An unusual football injury

Case presentation

- 25 y.o. woman, married+2
- Complaints (3 months)
  - Nausea
  - Pain in epigastrium and LUQ – persistent with certain relief with Nexium and lactose free diet
  - Diarrhea up to 4 times a day, sometimes with mucus or blood, with alternating periods of constipation

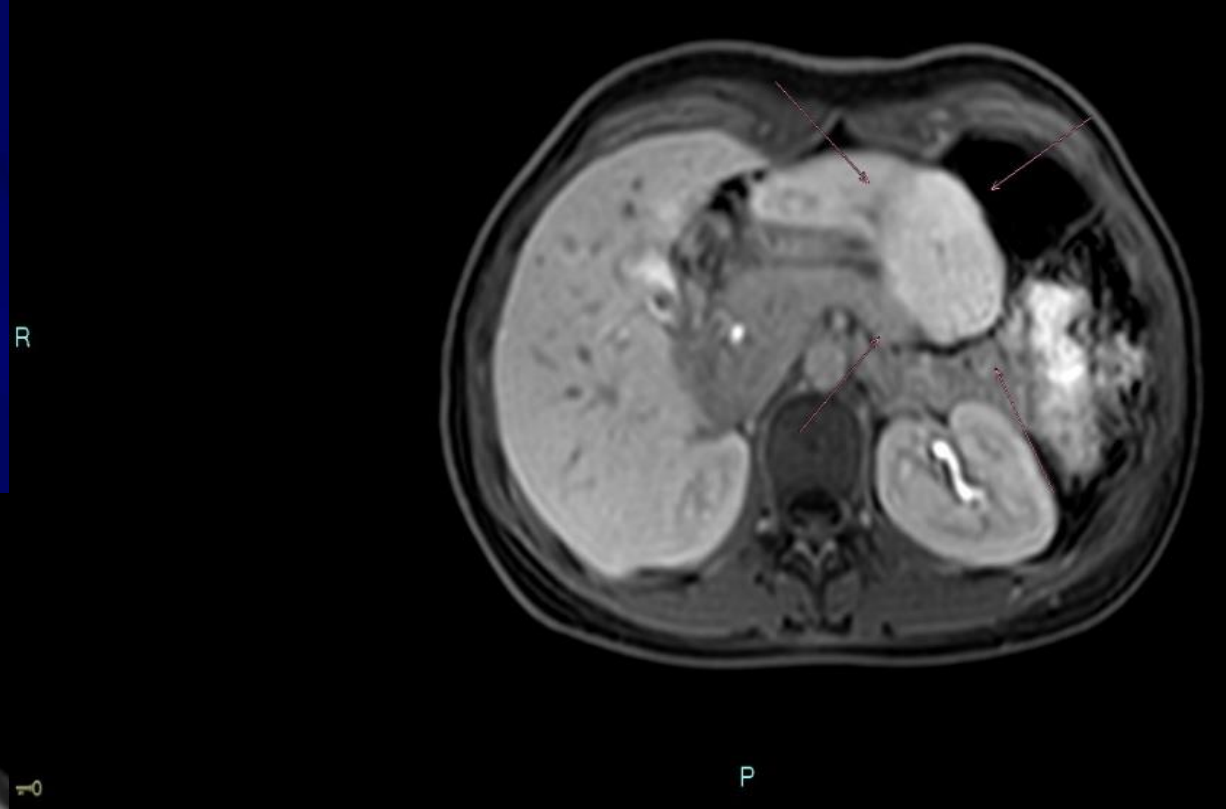
- Unremarkable personal medical history
- Oral contraceptives for several years
- Grandmother – CRC in the age of 70

- Unremarkable physical examination except slight epigastric tenderness
- Unremarkable laboratory tests
- Normal gastroscopy including duodenal biopsies
- Normal colonoscopy and ileoscopy including biopsies

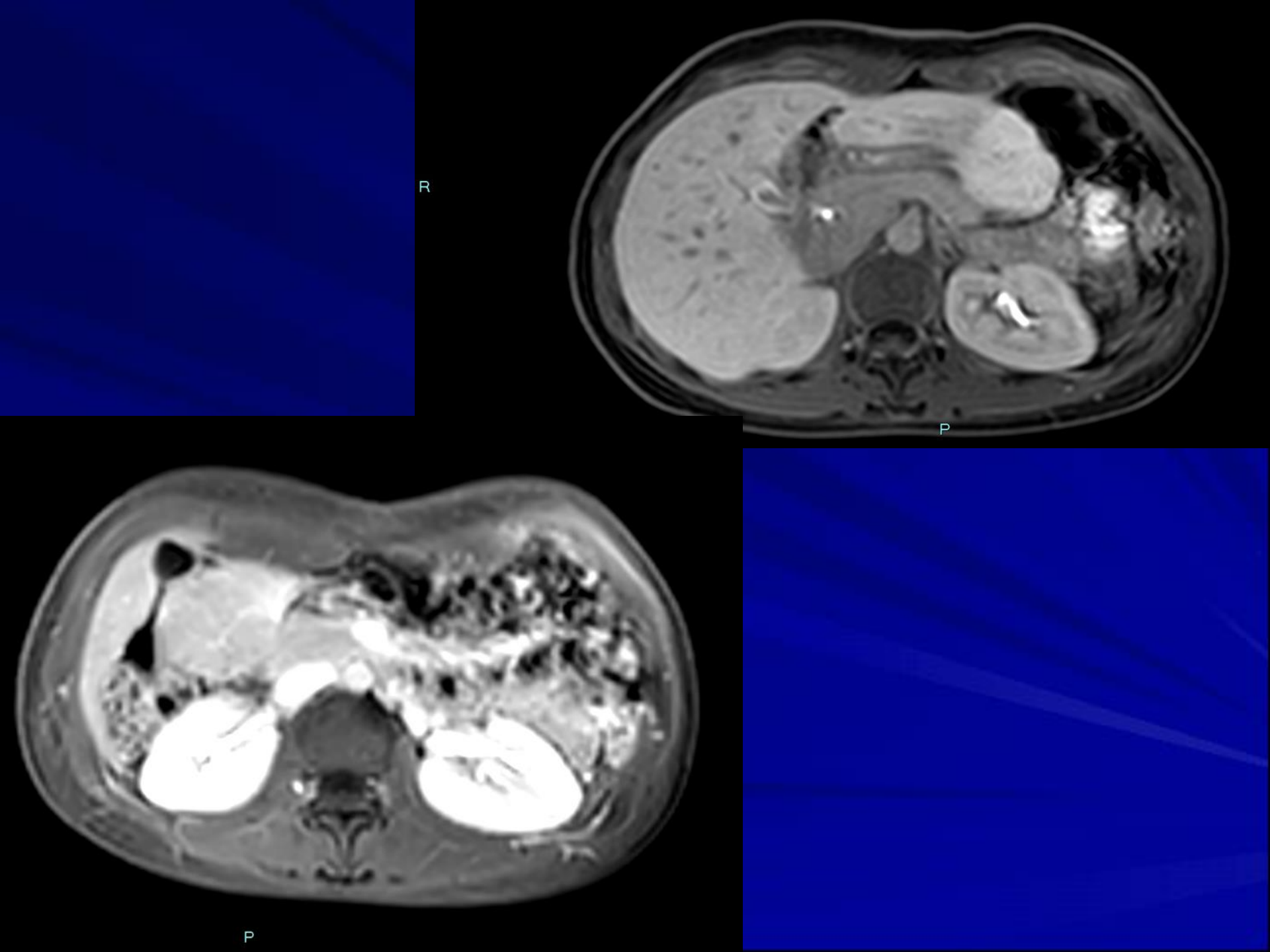
Imaging

- US: mass 5 cm in RUQ: lymph node? SOL originating from stomach?
- CT: sub-optimal exam (venous phase only).
  - Slightly hypodense lesion about 5 cm in the liver (segment 2)
  - peripheral nodular enhancement
  - central hypodense area
  - no significant wash out
  - no contact with

MRI



- What kind of lesion is it?
- Can it explain the patient's complaints?
- What is the treatment?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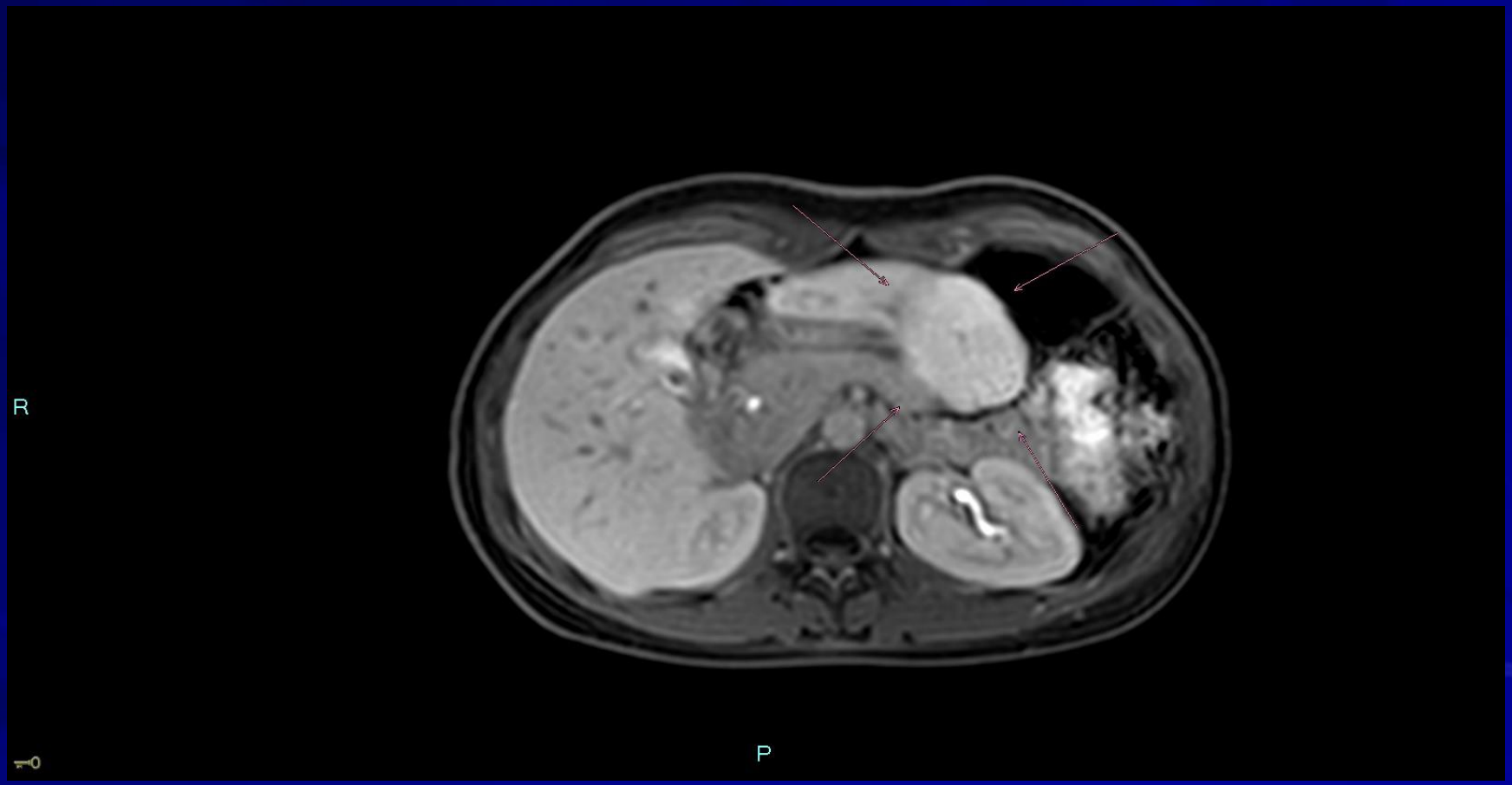
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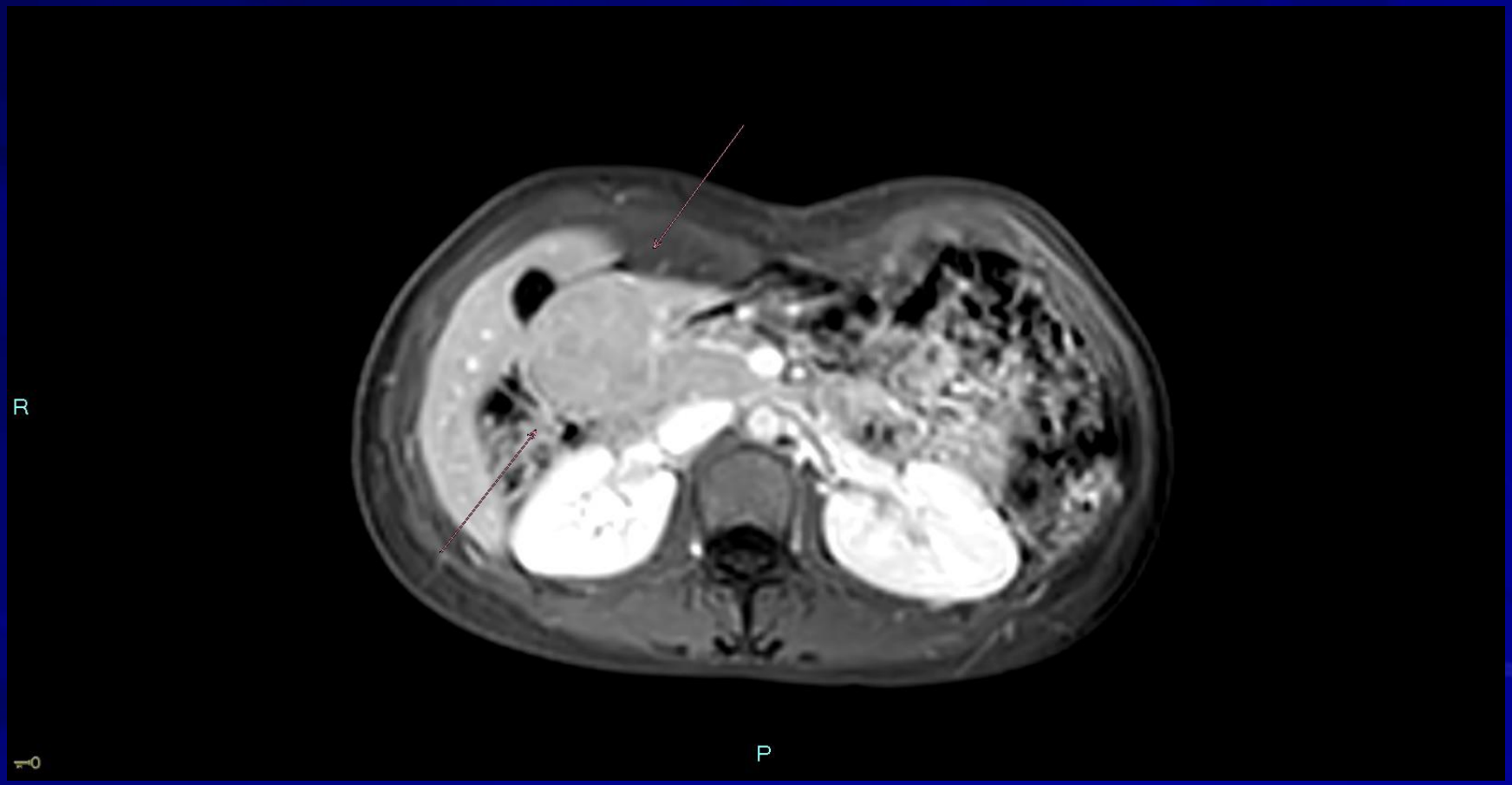
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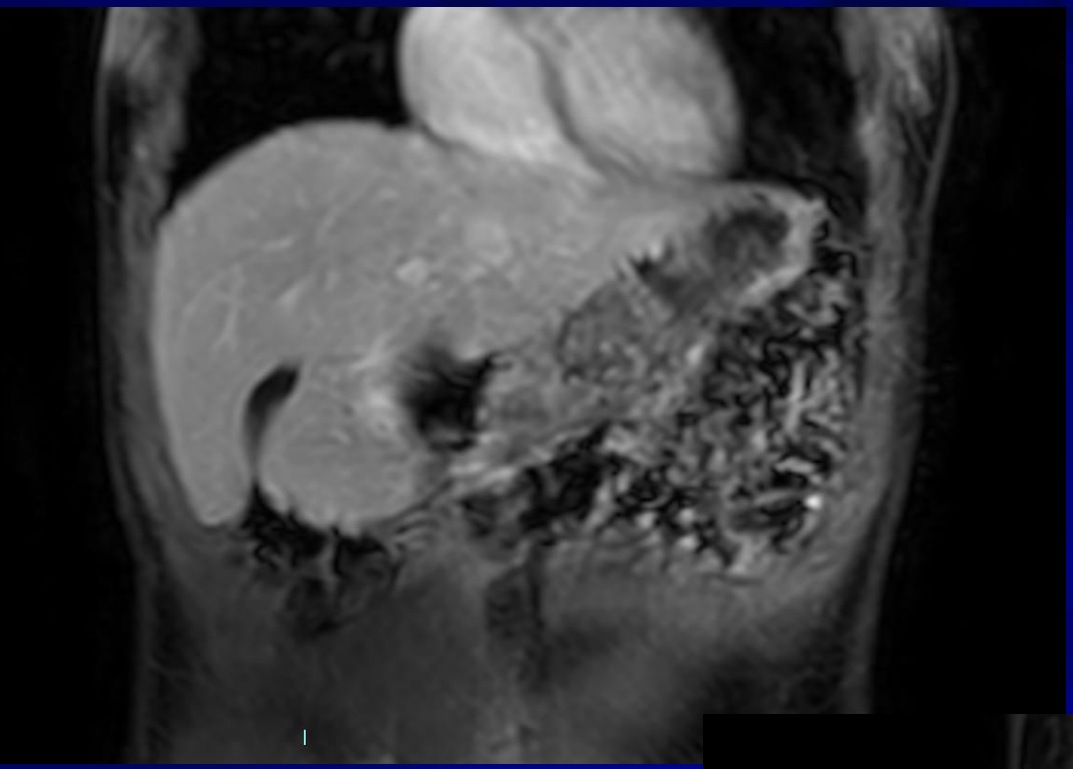
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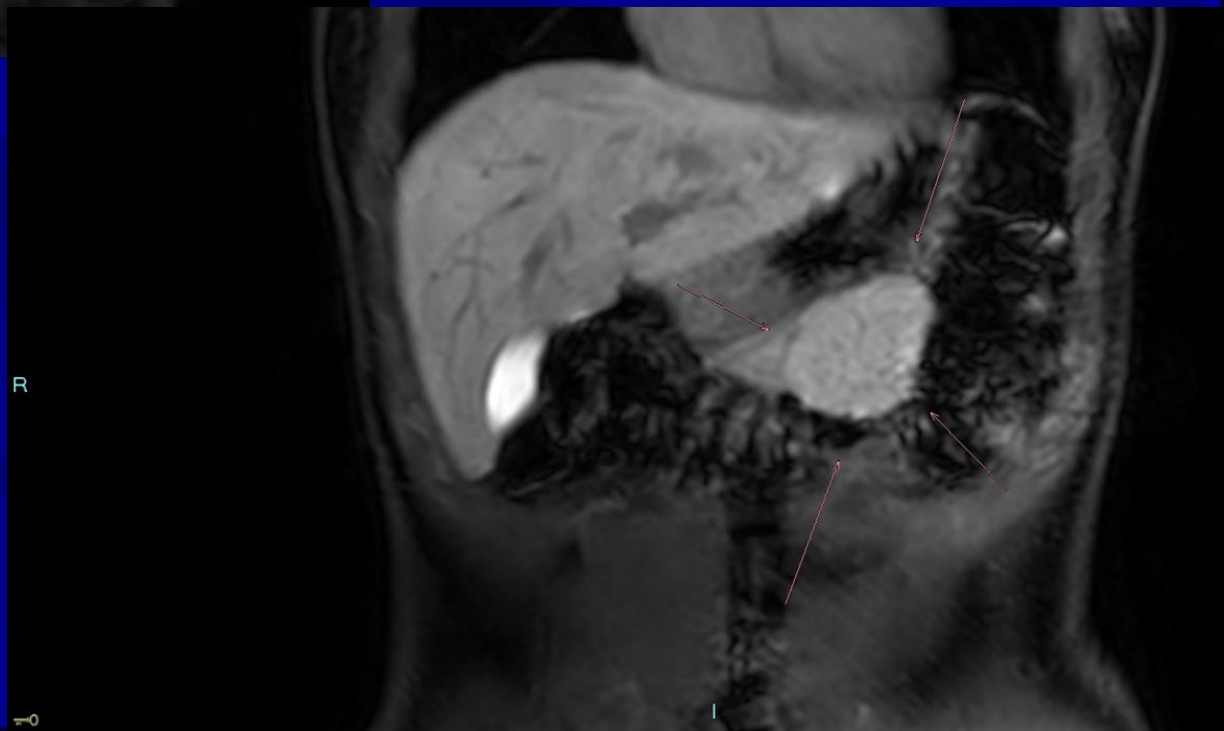
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Diagnosis:

PEDUNCULATED FNH (PFNH)

FNH

- 2nd frequent solid liver tumor
- 8% of primary hepatic neoplasms and 0.3-3% of population
- F:M = 10:1
- Age 20-50
- Solitary 70%, multiple 30%
- 8.8% - PFNH (*Bader TR et al, Magn Reson Imaging 2001*), 1st description – 1973

A propos: other pedunculated liver lesions

- Pedunculated hemangioma: 25 cases, typical in 85%
- Adenoma – 25% exophytic growth, but pedunculated – rare
- Pedunculated HCC – 3%, vascular invasion is rare and survival and prognosis are better
- 1 case – pedunculated accessory liver lobe
- 1 case of each of pedunculated liver tumors:
  - angiomyolipoma
  - lympangioma
  - liver fibrous solitary tumor
  - Cholangiocarcinoma
  - Liver metastasis

FNH

- Pathogenesis – vascular malformation with hyper-perfusion and hyperplastic response
- Origin of PFNH:
  - Congenitally displaced lobules in Glisson's capsule
  - Ectopic liver tissue
  - Accessory lobes
- Pathology – well-differentiated tumors. No capsule. Hepatocellular nodules + stromal tissue
- Classical forms of FNH - 80%
- Atypical - 20% (unknown clinical relevance):
  - Teleangiectatic
  - With cell atypia
  - Mixed hyperplastic + adenomatous

- 25% symptomatic *(A Cristiano et all,Updates Surg 2014)*
- Rare predisposition to hemorrhage and rupture
- 45% operated FNH – d.t. symptoms
  - Epigastric pain
  - Early satiety
  - Palpable mass
  - Decreased appetite
  - Weight loss
  - Nausea/vomiting
  - Fatigue

- Possible additional reasons for symptoms in PFNH:
  - Tension, torsion/volvulus of stalk
  - Mass effect such as pressure on stomach, bowel obstruction etc may manifestate on more distant organs

Diagnosis

- In the MRI era (especially using hepatobiliary contrast) diagnosis of FNH has high accuracy
- More difficult is diagnosis for
  - atypical FNH
    - lacking central scar
    - pseudocapsule
    - hyperintense on both T2w and T1w images (both natively and in delayed phases) and isointense in the hepatobiliary phase
  - Elderly patient with liver disease and risk for HCC

- Pedunculated liver tumors are more difficult for diagnosis as:
  - the pedicle may be very thin and unnoticed
  - atypical imaging aspect
  - torsion of pedicle
- In such cases the lesion may be interpreted as submucosal gastric tumors, retroperitoneal tumors, right adrenal tumors etc.

Tissue is issue

- 35-y.o woman with abdominal pain
- Perigastric mass by CT
- EUS – well-circumscribed, mixed echogenic mass about 3 cm arises from muscularis propria.
- FNA – hepatocytes!!!
- Lap excision – PFNH
- Asymptomatic p/surgery

K Reddy et al, GI Endoscopy 2015

Treatment: surgery

- Indications:
  - Symptomatic patient
  - Uncertainty of diagnosis
  - Tumor enlargement >3-5 cm/y
  - Possibility of rupture, bleeding, torsion?
- Outcomes:
  - Neglectible mortality
  - 14% morbidity
  - 85-92 % disappearance of symptoms

Am J Surg 2012 *Semin Liver Dis 2013*

Eur J Med Res 2015 *HPB 2014, 2015*

Not only GI symptoms may improve…

- 12-y.o. female
- preoperative evaluation for correction of tetrology of Fallot
- diagnosis of asymptomatic PFNH
- The degree of cyanosis decreased after mass excision

S. Sawhney, Pediatr Radiol 1992

Intraoperative and postoperative images of the pedunculated FNH

J Med Ultrasonics (2015) 42:97–102

Treatment: embolisation

- Alternative for surgery if there are difficulties (lesion location) or contraindications
- 50% FNHs are hyper vascular with central feeding artery
- 58% complete resolution of symptoms, 42% - partial
- 87% mean decrease in size

J Vasc Interv Radiol 2013

Radiol Clin N Am 2015

Back for our patient

- At least upper abdominal pain may be considered as PFNH manifestation
- Pain significantly decreases her QOL
- Other possible reasons for pain were excluded
- Surgery was offered

Quae medicamenta non sanant, ferrum sanat

Hyppocratus