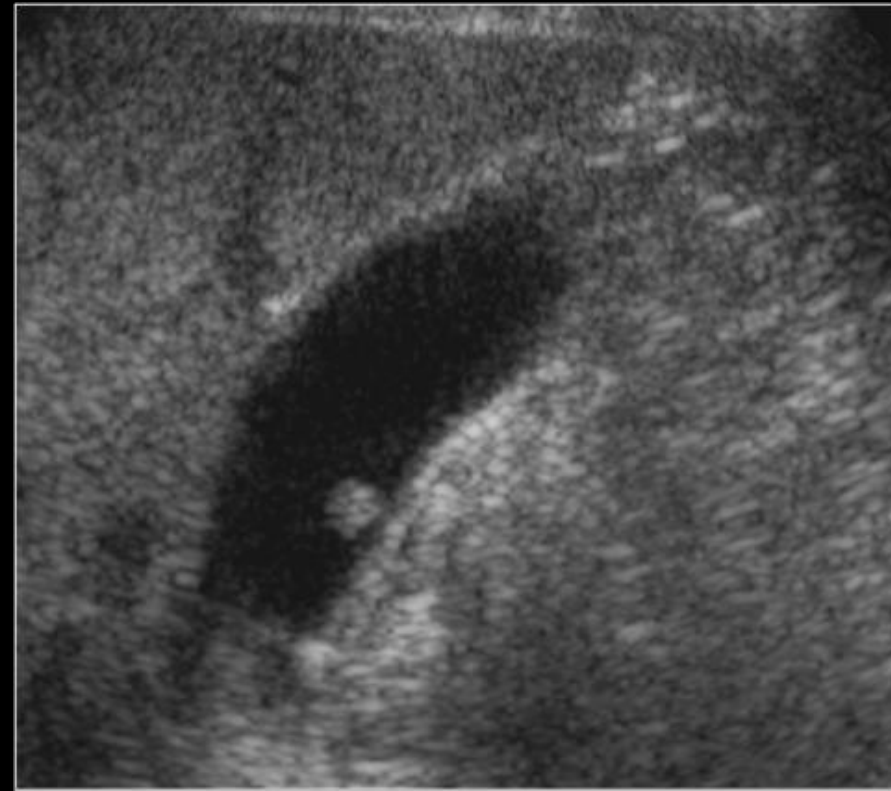
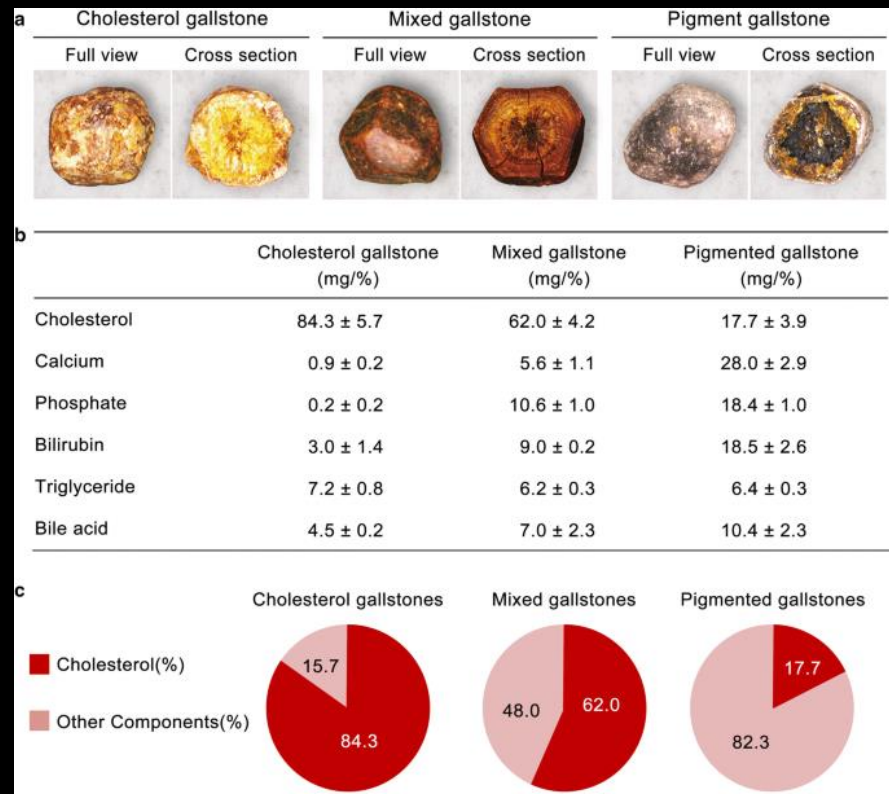
Patologický obsah ve žlučníku - cholecystolithiáza

- bolesti v pravém hypochondriu v návaznosti na jídlo
- elevace ALT, GGT, bilirubinu
- klinická otázka
 - o cholecystolithiáza?
 - o cholecystitida (komplikace)?
 - o dilatace (obstrukce) žlučových cest?



Cholecystolithiáza (UZ)

- prevalence 6,1 % (v Mexiku 25,8 %)
- 75-80 % není RTG kontrastních (nemusí být vidět na RTG/CT)



Komplikace cholecystolithiázy

Abd Renal
C5-1
25Hz
RS

2D
61%
Dyn R 55
P Low
HGen

TIS0.2 MI 1.3

M3

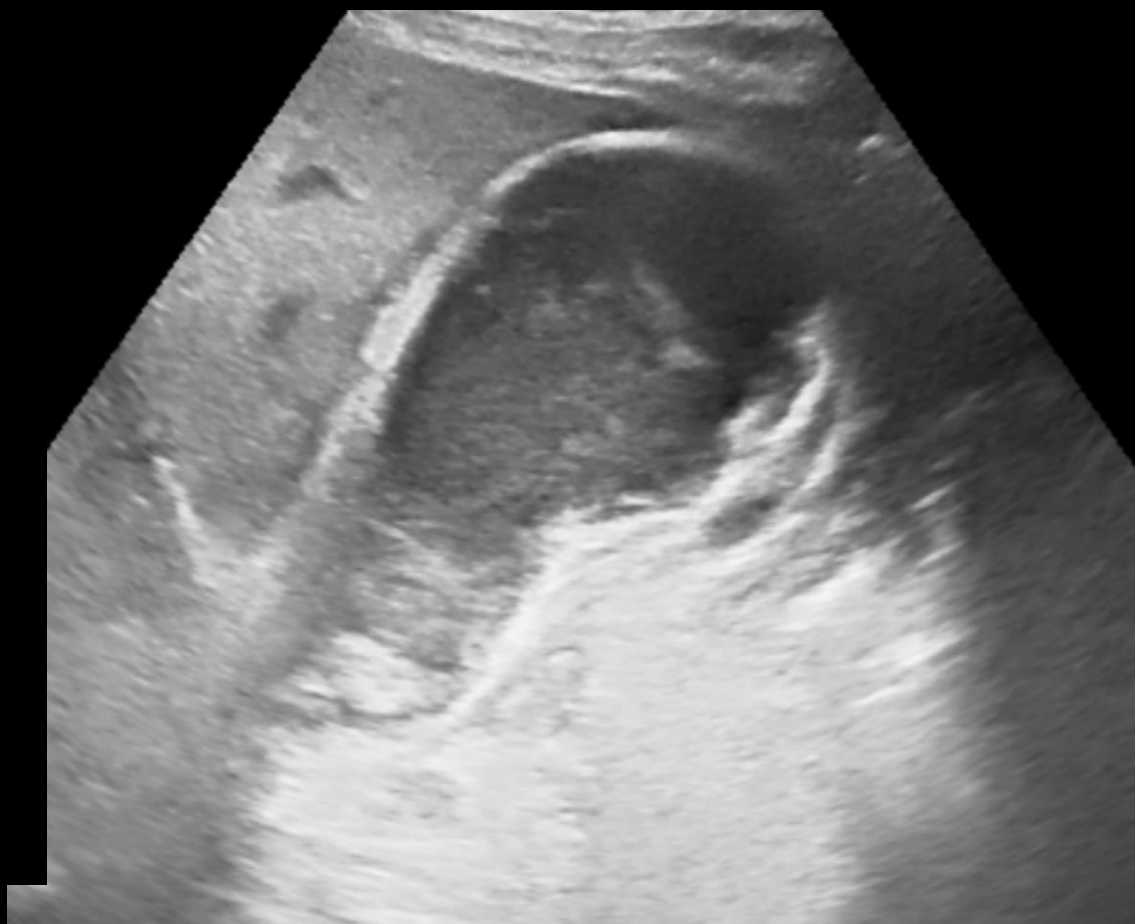
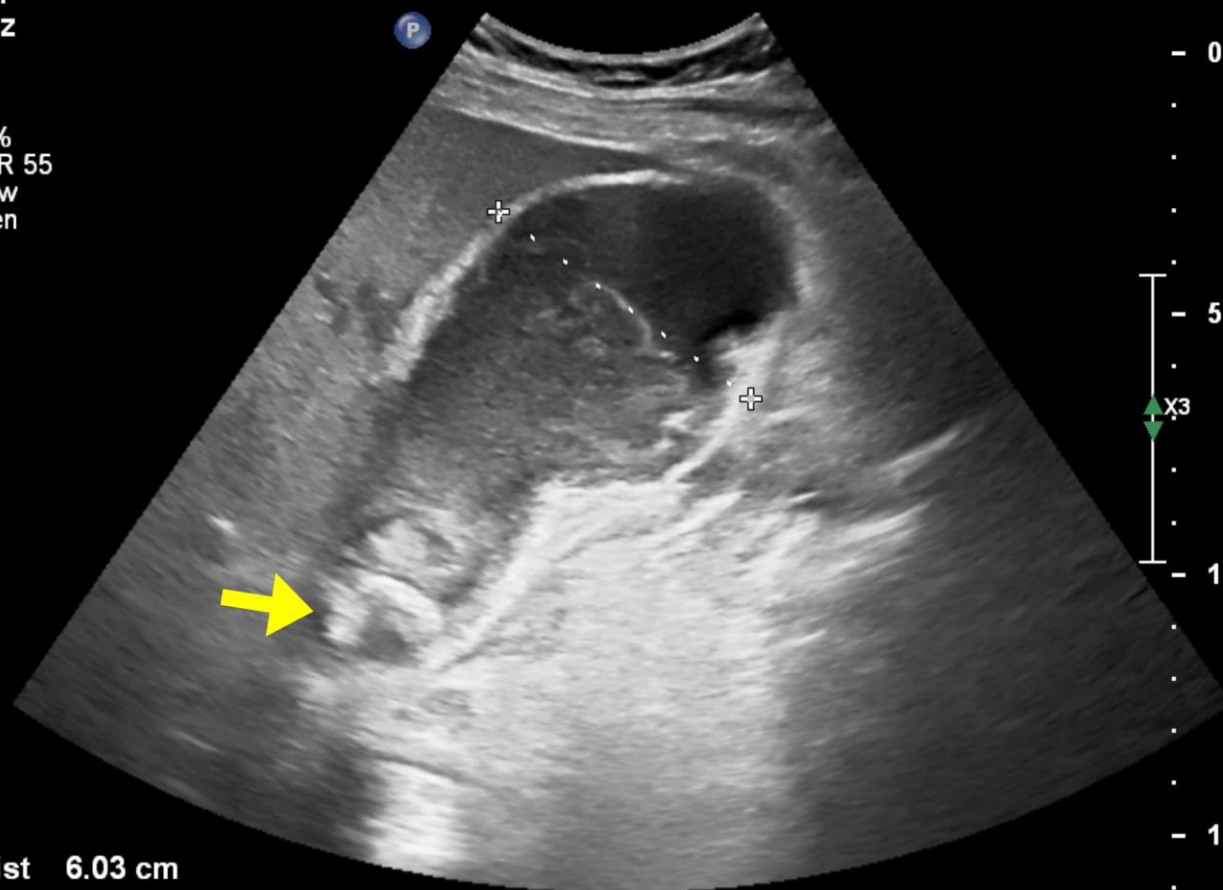
- 0

- 5

- 10

- 15

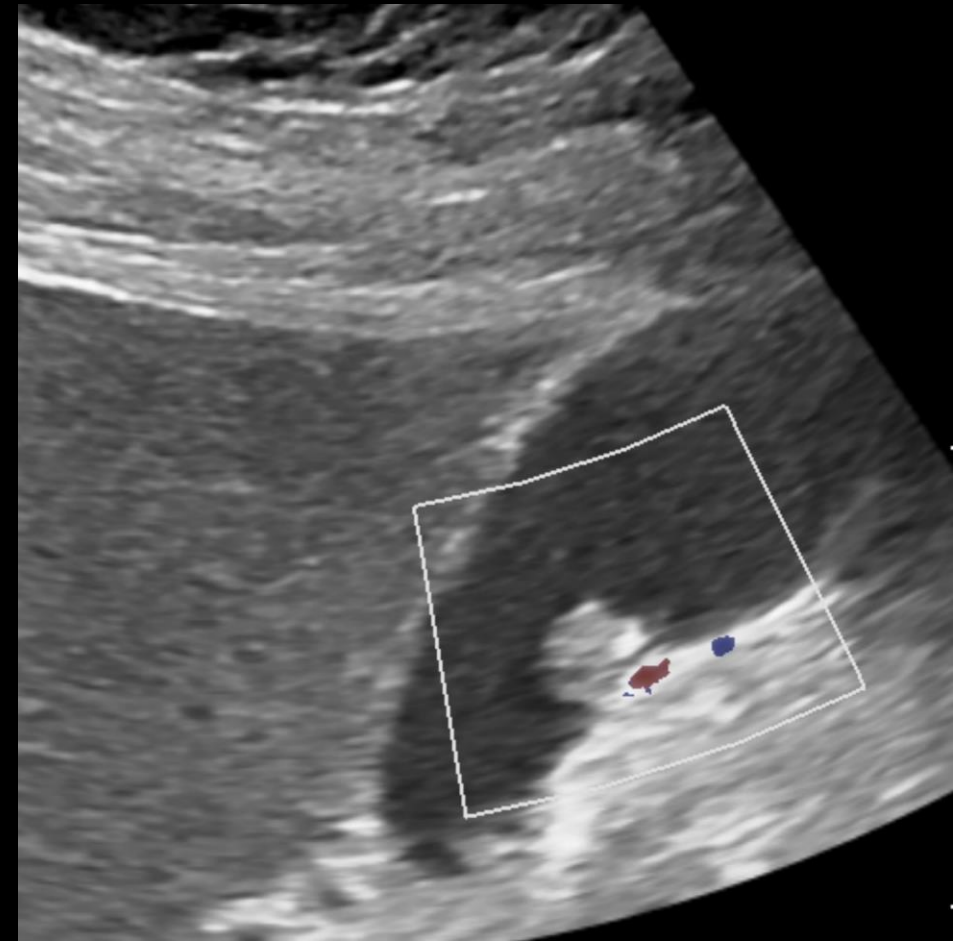
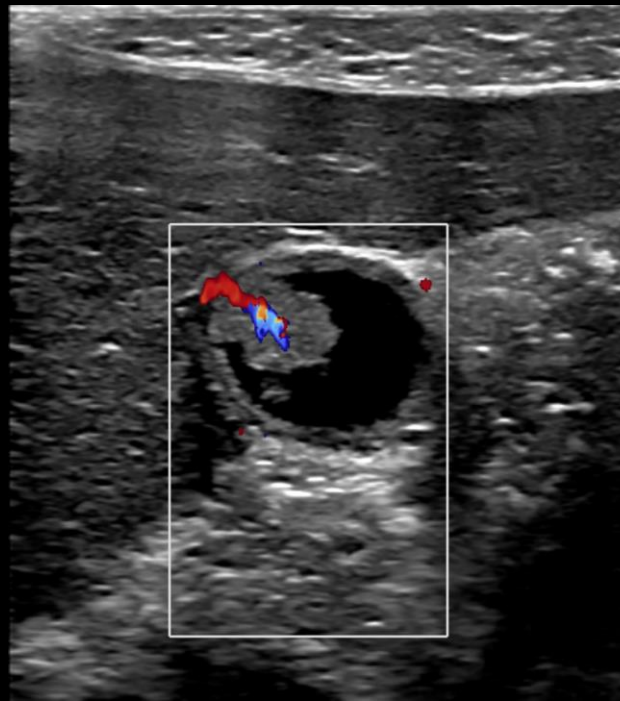
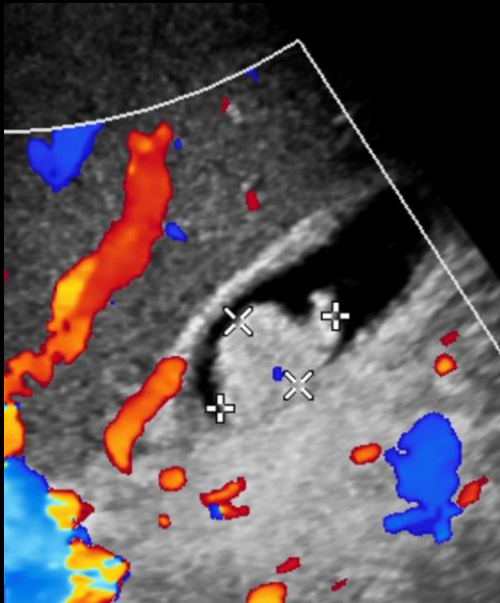
✧ Dist 6.03 cm



Patologický obsah - polypy

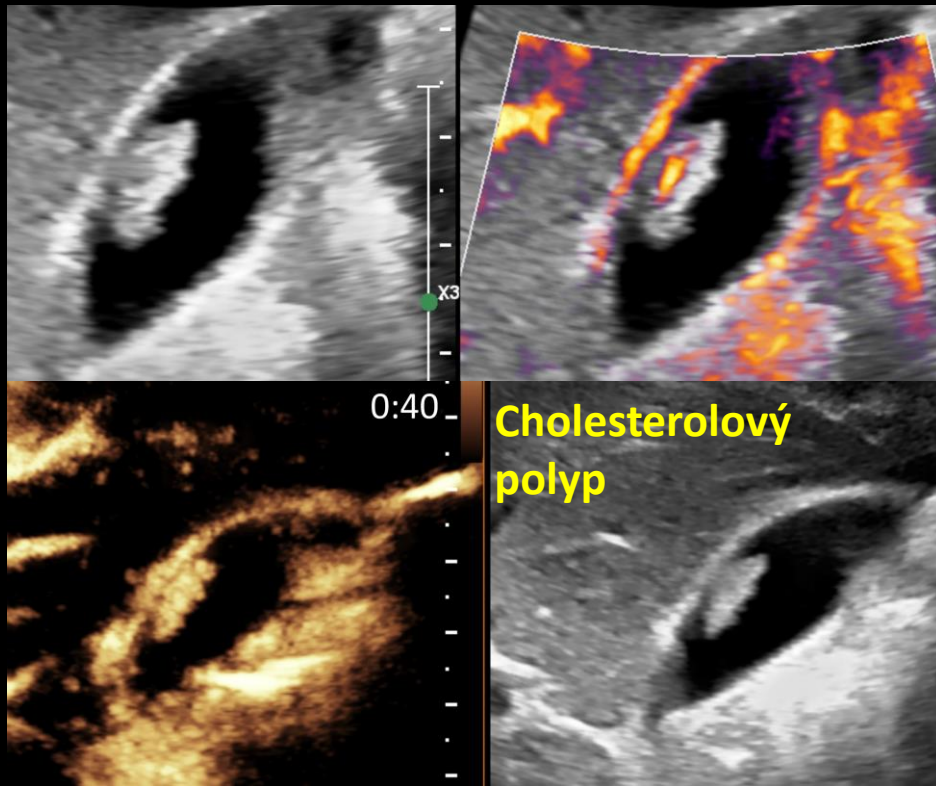
- echogenní léze při stěně, bez akustického stínu s vaskularizací v doppler módu
- riziko maligní transformace 5 % >10 mm (0,01 % <10mm)

Podtypy polypů	
Cholesterolové	60-90 %
Adenomy	25-40 %
Zánětlivé	10 %
Hamartomy a další	



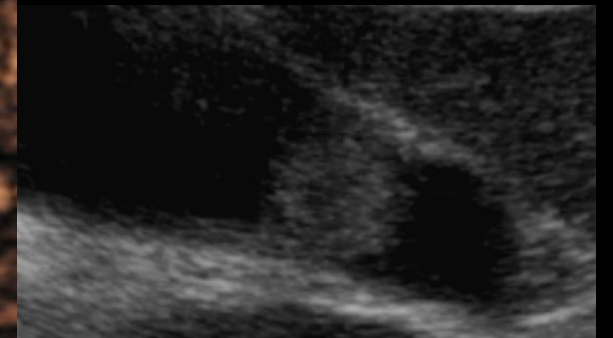
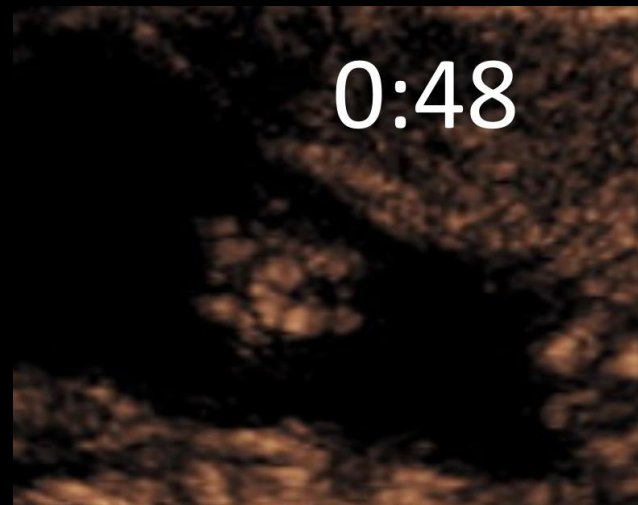
Cholecystolithiáza vs polyp (UZ)

- nález na UZ
 - o cholecystolithiáza/sludge vs polyp -> otočení pacienta na bok
 - o prevalence cholecystolithiáza 10 % vs polyp 0,3-12 %



RECOMMENDATION 64

CEUS is able to differentiate between a perfused gallbladder lesion and motionless biliary sludge (LoE 4, GoR C). Strong consensus (20/0/0, 100%)

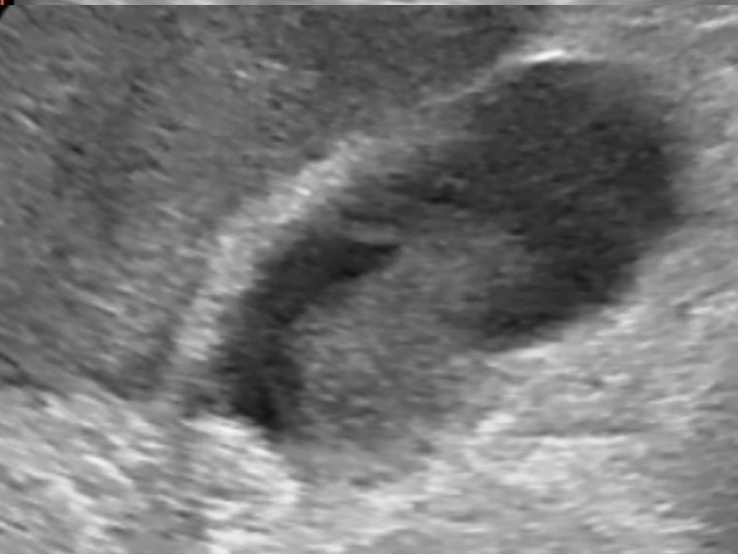
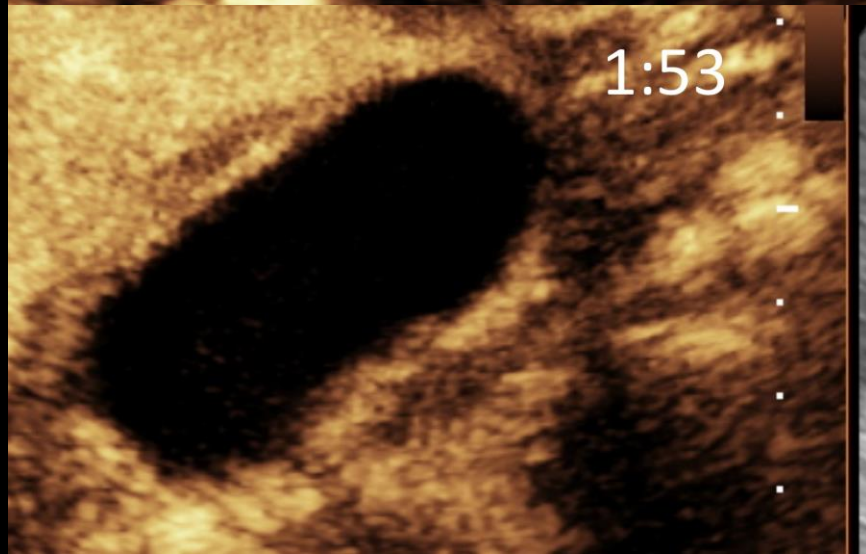


Využití – žlučník (EFSUMB)

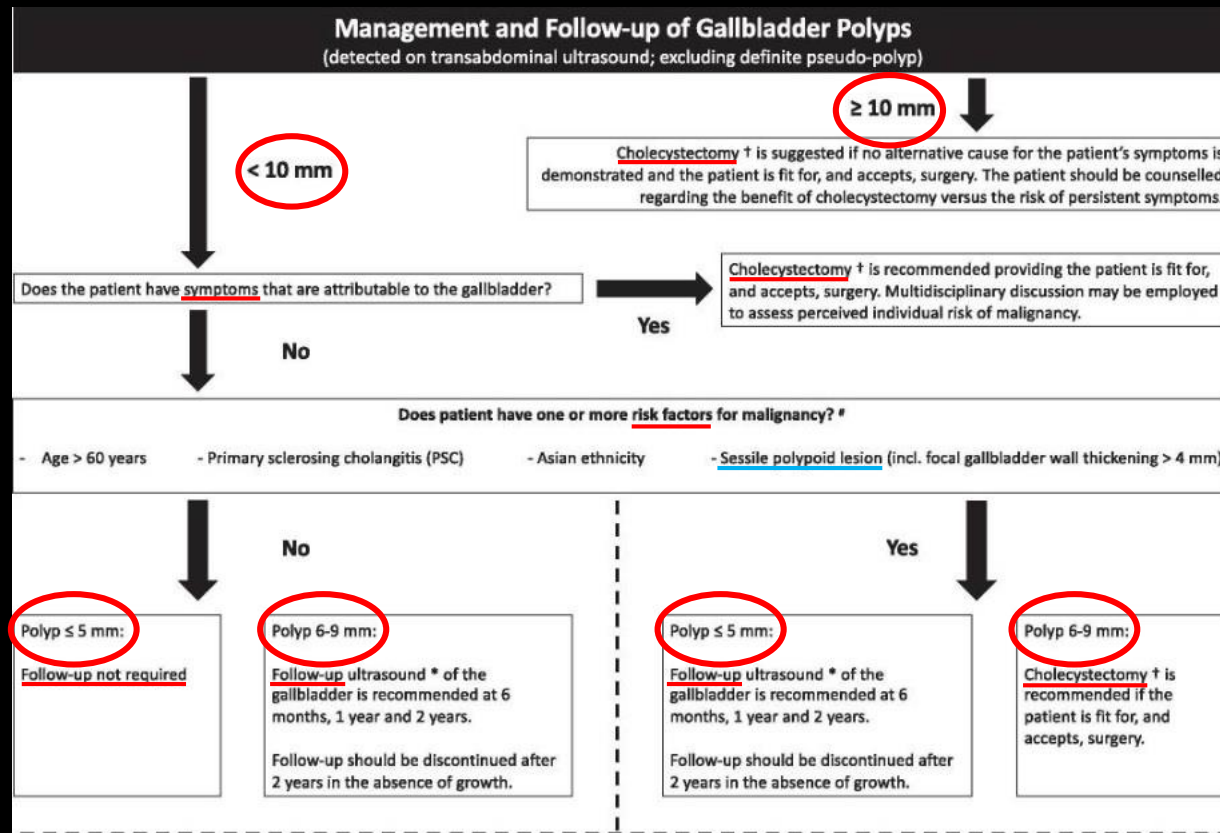
RECOMMENDATION 64

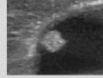
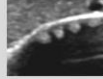
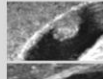
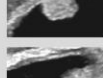
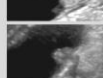
CEUS is able to differentiate between a perfused gallbladder lesion and motionless biliary sludge (LoE 4, GoR C). Strong consensus (20/0/0, 100 %)

sludge



Cholecystolithiáza vs polyp (UZ)



SRU Gallbladder Polyp Consensus Conference Guidelines				
Extremely Low Risk ^e	Pedunculated ball-on-the-wall			≤ 9 mm^a: No follow-up 10-14 mm: Follow-up US at 6, 12, 24 months^{b,c} ≥ 15 mm: Surgical consult
	Pedunculated with thin stalk			
Low Risk ^{d,e}	Pedunculated with thick or wide stalk			≤ 6 mm: No follow-up 7-9 mm: Follow-up US at 12 months^b 10-14 mm: Follow-up US at 6, 12, 24, 36 months^b vs surgical consult ≥ 15 mm: Surgical consult
	Sessile			
Indeterminate Risk ^e	Focal wall thickening ≥ 4 mm adjacent to polyp			≤ 6 mm: Follow-up US at 6, 12, 24, 36 months^b vs surgical consult ≥ 7 mm: Surgical consult
Footnotes: ^a Polyp size should be rounded to nearest millimeter ^b On follow-up: Increase of ≥ 4 mm in ≤ 12 months OR reaches threshold size within category - recommend surgical consult Decrease of ≥ 4 mm - stop following ^c Surgical consult may be an acceptable alternative for polyps 10-14 mm in Extremely Low Risk category ^d It is optional to consider polyps Low Risk instead of Extremely Low Risk if certain ethnicities are known (North Indian, North/South American Indigenous, local incidence) ^e If unsure between categories, choose Low Risk category				

Foley KG, Lahaye MJ, Thoeni RF, Soltes M, Dewhurst C, Barbu ST, et al. Management and follow-up of gallbladder polyps: updated joint guidelines between the ESGAR, EAES, EFISDS and ESGE. Eur Radiol. 2022;32(5):3358–68.

Kamaya A, Fung C, Szpakowski JL, Fetzer DT, Walsh AJ, Alimi Y, et al. Management of Incidentally Detected Gallbladder Polyps: Society of Radiologists in Ultrasound Consensus Conference Recommendations. Radiology. listopad 2022;305(2):277–89.

Akutní cholecystitida (UZ)

- akutní silné bolesti v pravém hypochondriu v návaznosti na jídlo
- 3-10 % akutních bolestí břicha
- 90-95 % obstrukční -> stáza žluči -> poranění stěny žlučovými solemi -> infekce
- klinická otázka
 - cholecystitida?
 - cholecystolithiáza?
 - volná tekutina v dutině břišní?
 - kolekce v okolí žlučníku?
 - dilatace (obstrukce) žlučových cest?

Cholecystitida

Akutní obstrukční cholecystitida

Akalkulózní cholecystitida

Gangrenózní cholecystitida

Emfyzematózní cholecystitida

Ostatní (purulentní, hemoragická, xantogranulomatózní, chronická)

Computed tomography versus ultrasound for the diagnosis of acute cholecystitis: a systematic review and meta-analysis

Gastrointestinal | Published: 17 May 2024

Volume 34, pages 6967–6979, (2024) [Cite this article](#)

Results

Sixty-four studies met the inclusion criteria. In the primary analysis of head-to-head studies ($n = 5$), CT had a pooled sensitivity of **83.9%** (95% CI, 78.4–88.2%) versus **79.0%** (95% CI, 68.8–86.6%) of US ($p = 0.44$). The pooled specificity of CT was **94%** (95% CI, 82.0–98.0%) versus **93.6%** (95% CI, 79.4–98.2%) of US ($p = 0.85$). The concordance of positive or negative test between both modalities was 82.3% (95% CI, 72.1–89.4%). US and

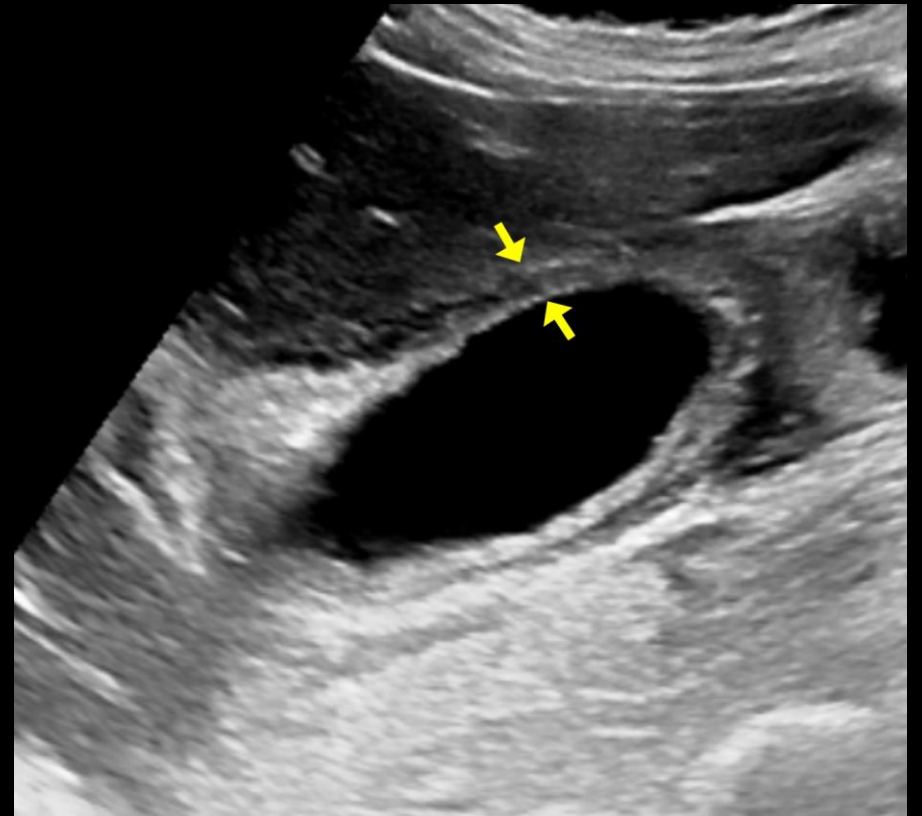
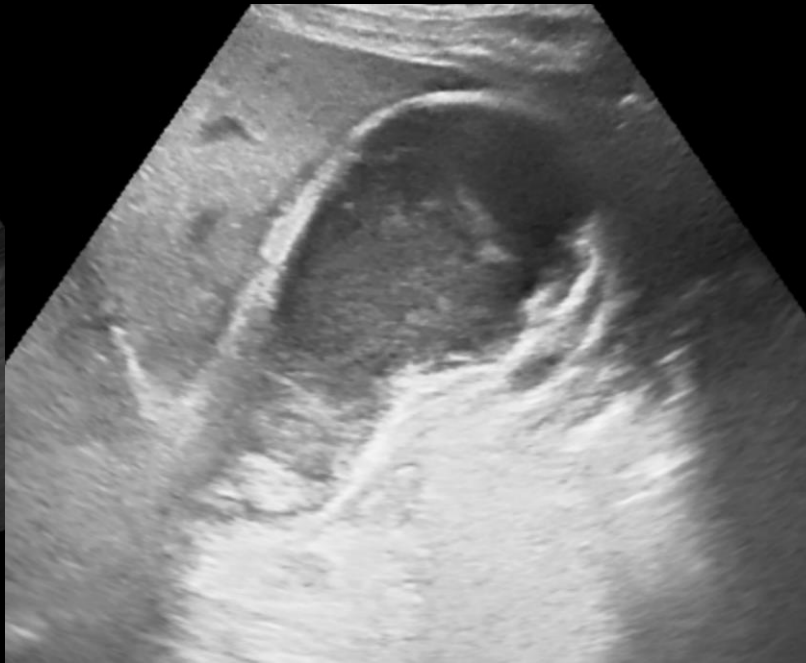
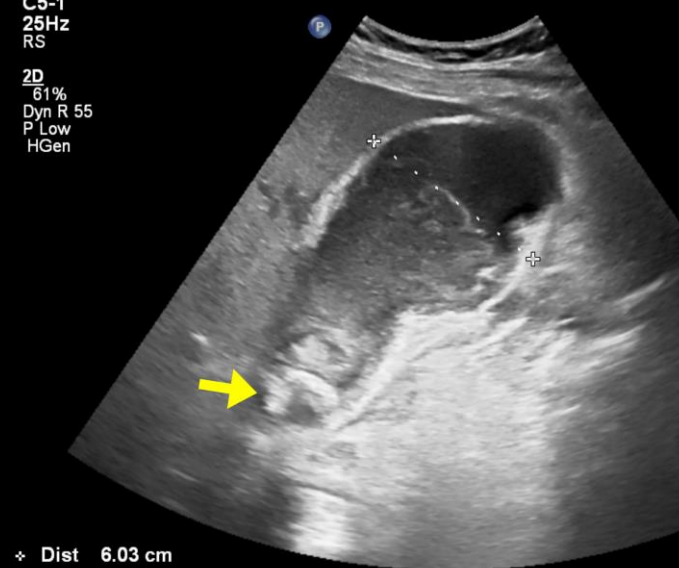
Akutní cholecystitida (UZ)

- velikost žlučníku (10x4cm) a jeho obsah, zesílení stěny ($>3\text{mm}$), prosáknutí/tekutina v lůžku, Murphy sign

Abd Renal
C5-1
25Hz
RS

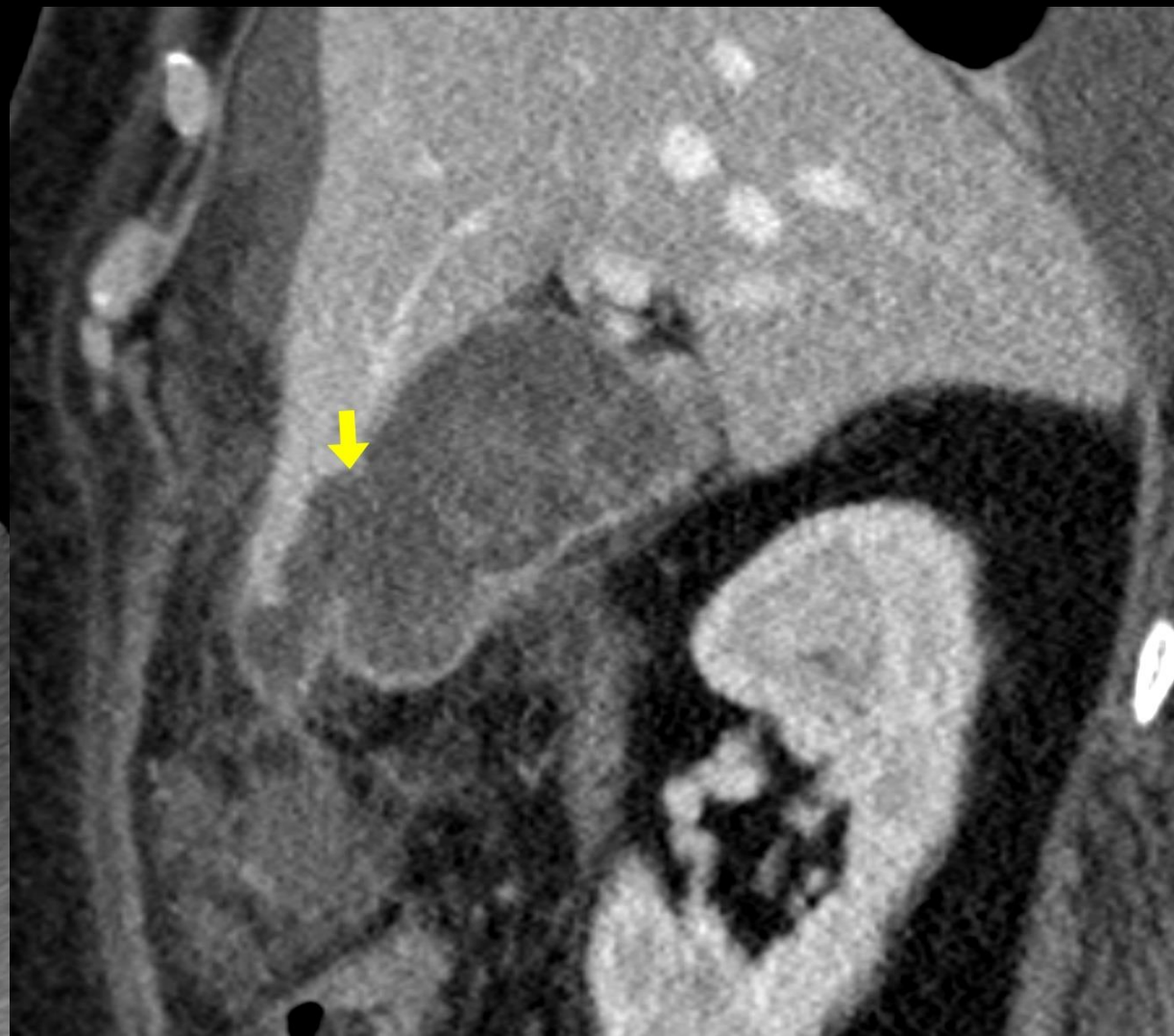
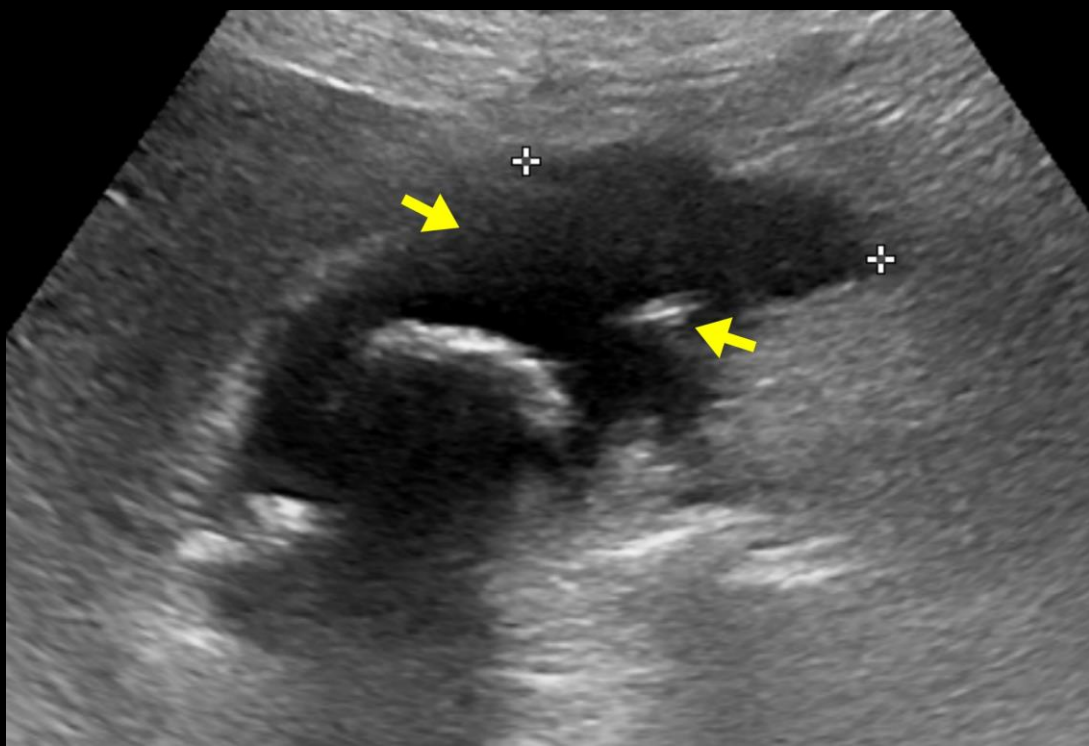
2D
61%
Dyn R 55
P Low
HGen

TISO.2 MI 1.3



Cholecystitida - komplikace

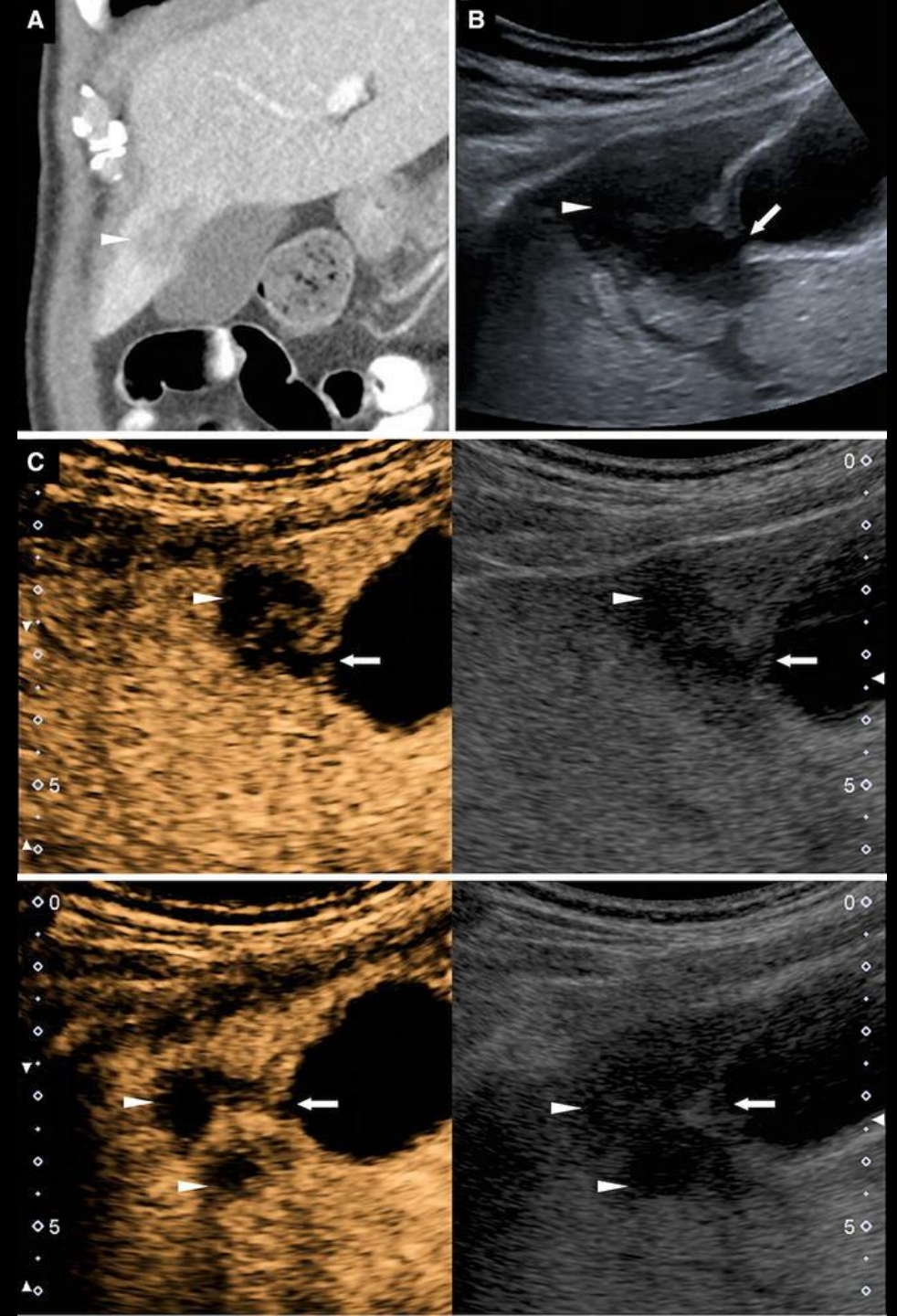
- tekutinová kolekce (perforace žlučníku)



Využití – žlučník (EFSUMB)

RECOMMENDATION 62

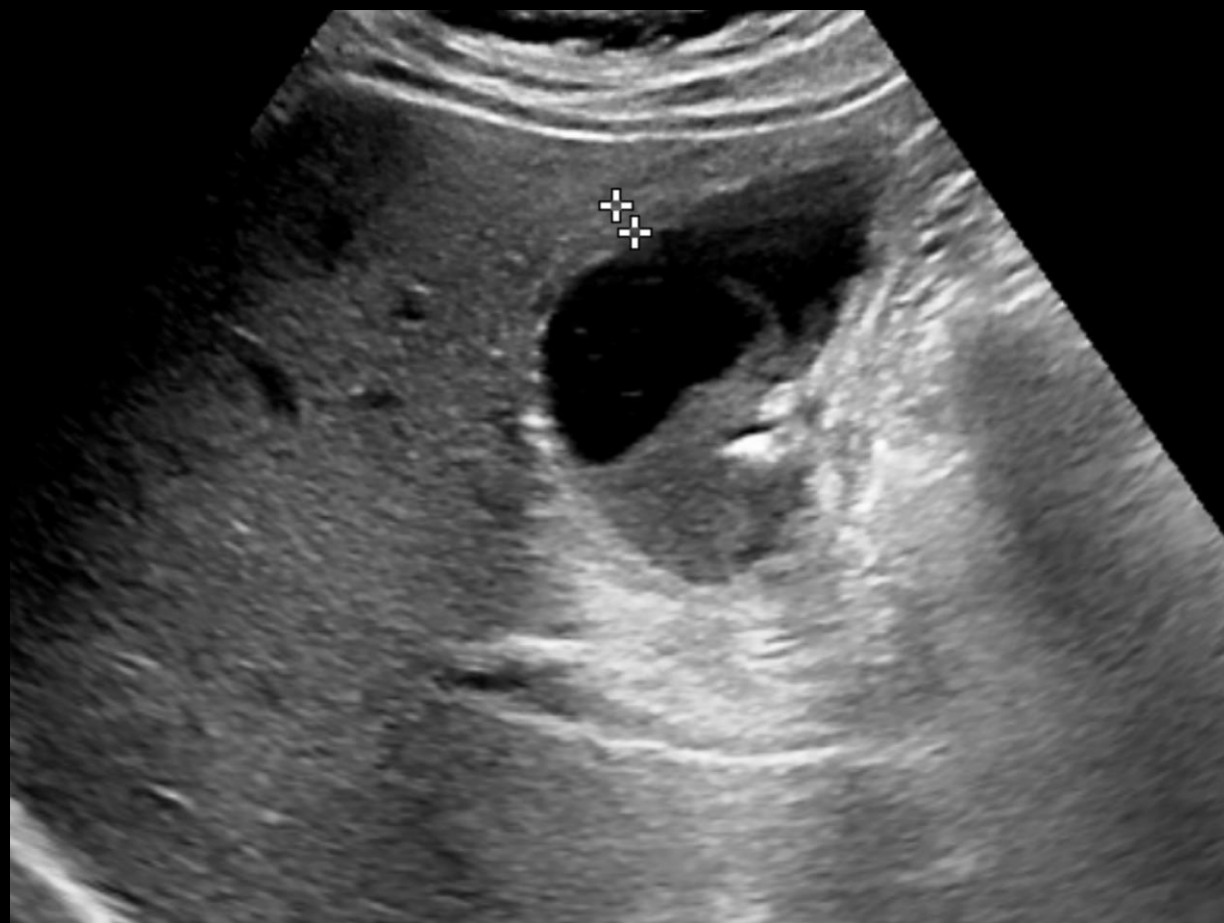
CEUS can be used in acute cholecystitis to better detect local complications (LoE 2b, GoR B). Strong Consensus (19/0/1, 100 %)



Dynamika cholecystitidy



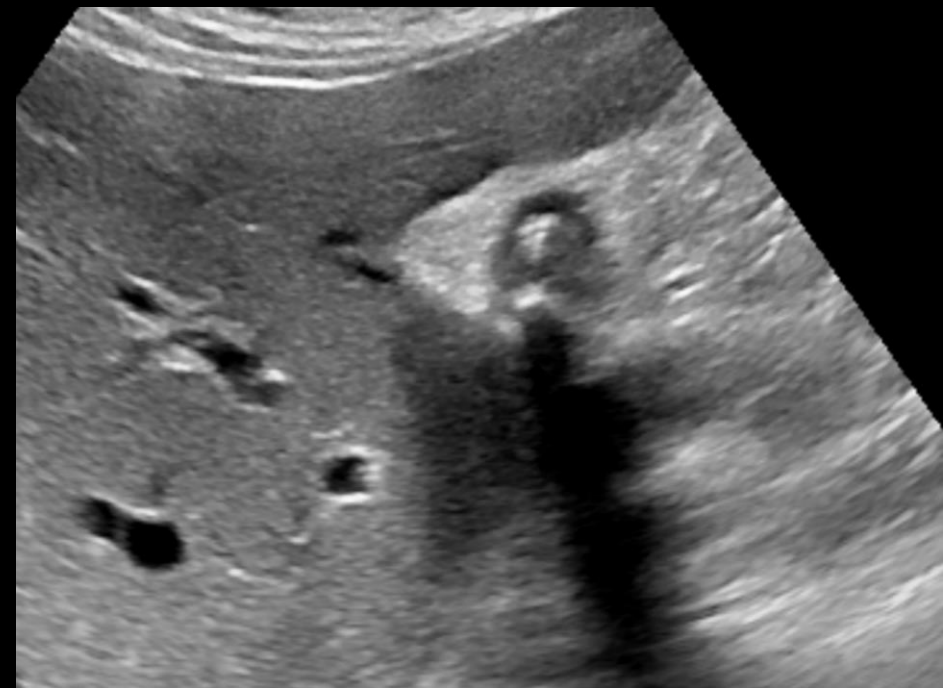
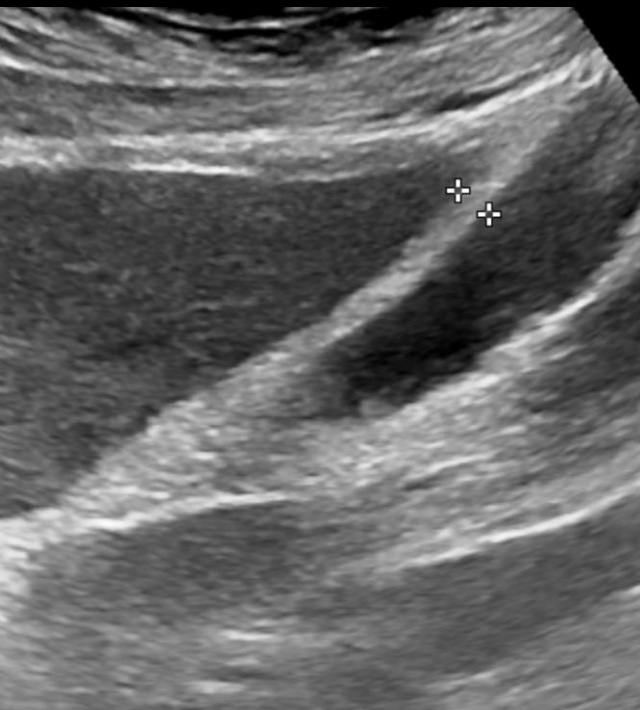
31.1.



2.2.

Chronická cholecystitida

- po opakovaných zánětech žlučníku
- distendovaný/kontrahovaný žlučník (s konkrementy)
- komplikace -> bilioenterální píštěl -> biliární ileus

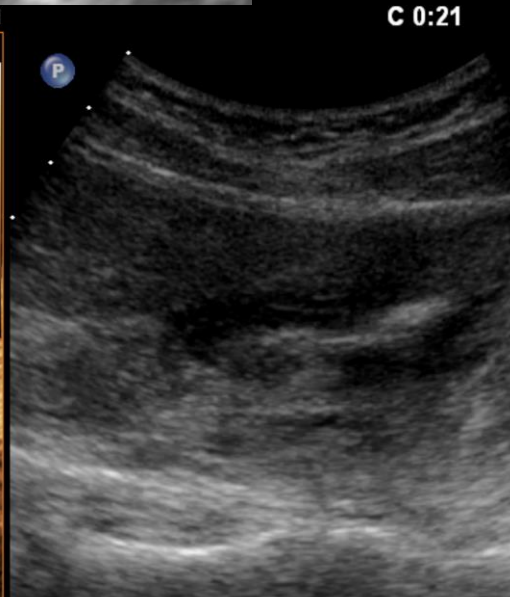
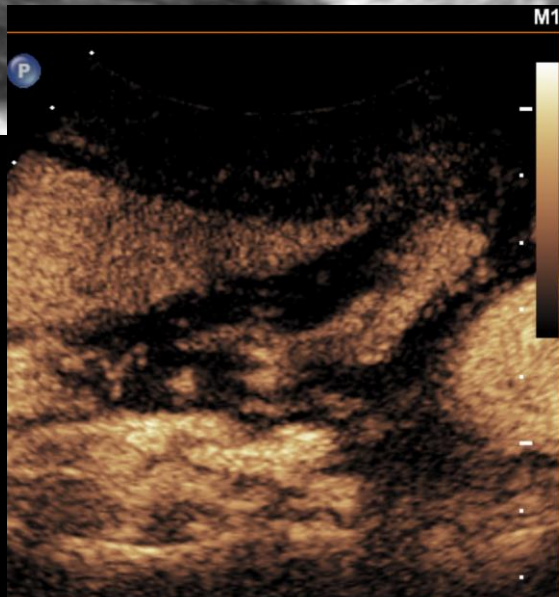
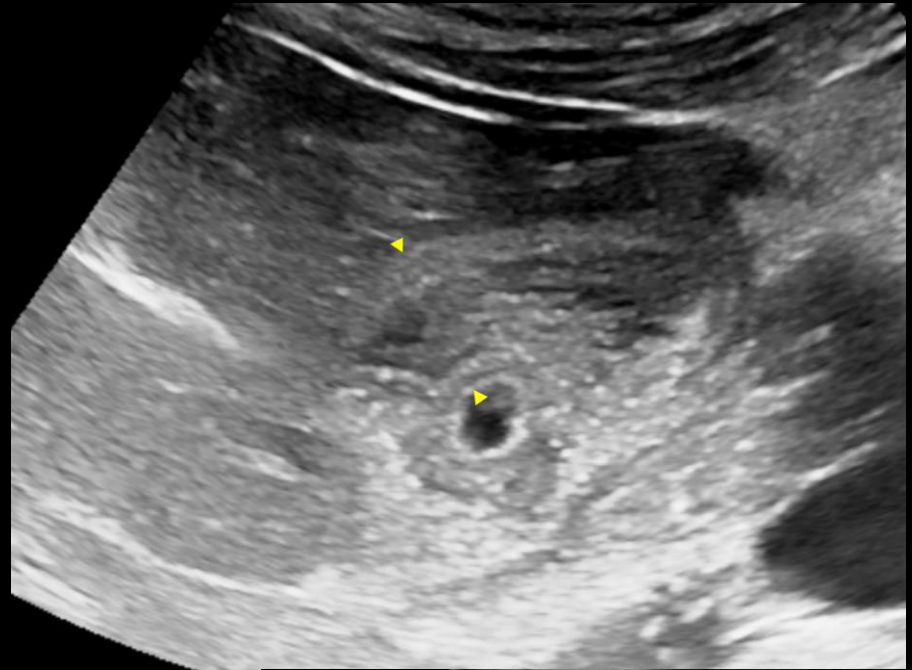


Cholecystitida – diff.dg.

rozšířená stěna?



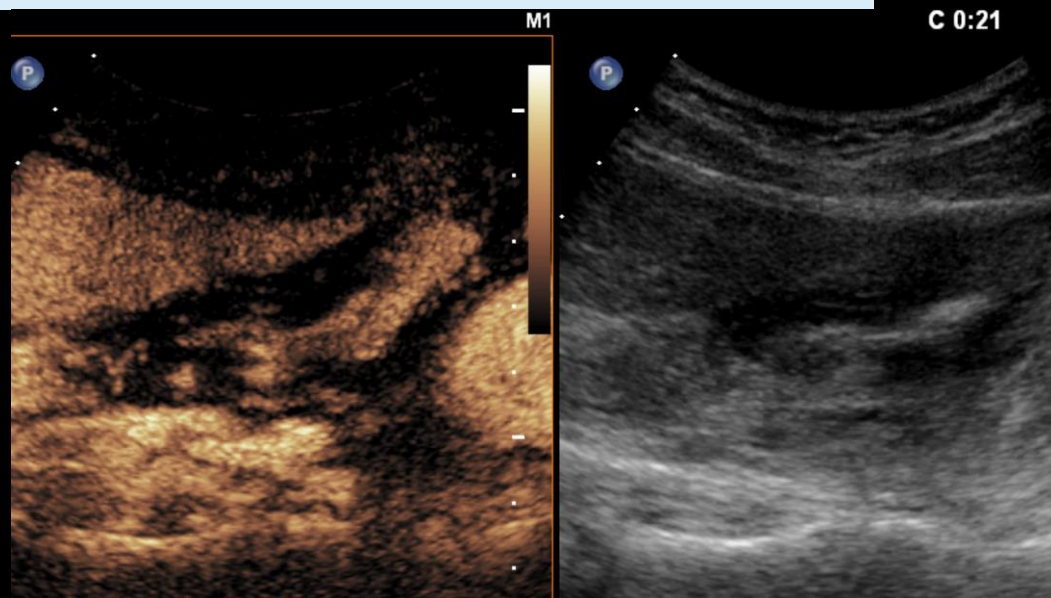
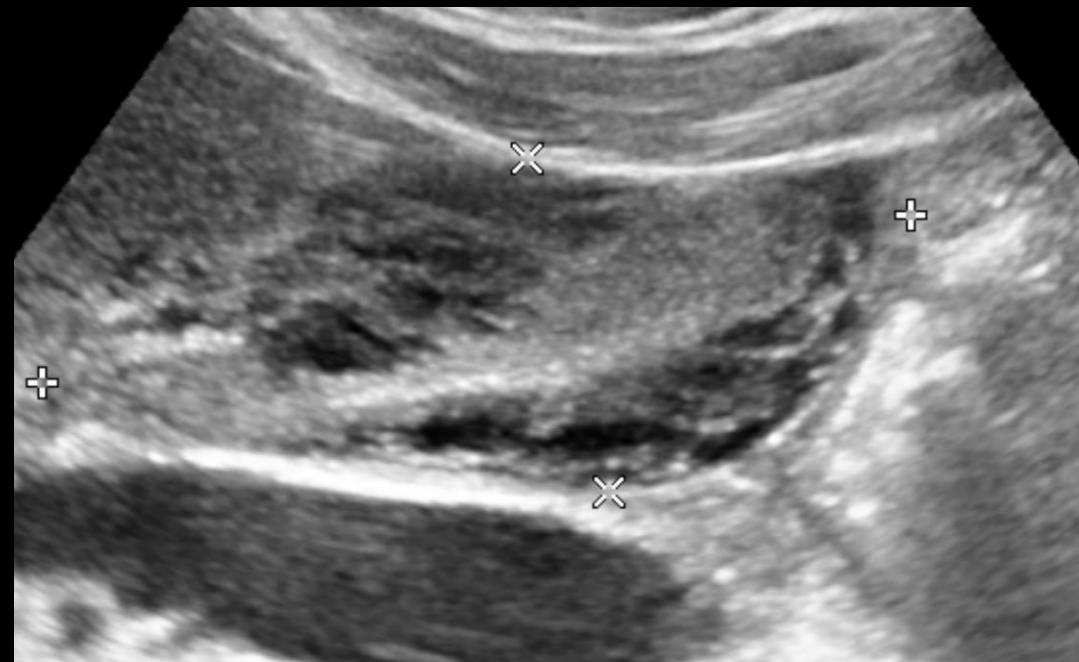
rozšířená stěna?



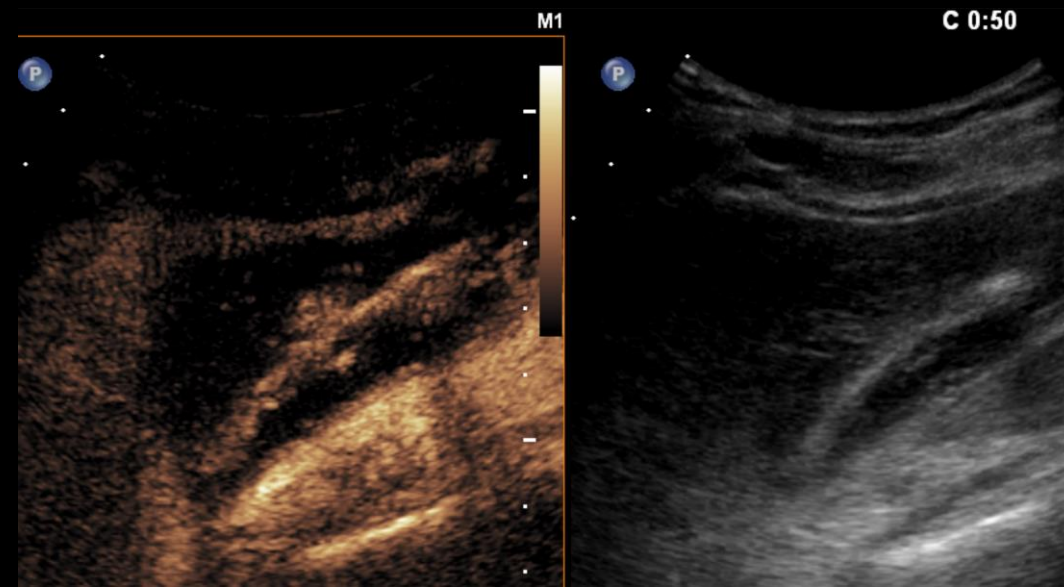
Využití – žlučník (EFSUMB)

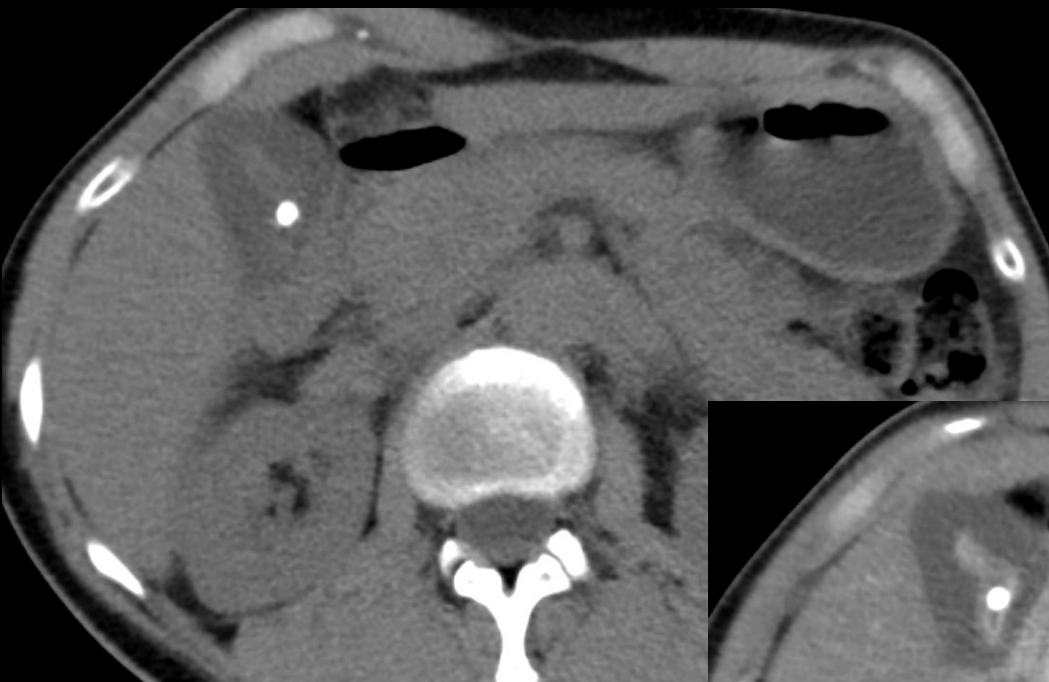
RECOMMENDATION 63

CEUS may differentiate **chronic cholecystitis** from gallbladder carcinoma (LoE 2b, GoR B). Strong Consensus (19/0/1, 100 %)



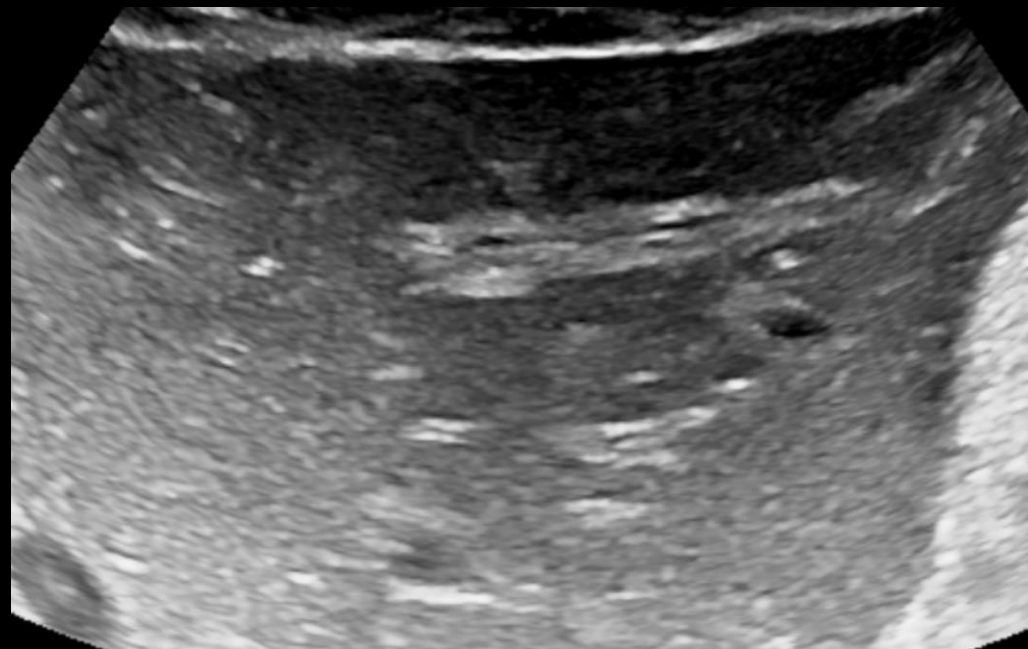
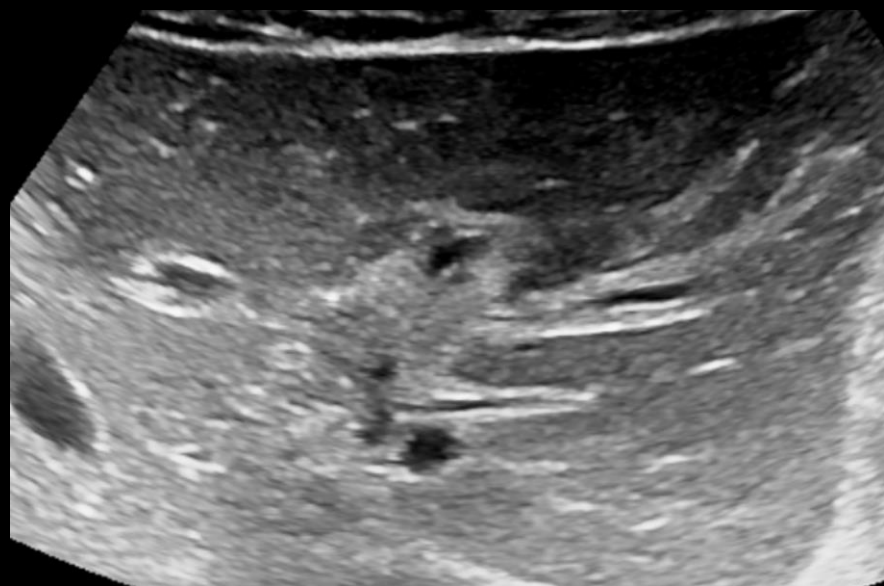
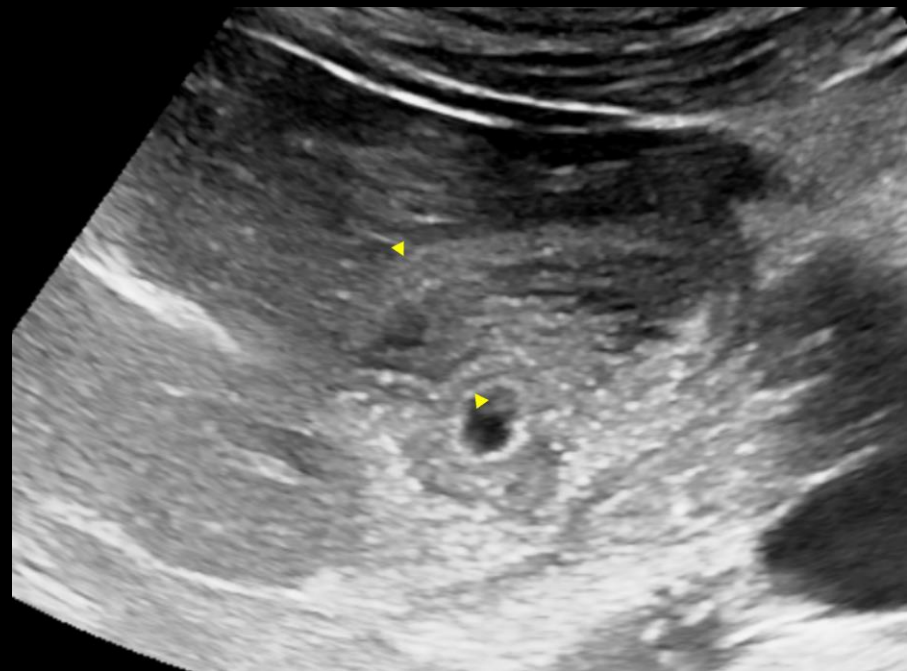
Hepatitida A





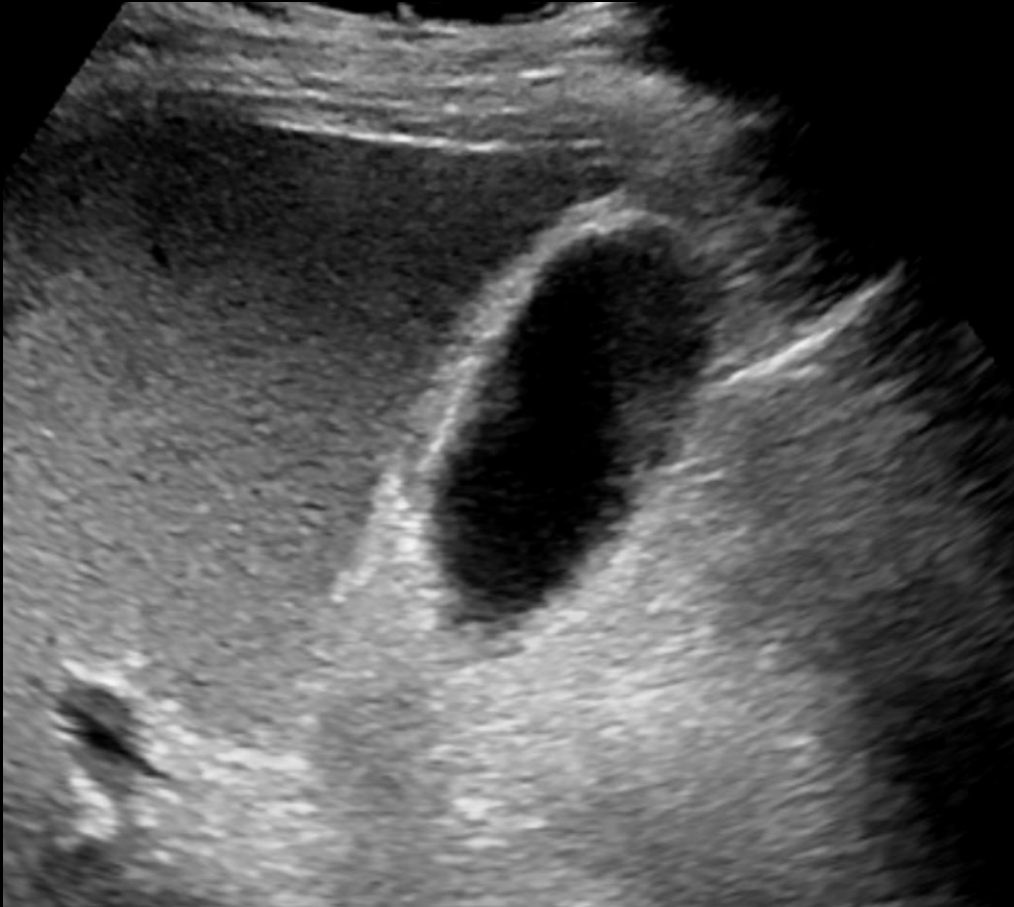
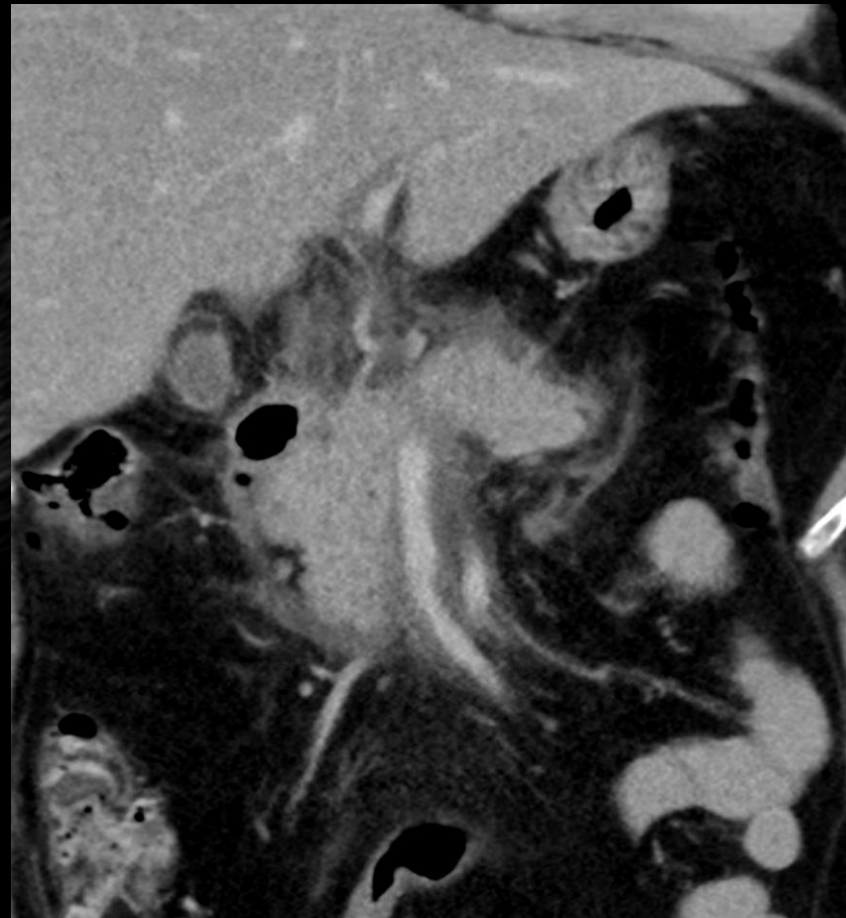
Reaktivní změny žlučníku

- zesílená stěny žlučníku (může být kontrahovaný)
- hepatitida (až u 51 %), městnavé srdeční selhání, renální selhání, sepse, hypoalbuminémie, pankreatida, kolitida, pyelonefritida
- nemusí být sonopalpační bolestivost ani lithiáza + jiná primární patologie



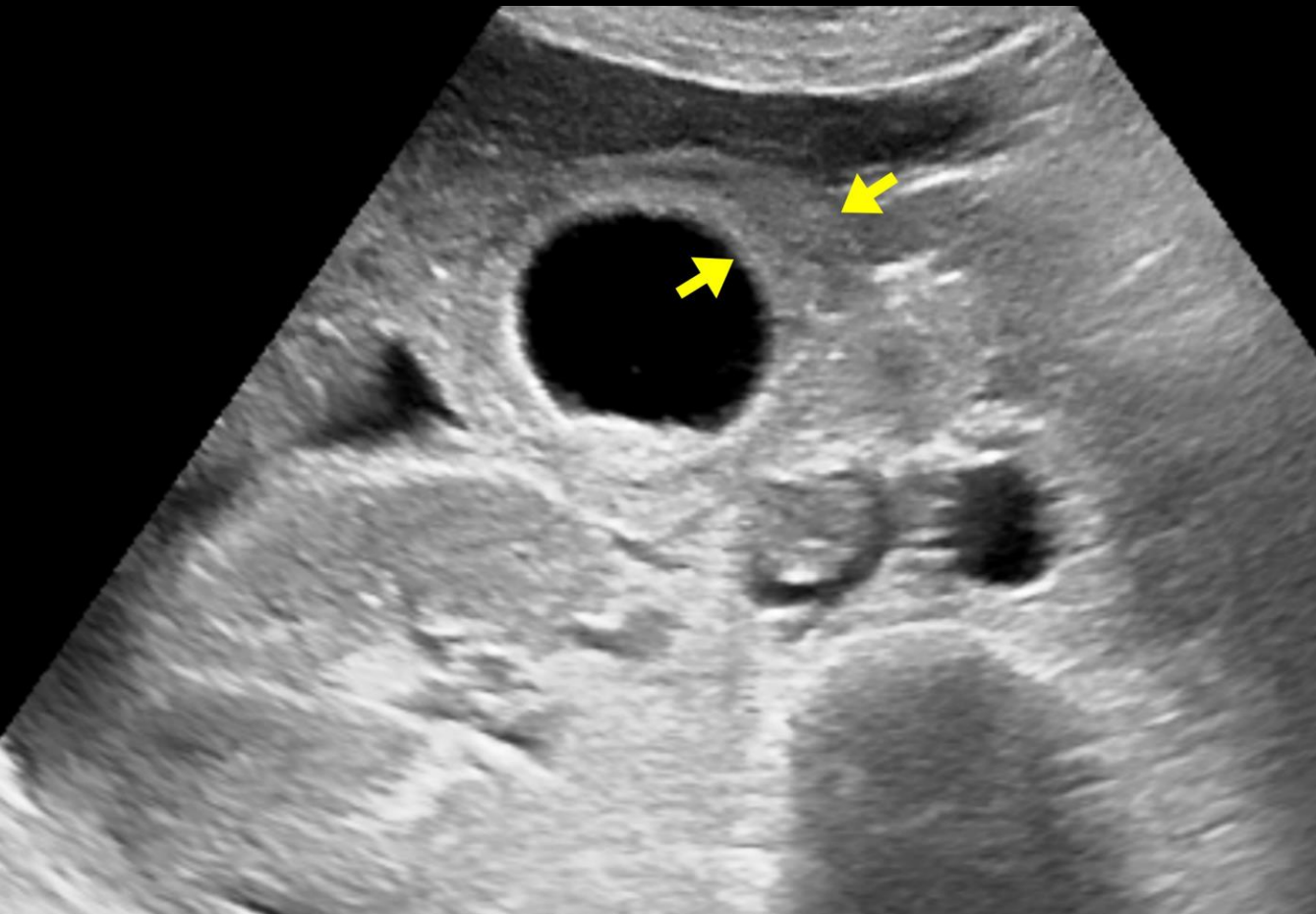
Reaktivní změny

pankreatitida



PSC, elevace CRP

overlap autoimunitní hepatitidy a PSC



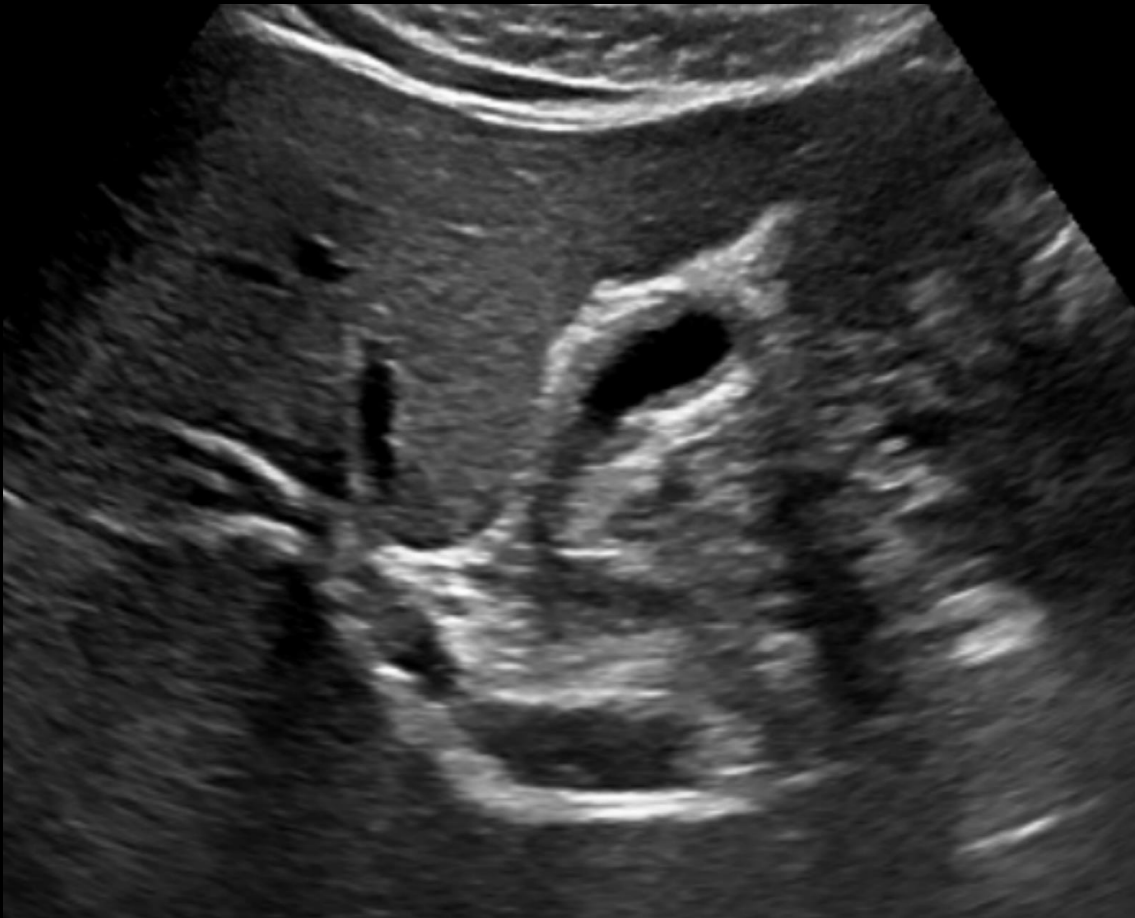
30.12.2024



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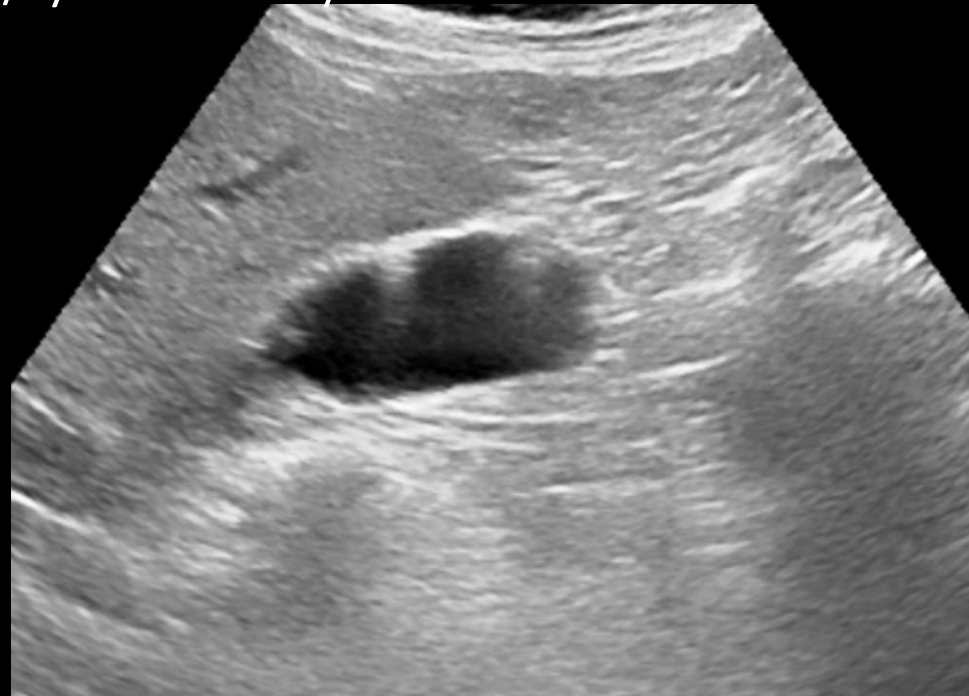
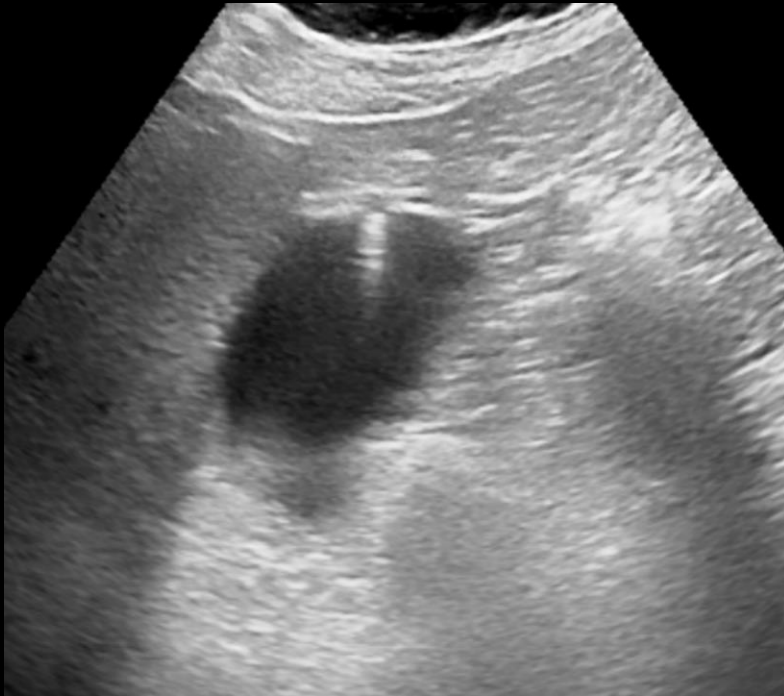
Postprandiální stav

- před vyšetřením žlučníku nutné lačnění 4-6 hod

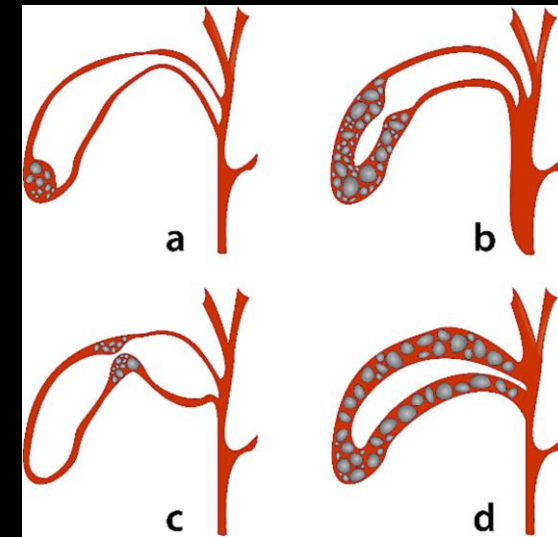


Adenomyomatóza

- 2-8 % cholecystektomií
- Hyperplázie epitelu stěny -> tvorba intramurálních divertiklů (Rokitansky-Aschoffovy sinusy)
- 3 typy (difúzní, segmentární, fundus)
- zesílená stěna, intramurální echa/cystické útvary

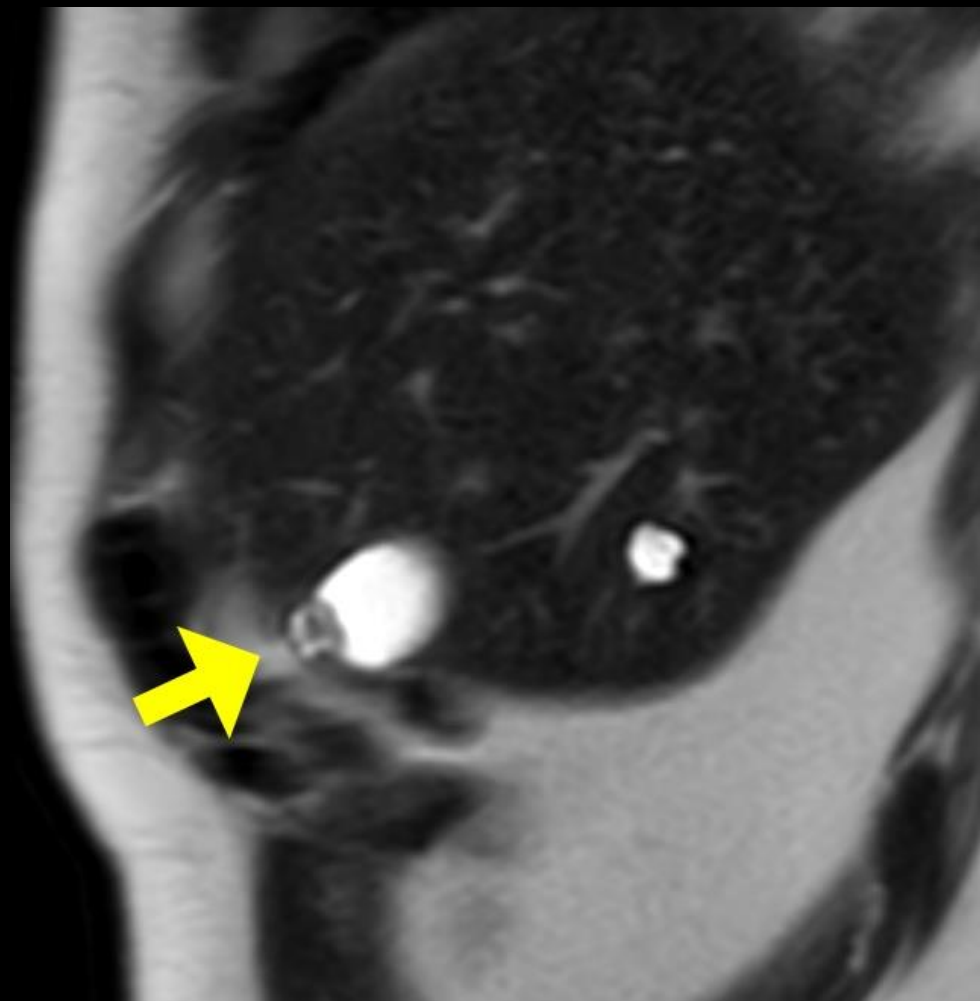
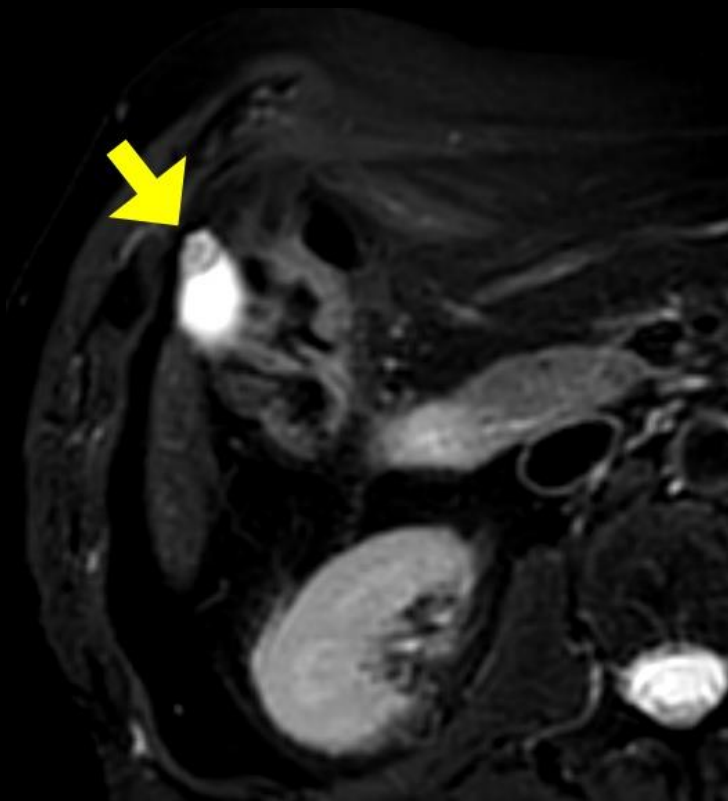
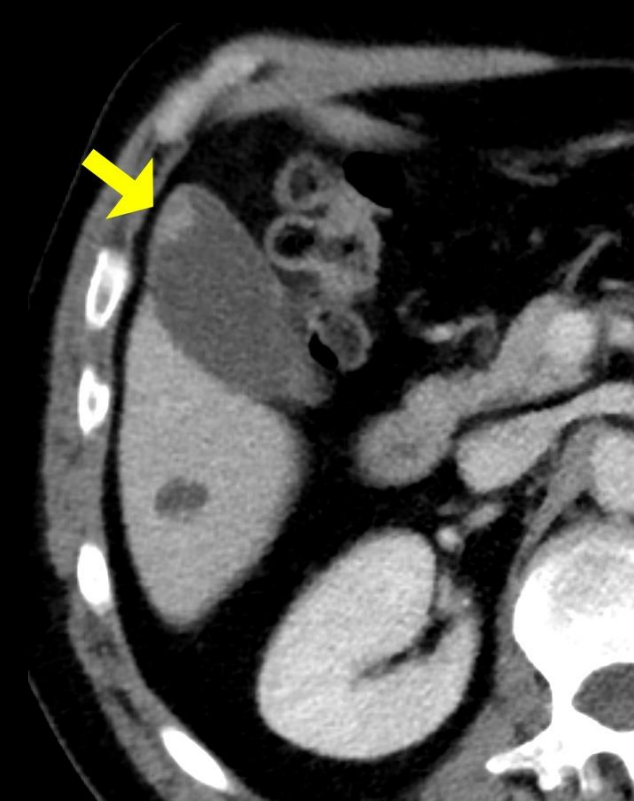


comet-tail artifact



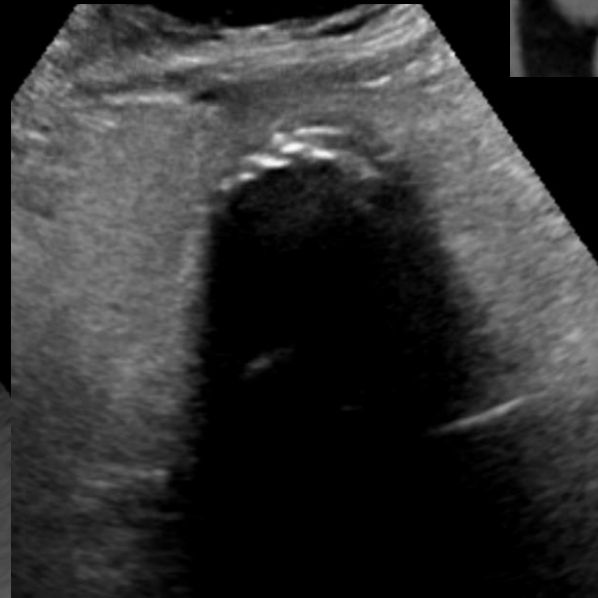
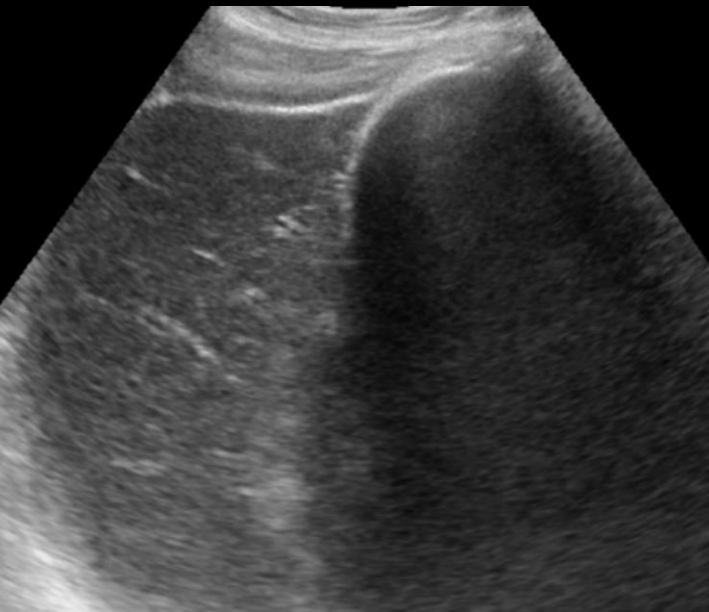
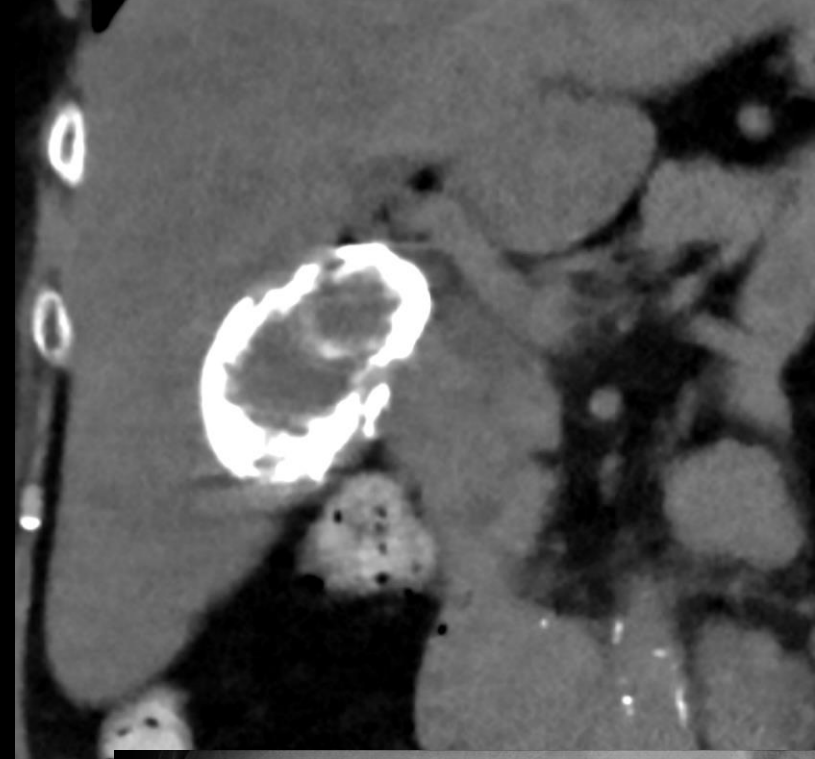
Adenomyomatóza

	senzitivita	specifita
UZ	36-80 %	54-96 %
CT	36-65 %	53-86 %
MR	81-99 %	93-100 %



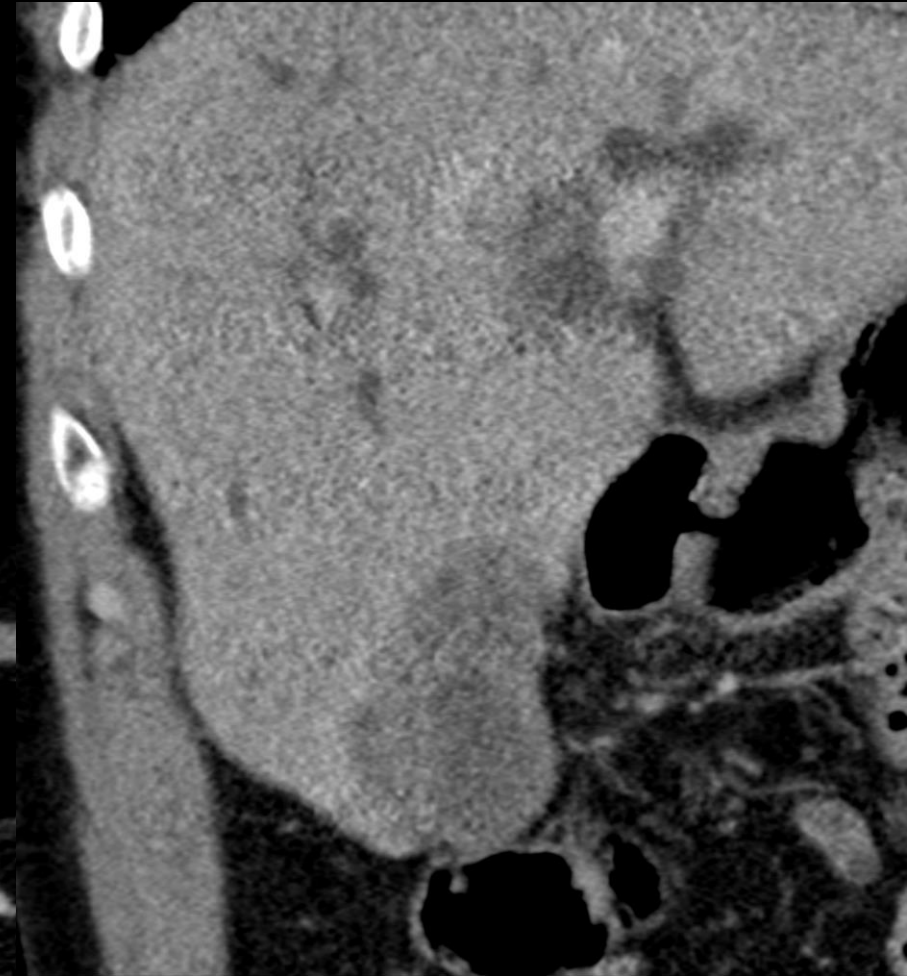
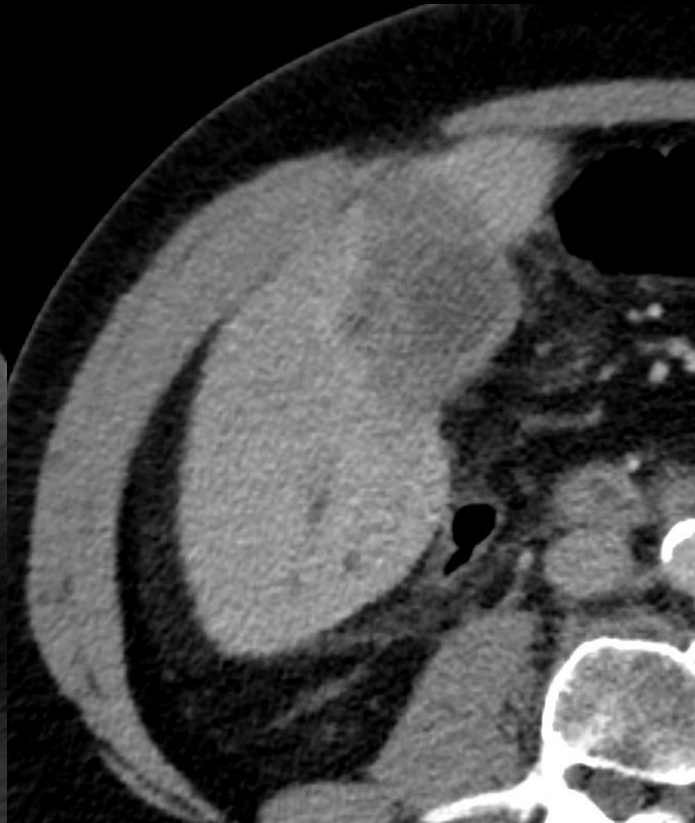
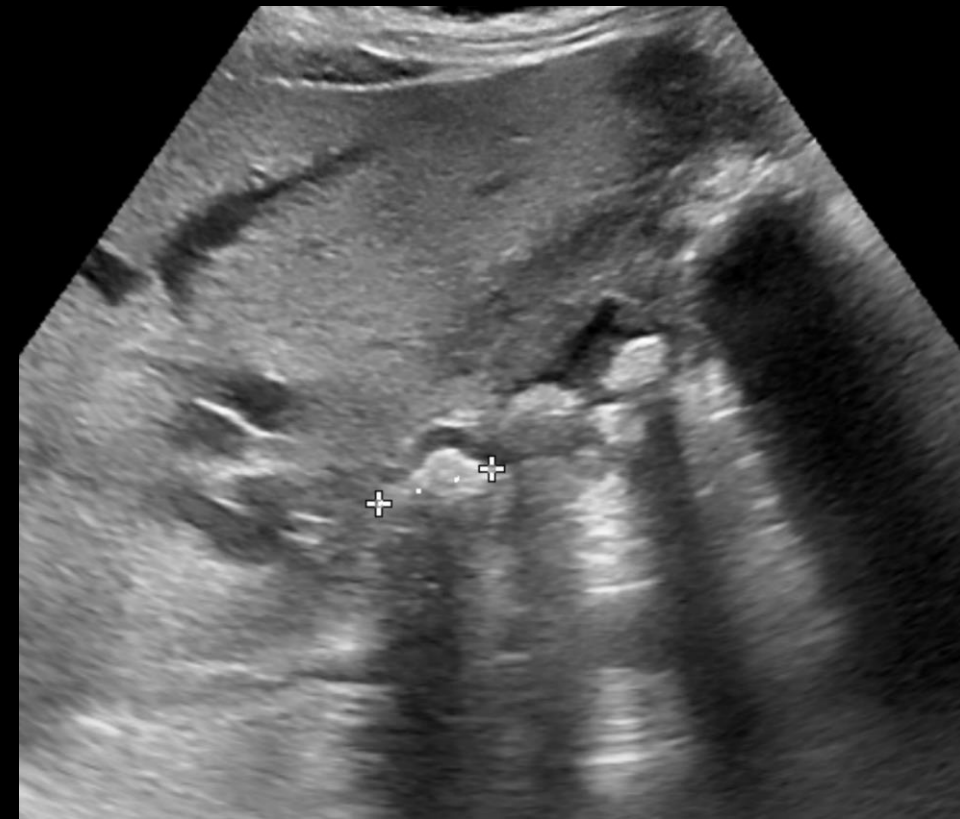
Porcelánový žlučník

- intramurální kalcifikace <- chronický zánět
- riziko karcinomu žlučníku 0-5 % (historicky 12-33 %)
- na UZ problematické odlišení lithiázy vyplňující žlučník

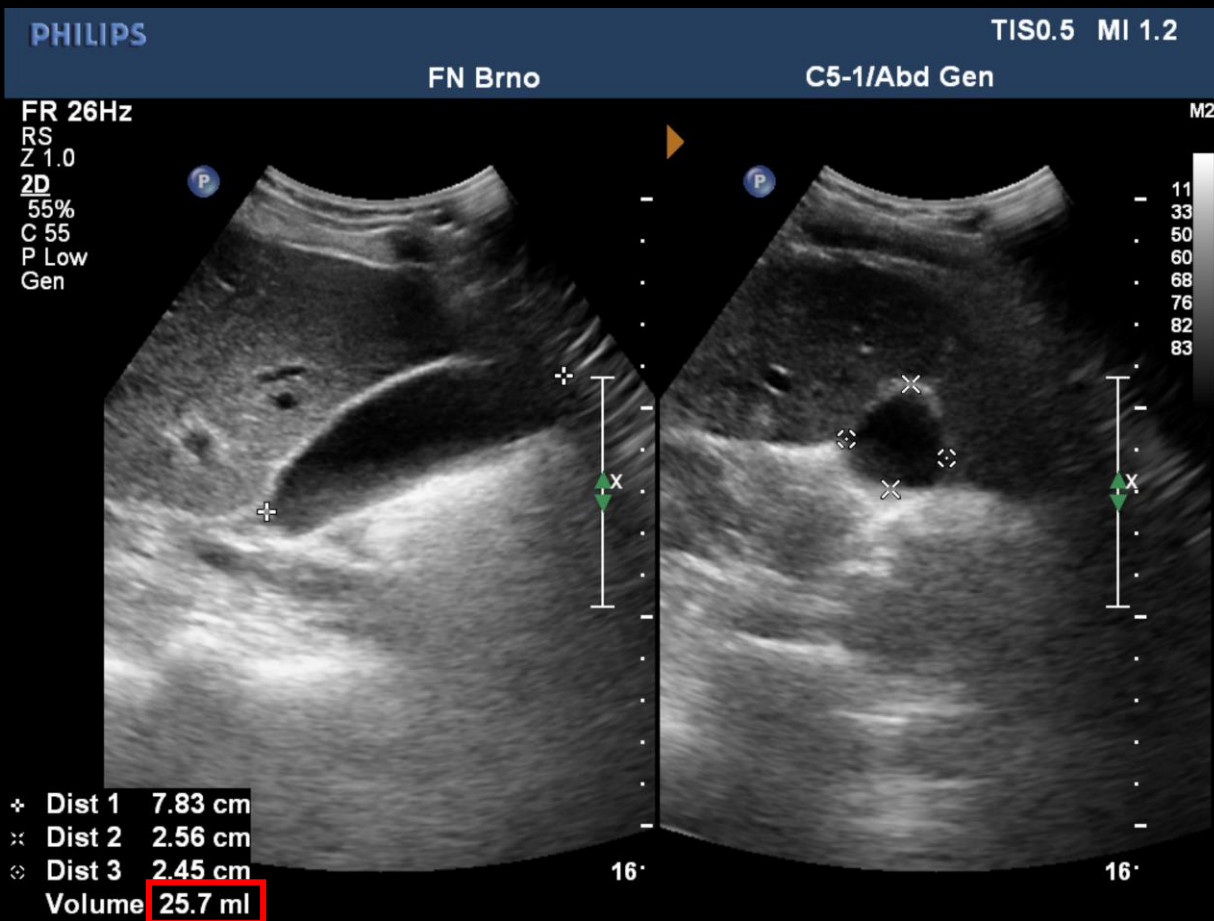


Tumor žlučníku

- 80-95 % malignit biliárního traktu
>60 let (ženy:muži = 4:1)

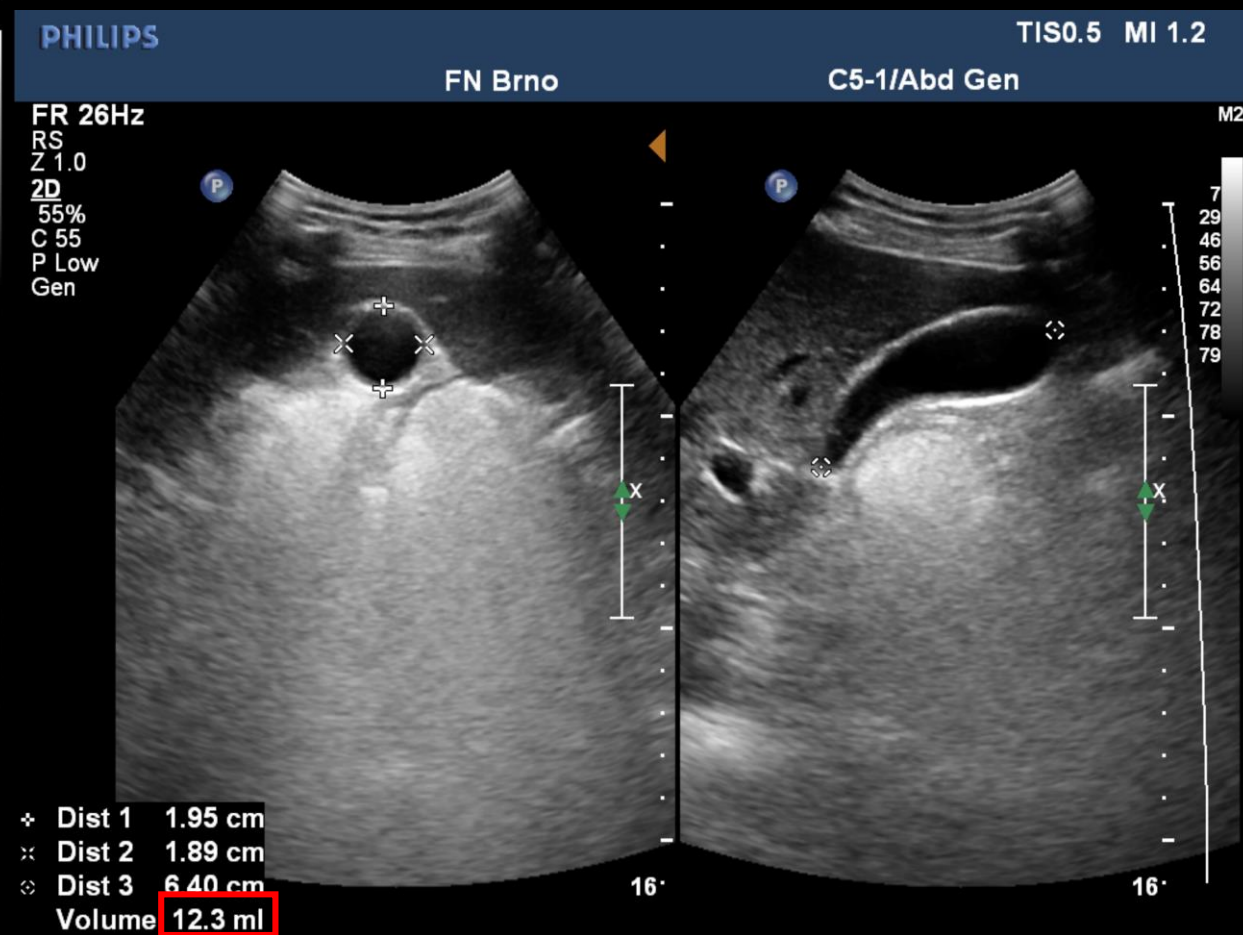


Funkční vyšetření



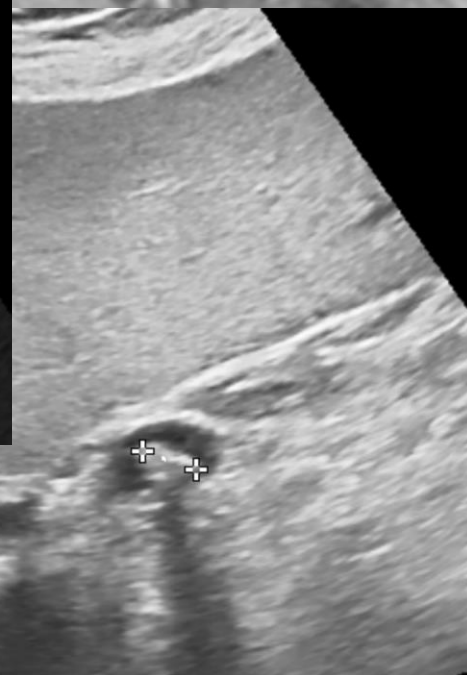
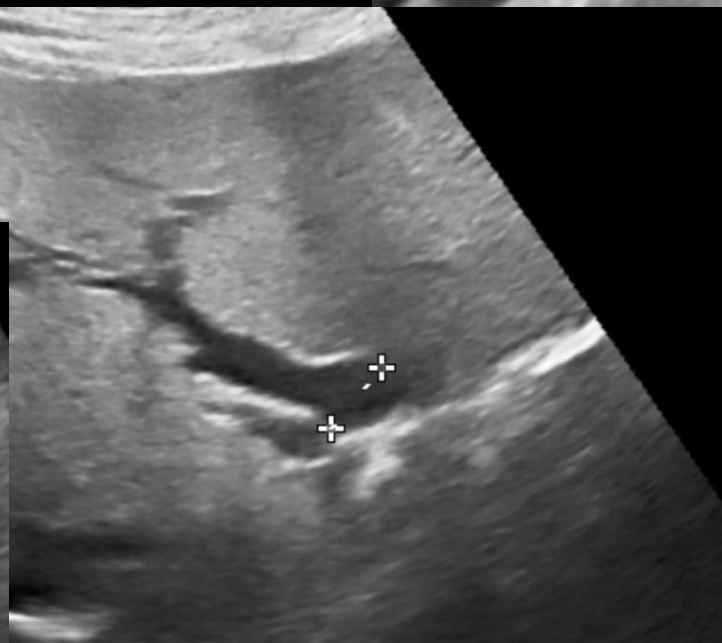
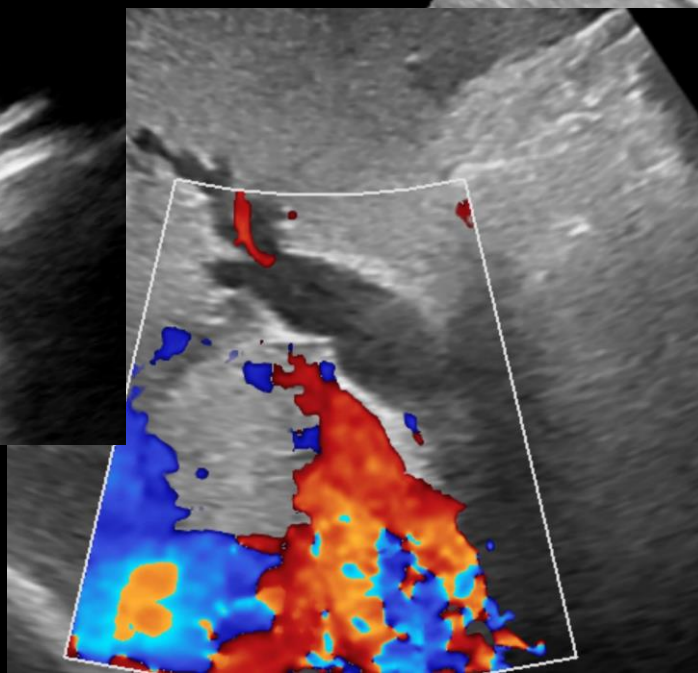
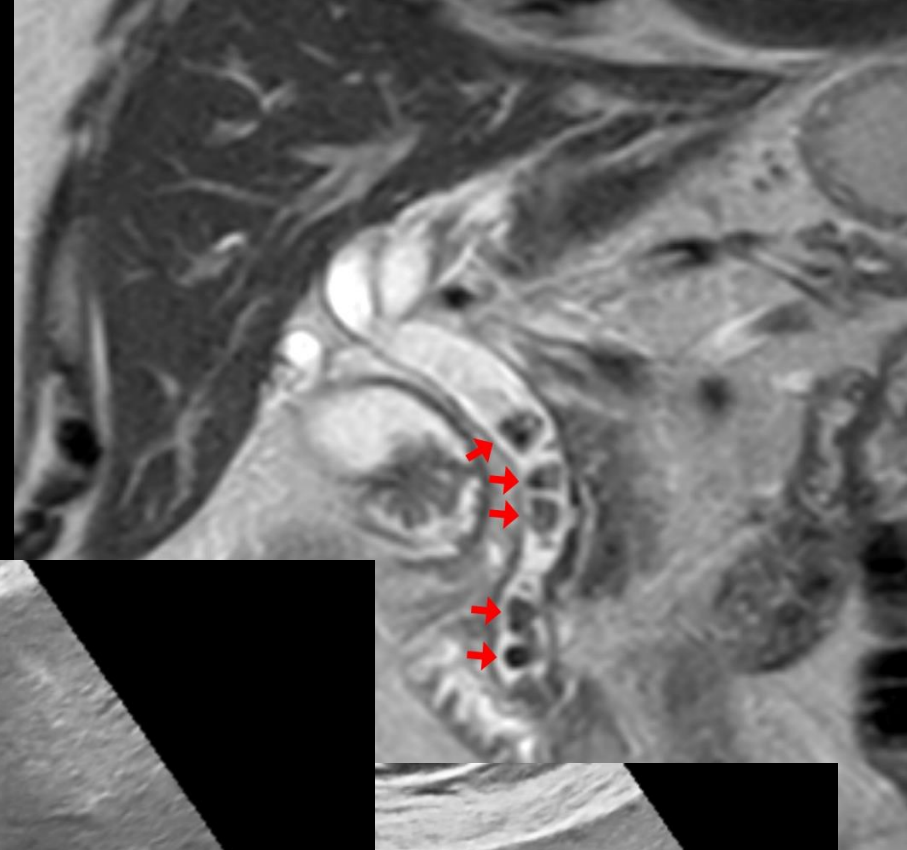
<52,1 %

po 1 hodině



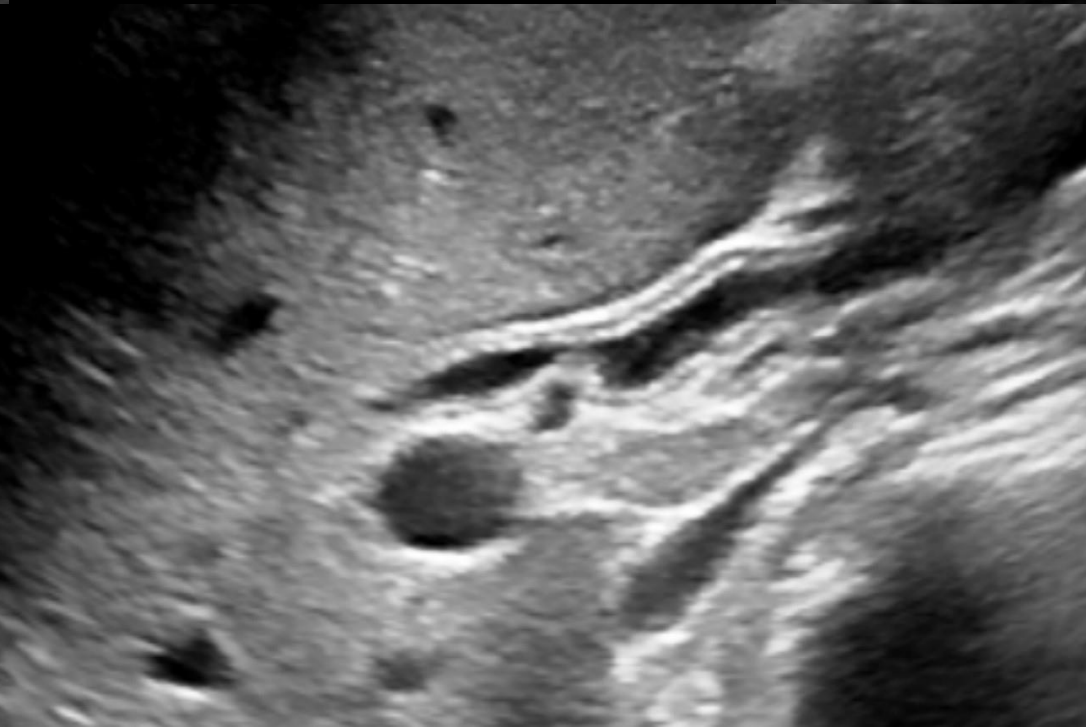
Dilatace žlučových cest + choledocholithiáza

- dilatace žlučových cest -> hledat příčinu (otočit pacienta na levý bok)
- 33 % lithiáza; 12,5 % tumor hlavy pankreatu

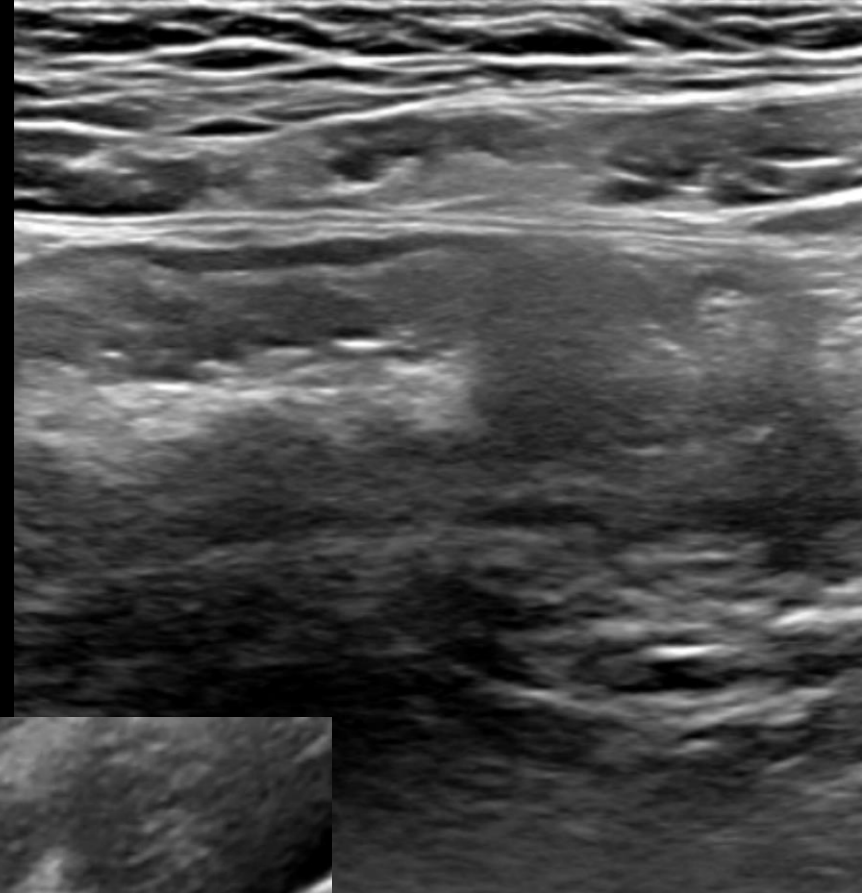


Cholangioitida

- klinická otázka
 - dilatace žlučových cest?
 - obstrukce? (lithiáza)? cholecystolithiáza?
 - ?absces?



PSC+UC



Závěr

- vyšetření pacientů na lačno
- Kombinace UZ nálezu a kliniky
- UZ metoda volby hodnocení dynamiky zánětu žlučníku
- dilatace žlučových cest -> příčina?

Děkuji za pozornost