

MULTIDISCIPLINARY WORKSHOP
ESGAR/EPC
MULTIDISCIPLINARY
PANCREATIC WORKSHOP



March 22 - 23, 2018
Lisbon, Portugal



Clinical Case

António Pedro Pissarra

March 23, 2018

Medical Imaging Department, University Hospitals of Coimbra
Dir.: Prof. Doutor Filipe Caseiro Alves

Case Report



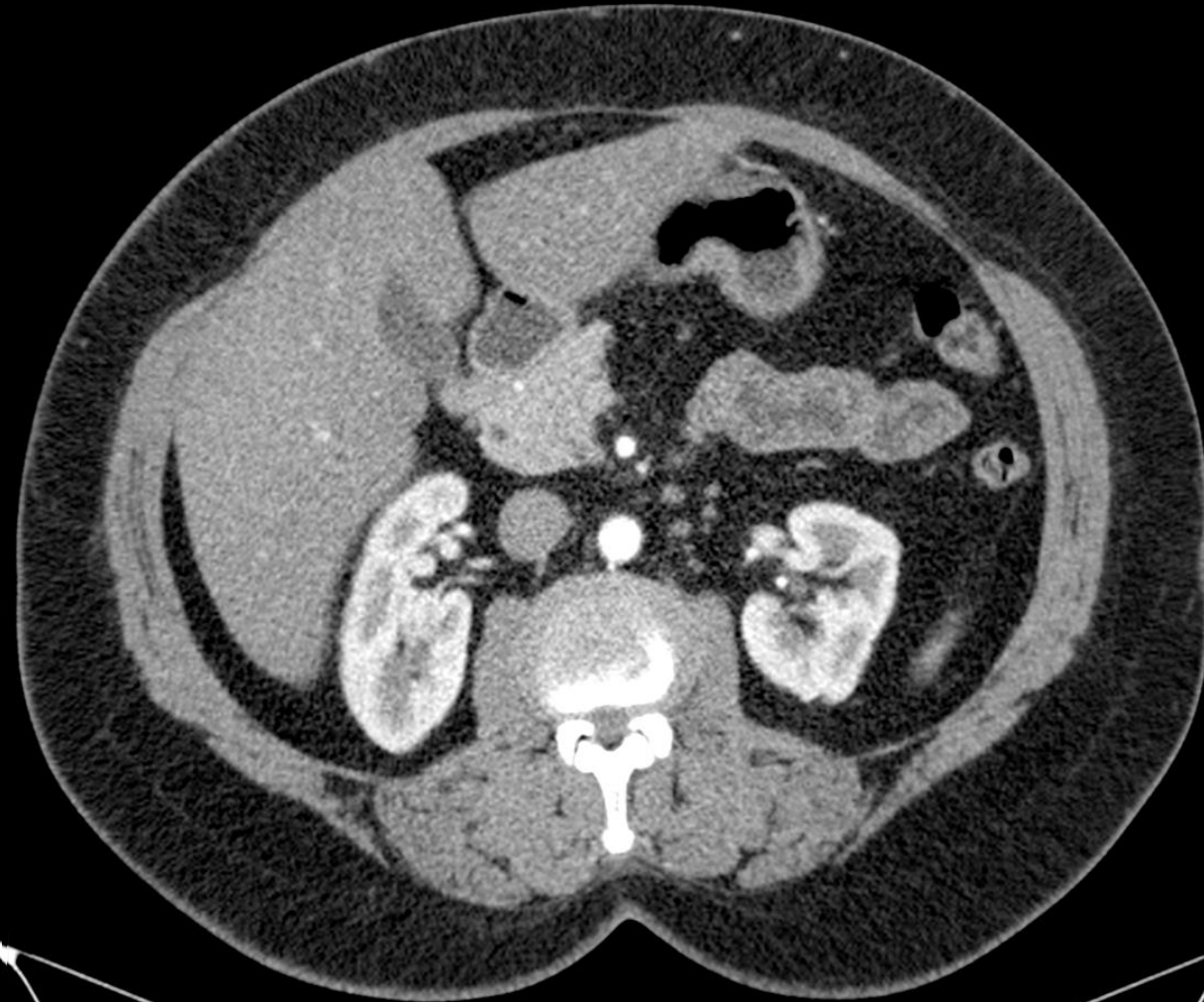
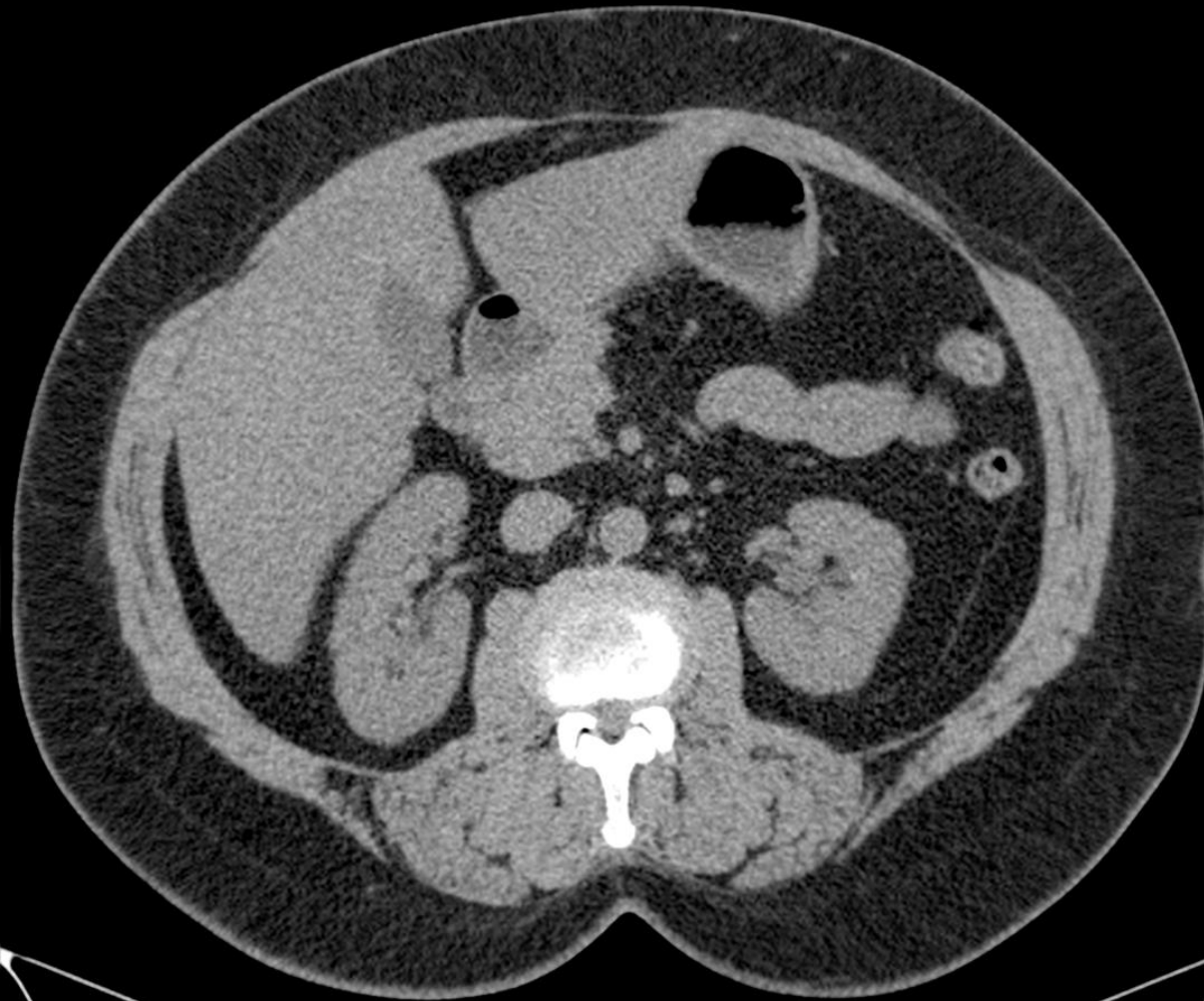
- 62-year-old woman;
- Medical history:
 - Obesity;
 - Arterial hypertension;
 - Dyslipidemia;
 - Hypothyroidism;
 - Alcohol abuse.
- Surgical history:
 - Left thigh intermediate-grade chondrosarcoma (surgically removed in 2005 - R0);
 - Hysterectomy (21 years ago; unknown causes).



Yearly Follow-up CT scan

Yearly Follow-up CT scan

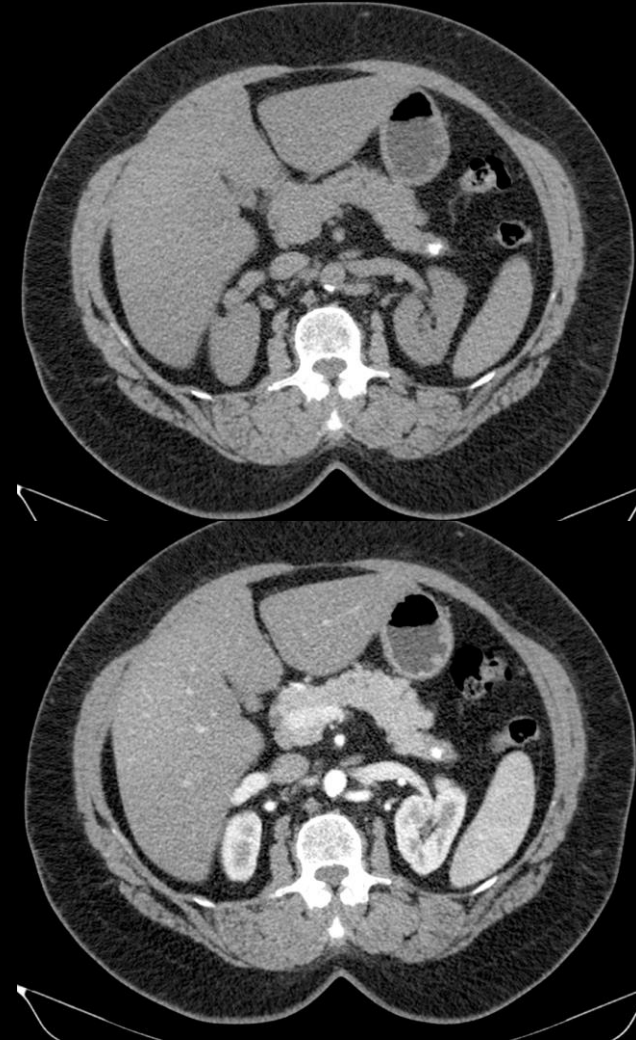
March 2016



Yearly Follow-up CT scan

March 2016

- Single calcified nodule (13 mm);
- No ductal abnormalities;
- Normal pancreatic parenchyma;
- No other relevant findings.

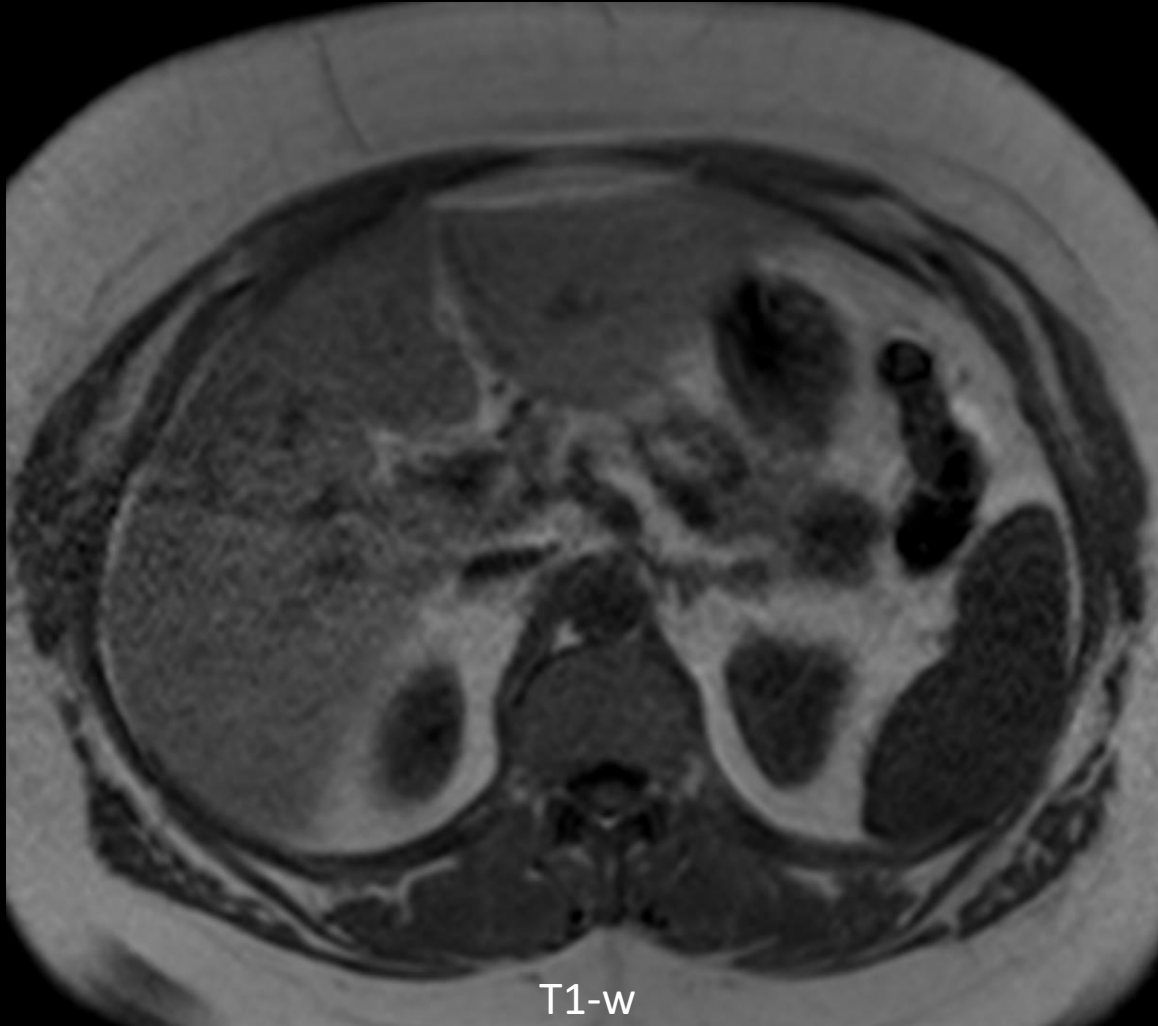




Pancreatic MRI

Pancreatic MRI

May 2016



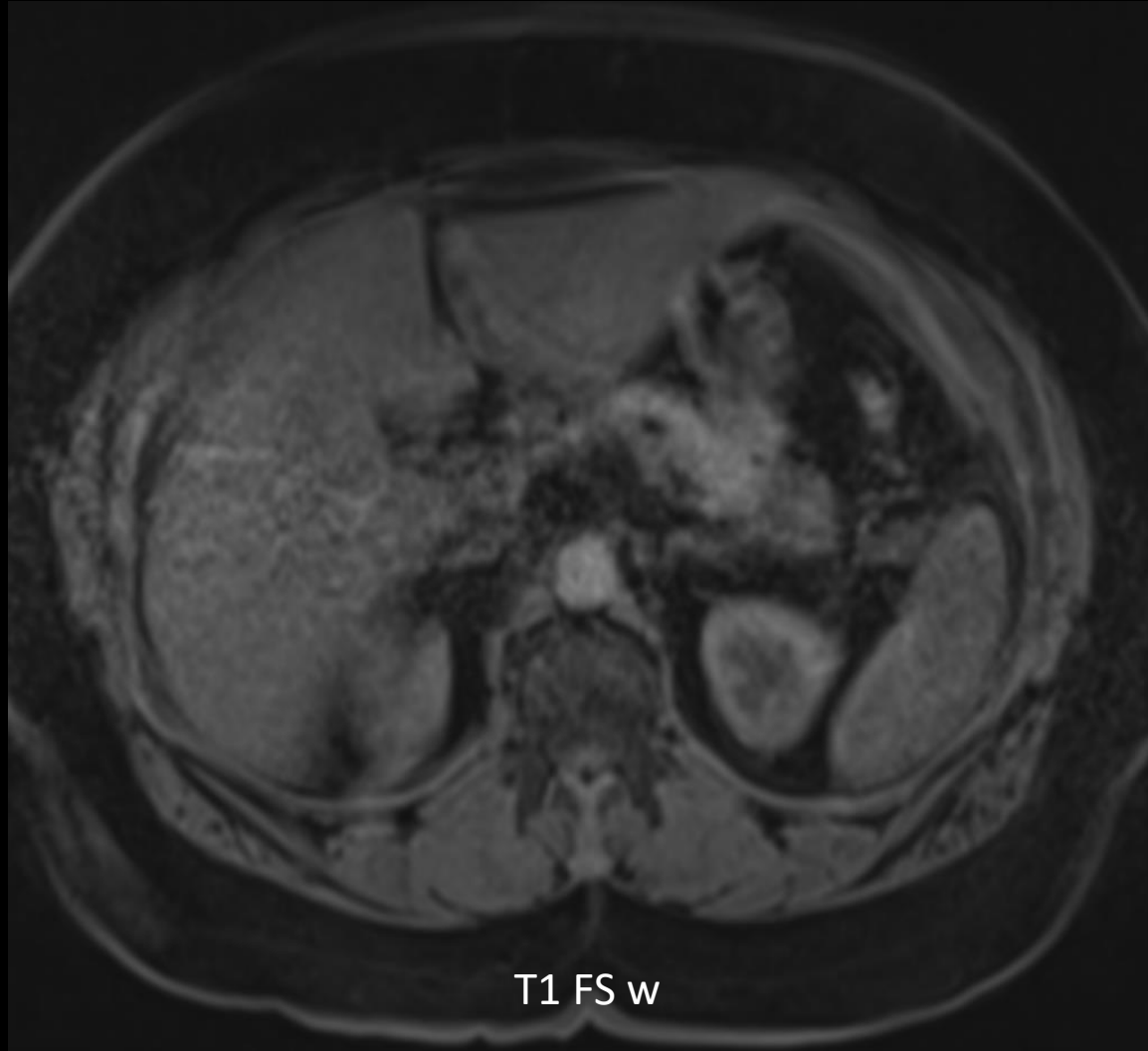
T1-w



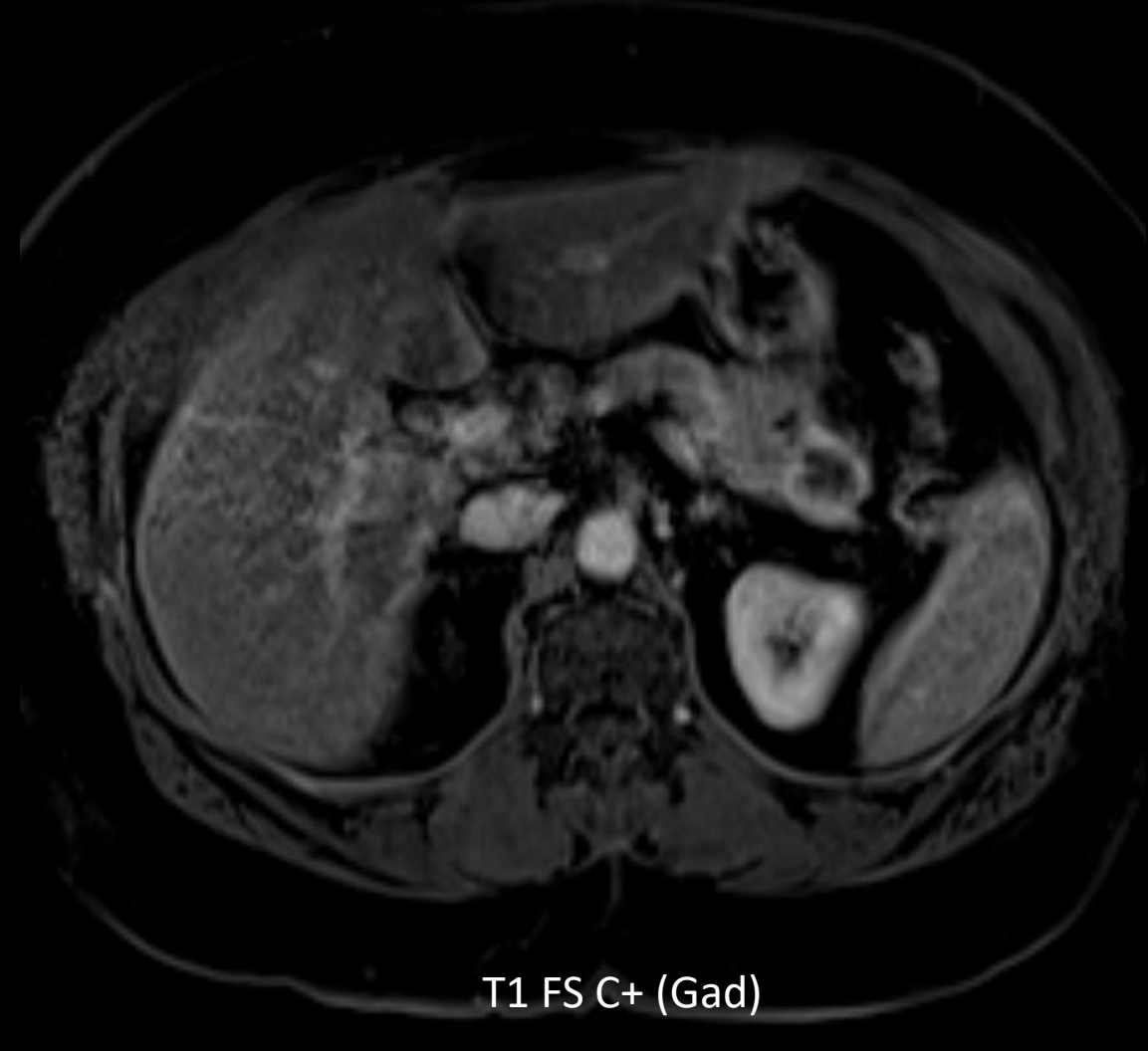
Half-Fourier T2-w FSE

Pancreatic MRI

May 2016



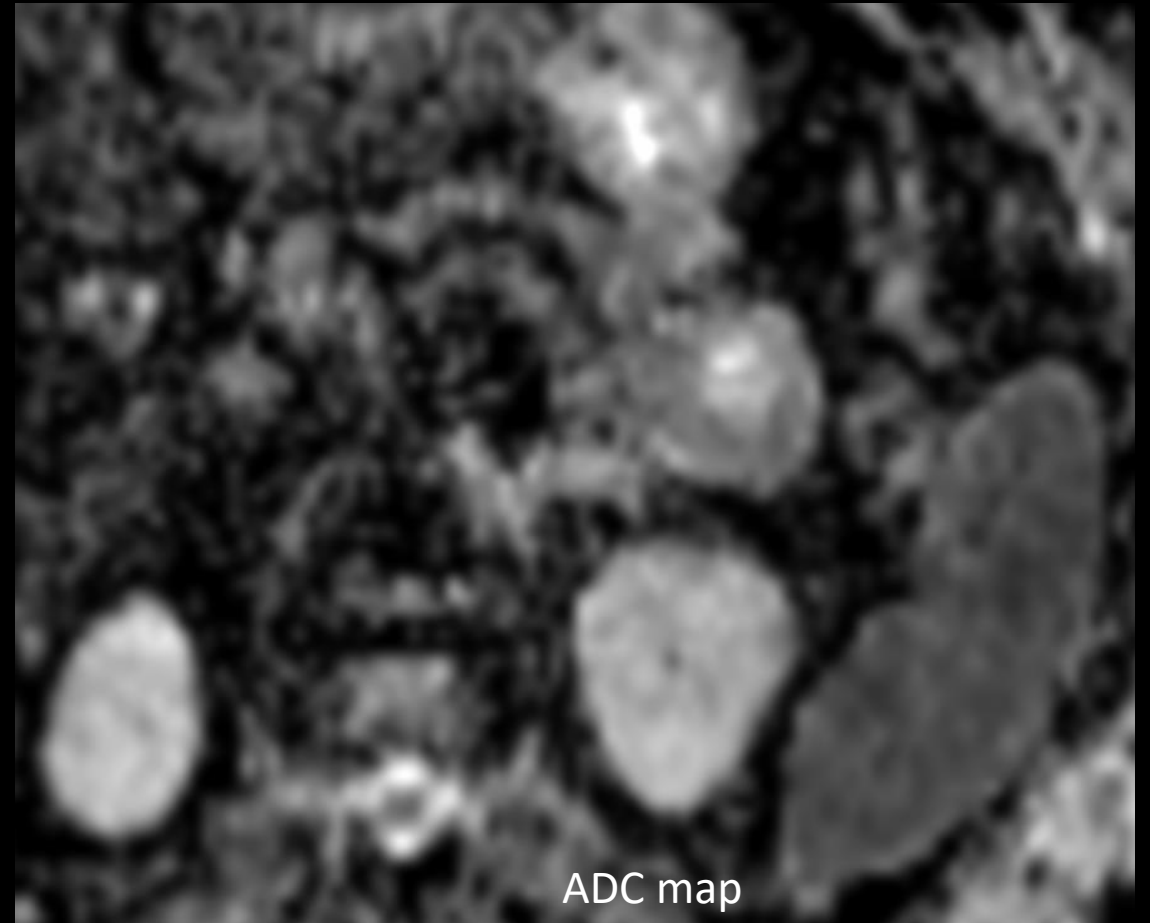
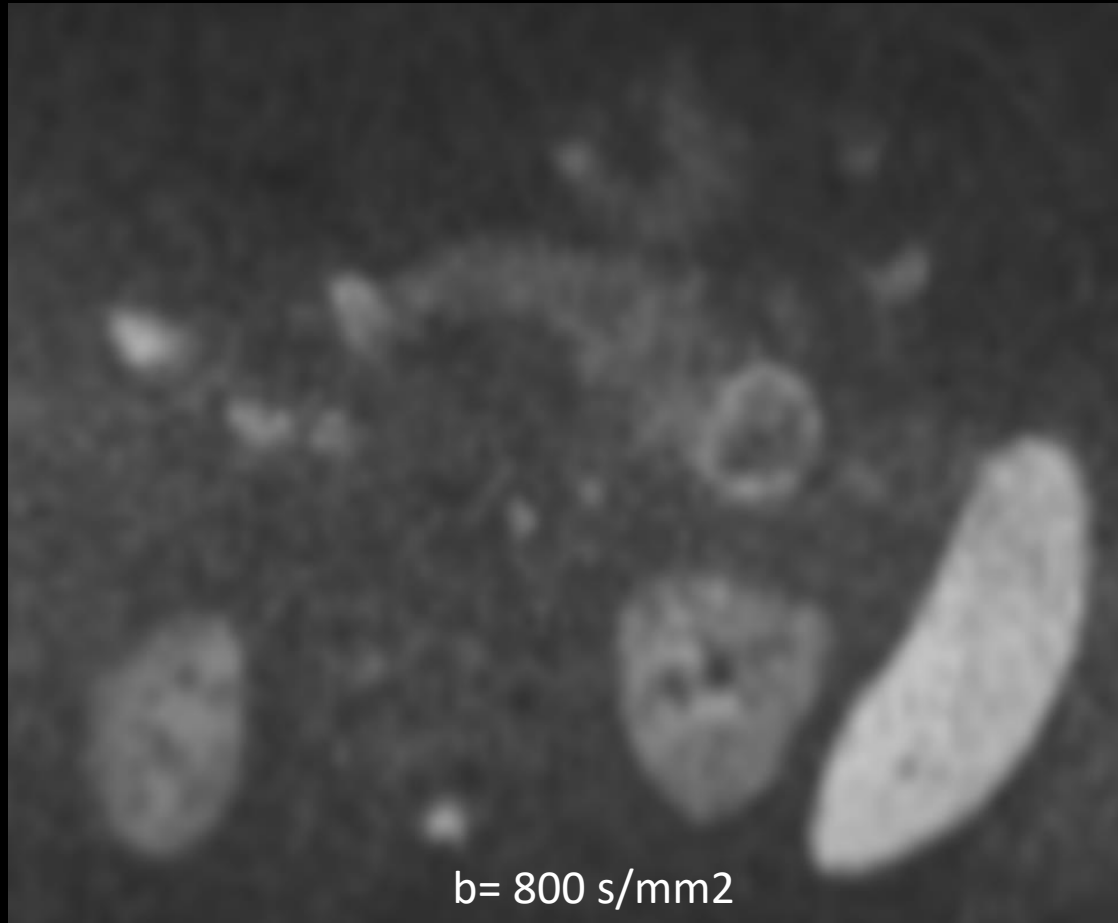
T1 FS w



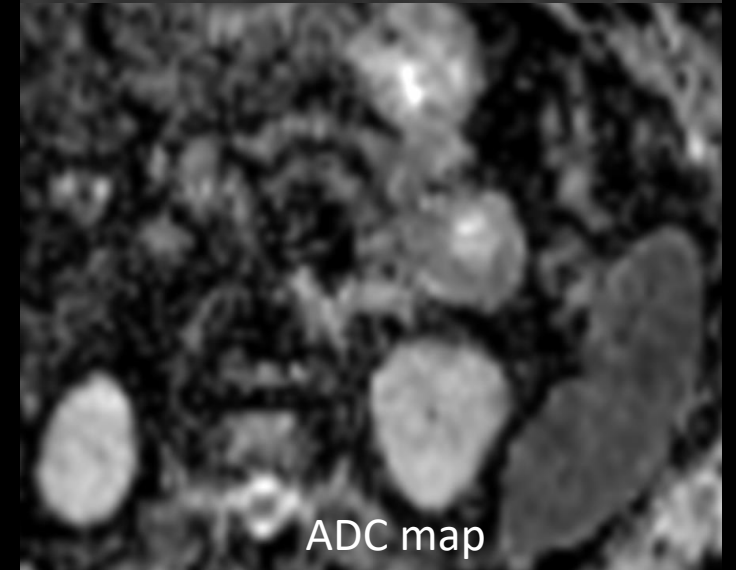
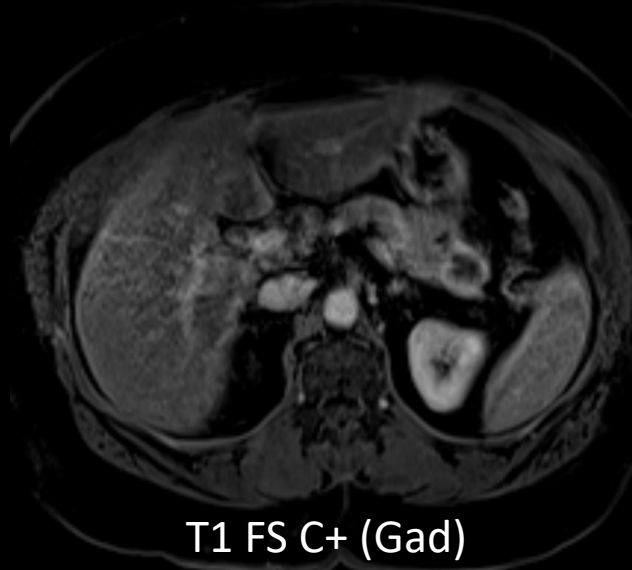
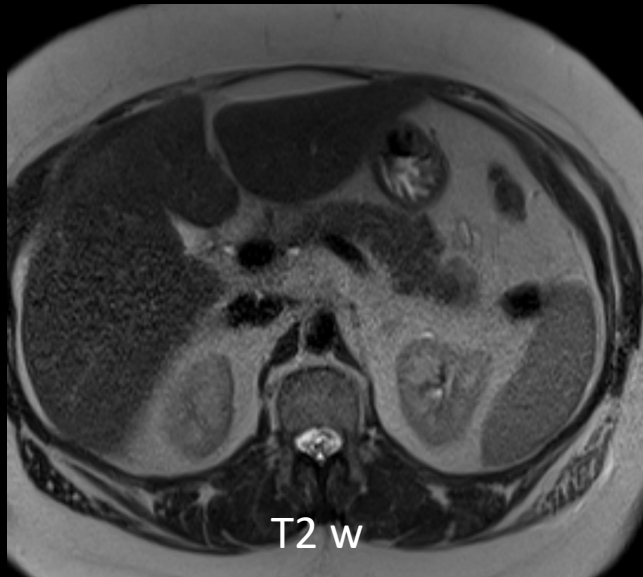
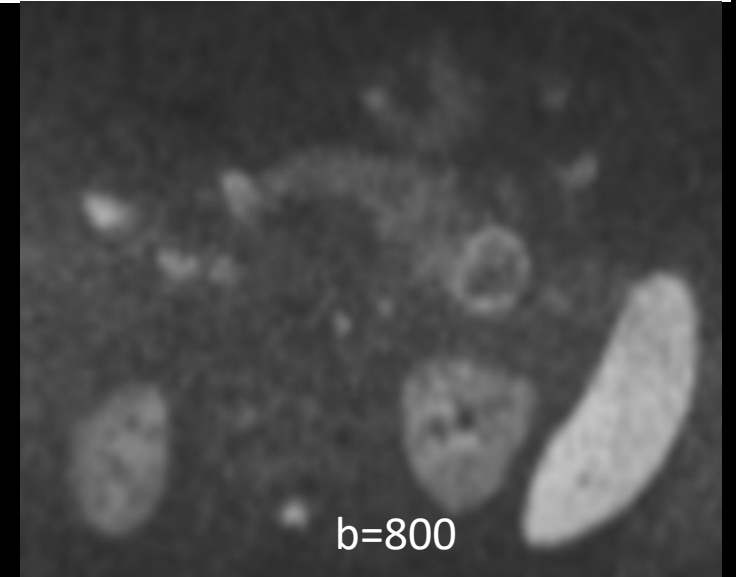
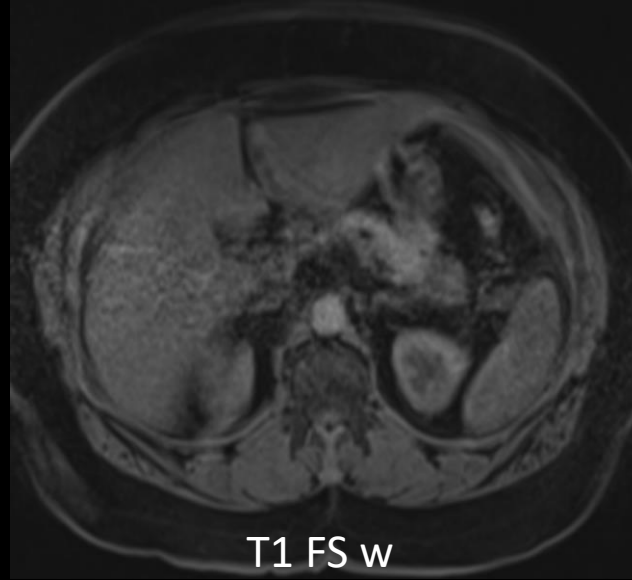
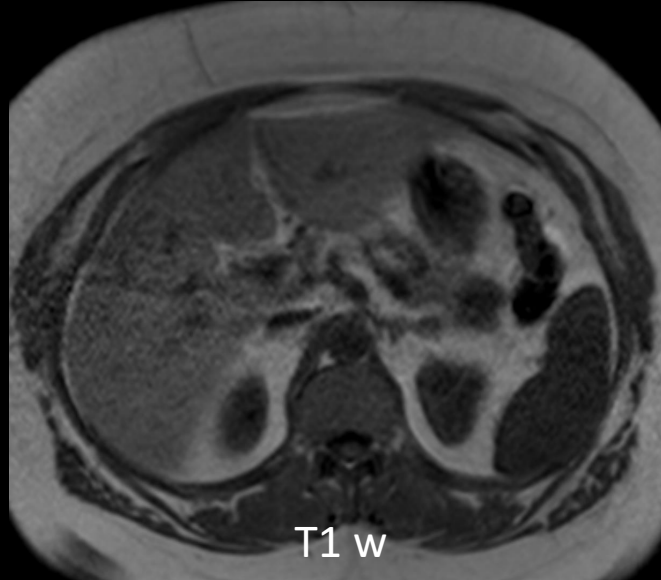
T1 FS C+ (Gad)

Pancreatic MRI

May 2016



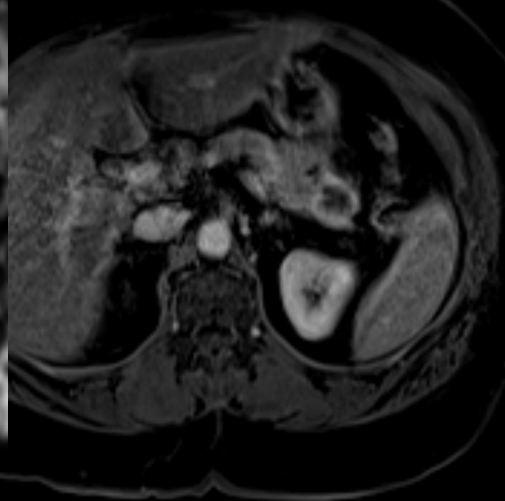
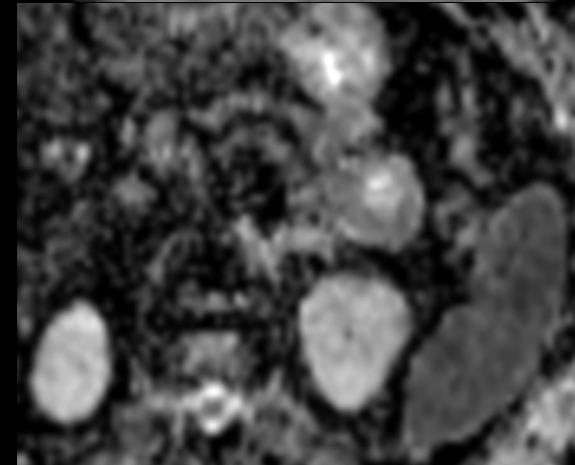
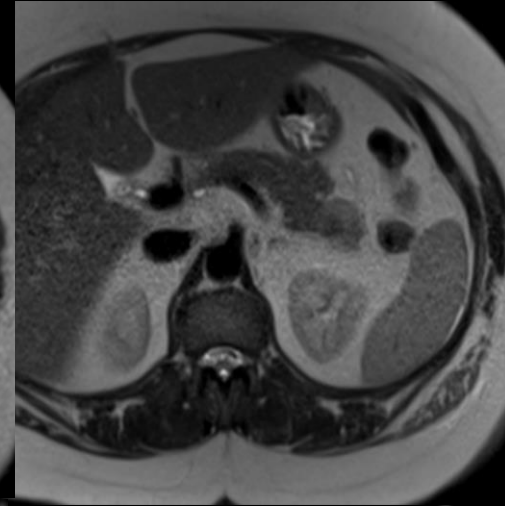
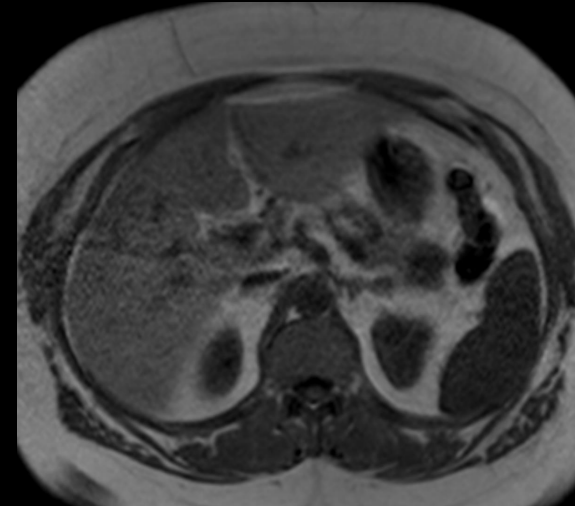
Pancreatic MRI



Pancreatic MRI



- Hypointense on T1-w images;
- Central hypointensity and peripheral hyperintensity on T2-w images;
- Peripheral enhancement and diffusion restriction.





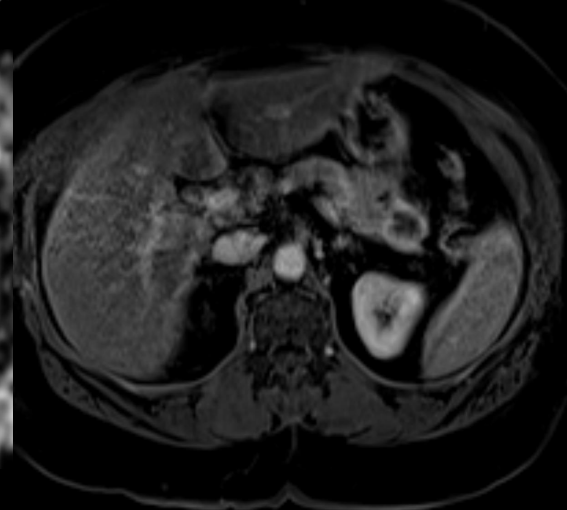
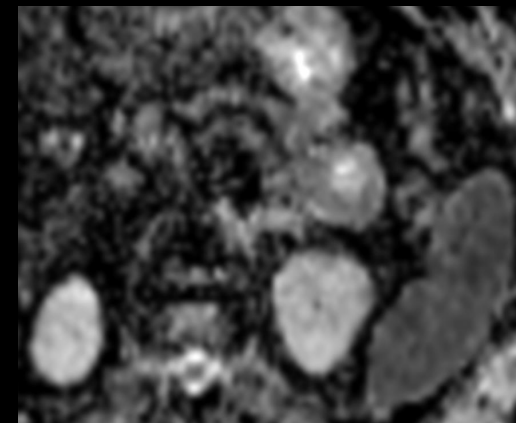
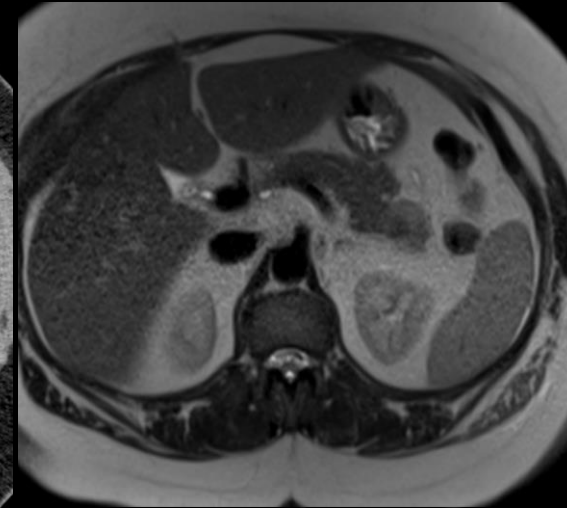
?

Question 1



■ What is the most likely diagnosis?

1. Mass-forming chronic pancreatitis?
2. PNET?
3. Calcified metastasis?
4. Malignant epithelial pancreatic tumor?

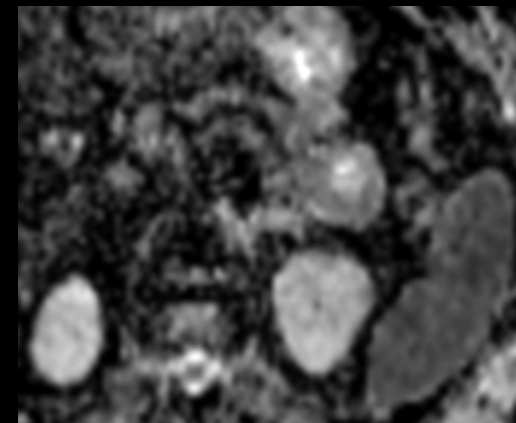
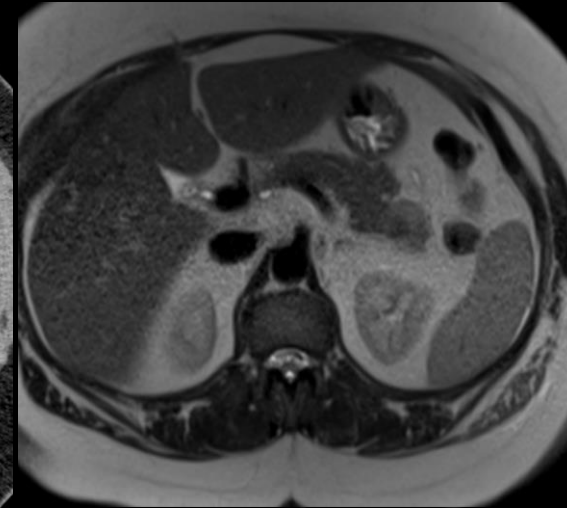


Question 1



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Differential Diagnosis



■ Mass-forming chronic pancreatitis

- ✓ Most common cause of pancreatic calcification (++ alcohol abuse);
- ✓ Calcification occurs in 50% of patients;
- ✓ Intraductal and/or parenchymal, usually focal and variable in size;
- ✓ Parenchymal fibrosis in chronic pancreatitis may cause DWI restriction.

TABLE 1: Specificity of Calcification in Chronic Pancreatitis

Location of Calcifications	Specificity (%)
Only parenchymal	67
Only intraductal	88
Diffuse parenchymal	91
Coexisting parenchymal and intraductal	100

Differential Diagnosis



■ Mass-forming chronic pancreatitis

- ✗ Usually multiple, irregular and small;
- ✗ ++ pancreatic head
- ✗ No main pancreatic duct/glandular atrophy;

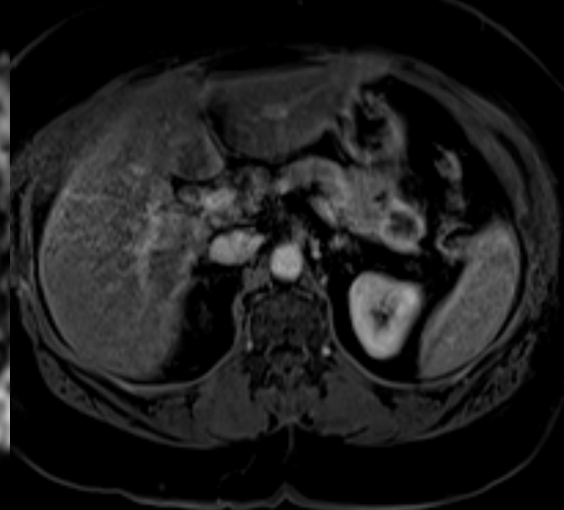
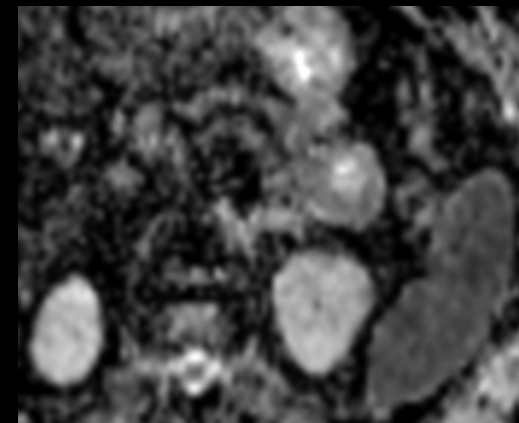
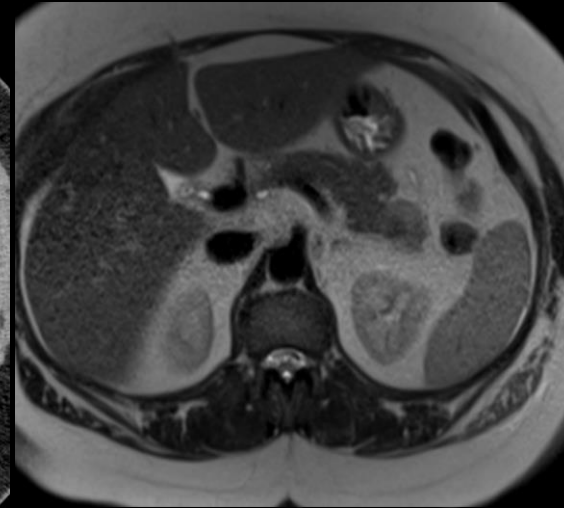
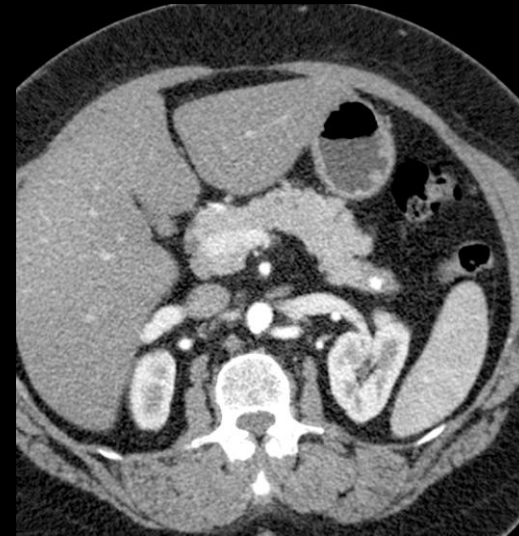


Question 1



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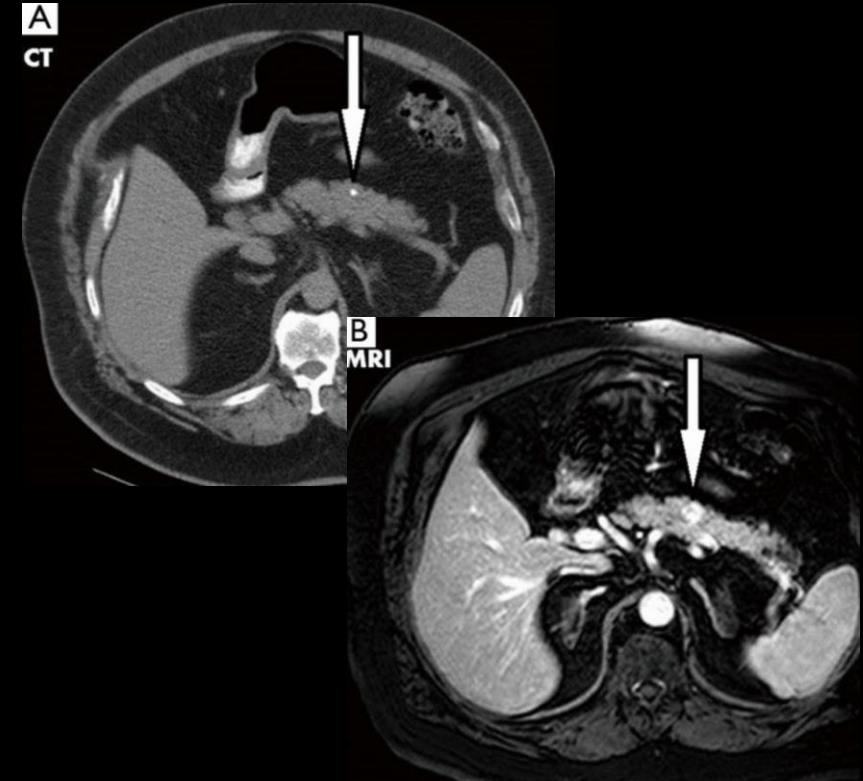


Differential Diagnosis



■ PNET

- ✓ ++ 4th-6th decades;
- ✓ ++ single, with no predilection for any part of the gland;
- ✓ Calcification can occur in hyperfunctioning and nonhyperfunctioning PNETs ($\approx 25\%$), usually central and focal;
- ✓ T1-w hypo and T2-w hyperintense, enhancement and restriction on DWI.



Pourmorteza, 2016

Differential Diagnosis



■ PNET

- ✗ Nonhyperfunctioning NETs calcify more commonly than hyperfunctioning NETs do;
- ✗ Nonhyperfunctioning NETs usually present as large tumors;
- ✗ Normally heterogeneous peripheral calcifications;



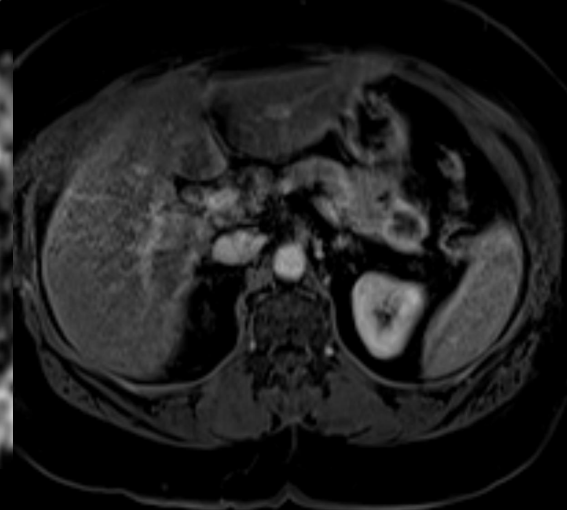
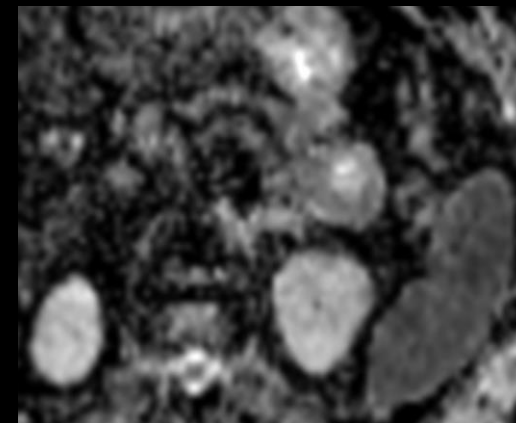
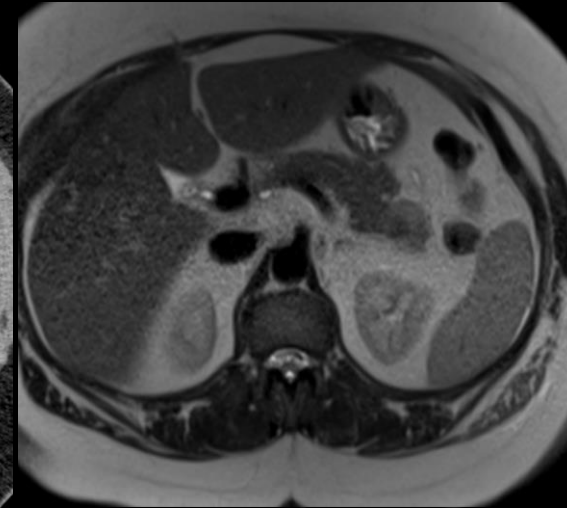
Mi Hye Yu, 2017

Question 1



■ What is the most likely diagnosis?

1. Mass-forming chronic pancreatitis ?
2. PNET?
3. **Calcified metastasis?**
4. Malignant epithelial pancreatic tumor?

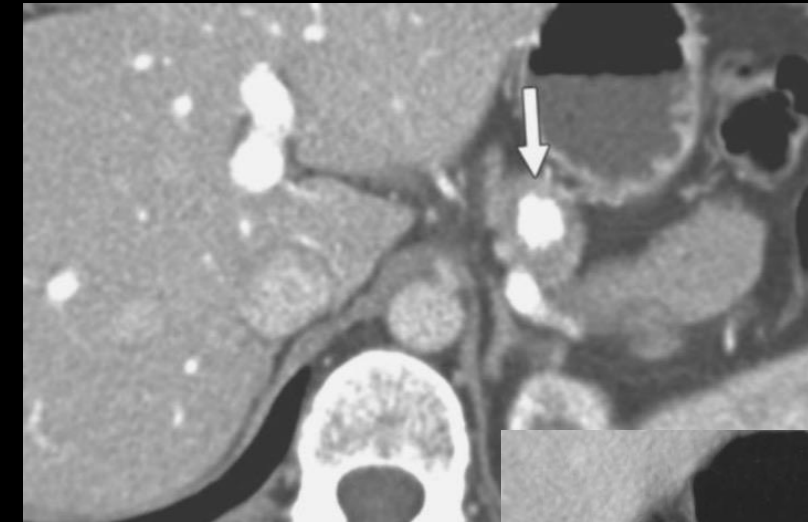


Differential Diagnosis



■ Calcified metastasis

- ✓ Past history of a primary tumor;
- ✓ Usually solitary (50-70%);
- ✓ Sarcomas rarely metastize to the pancreas (8%);
- ✓ Reports of calcified pancreatic metastases of osteosarcoma.



Javadi, 2017



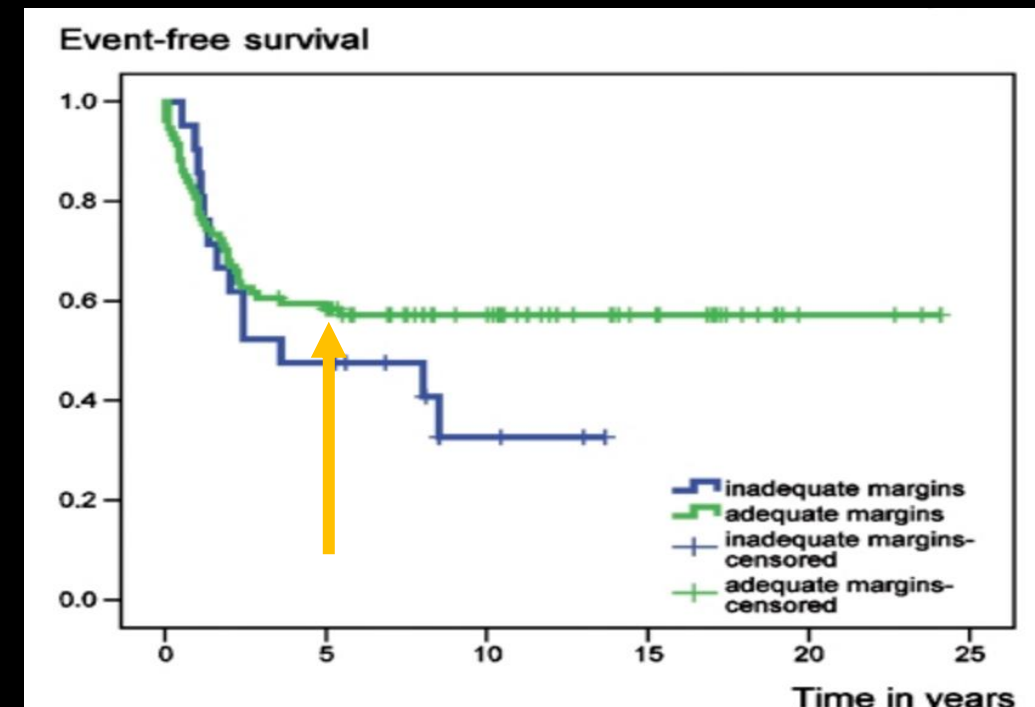
Lesniak, 2002

Differential Diagnosis



■ Calcified metastasis

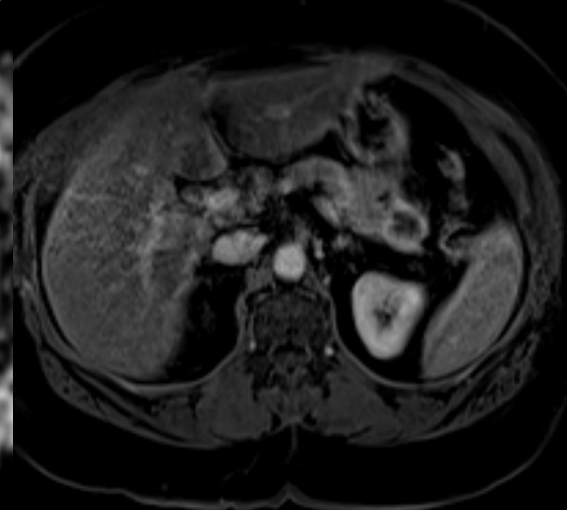
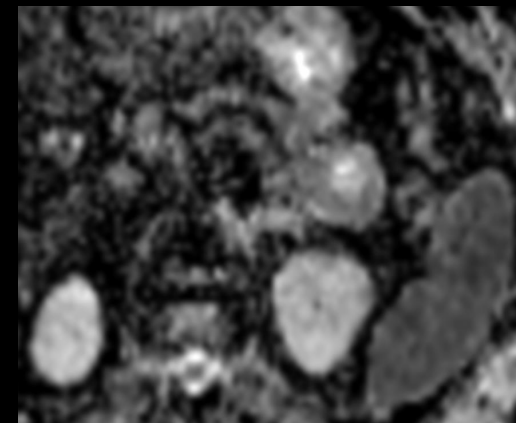
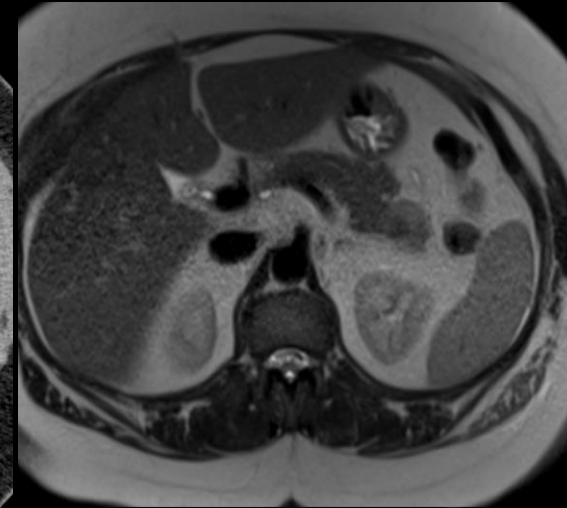
- ✗ Extremely low incidence in pancreas (++ secondary to renal, lung and breast cancers);
- ✗ Metastatic calcification is even lower (++ kidney and CRC);
- ✗ Chondrosarcoma mets more frequently appear in the first 5 years after diagnosis.



Question 1



- What is the most likely diagnosis?
 1. Mass-forming chronic pancreatitis ?
 2. PNET?
 3. Calcified metastasis?
 4. **Malignant epithelial pancreatic tumor?**



Differential Diagnosis

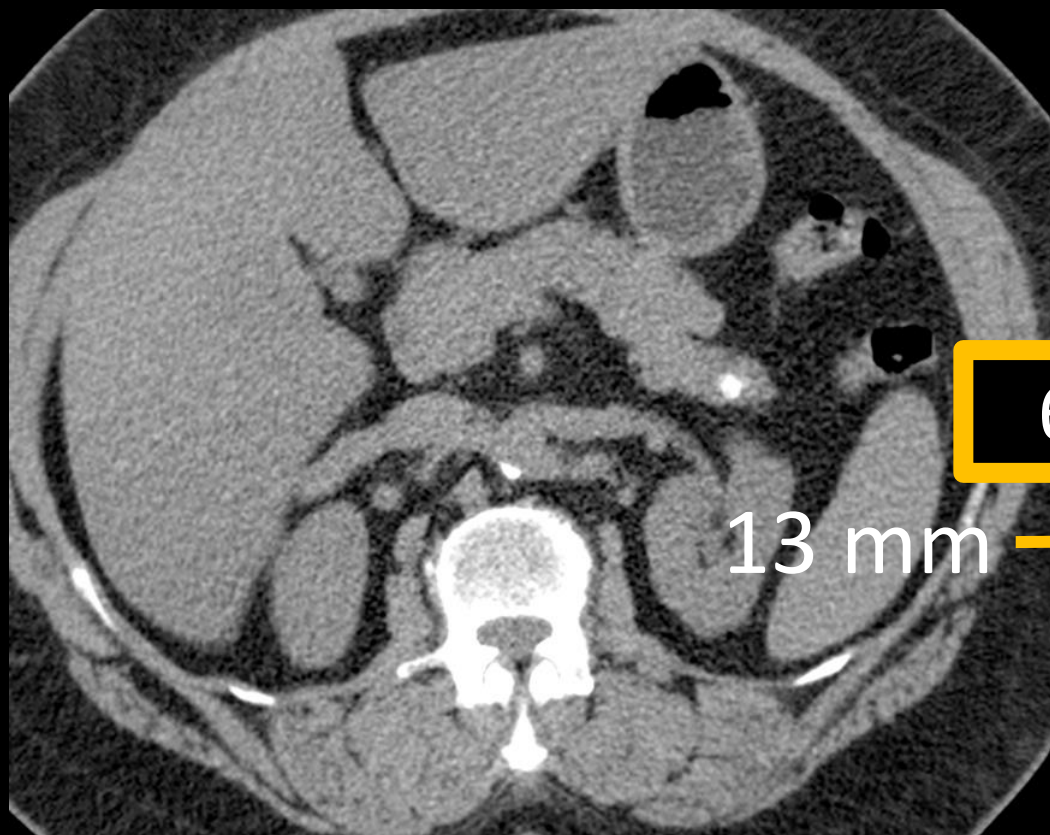


■ Malignant epithelial pancreatic tumor?

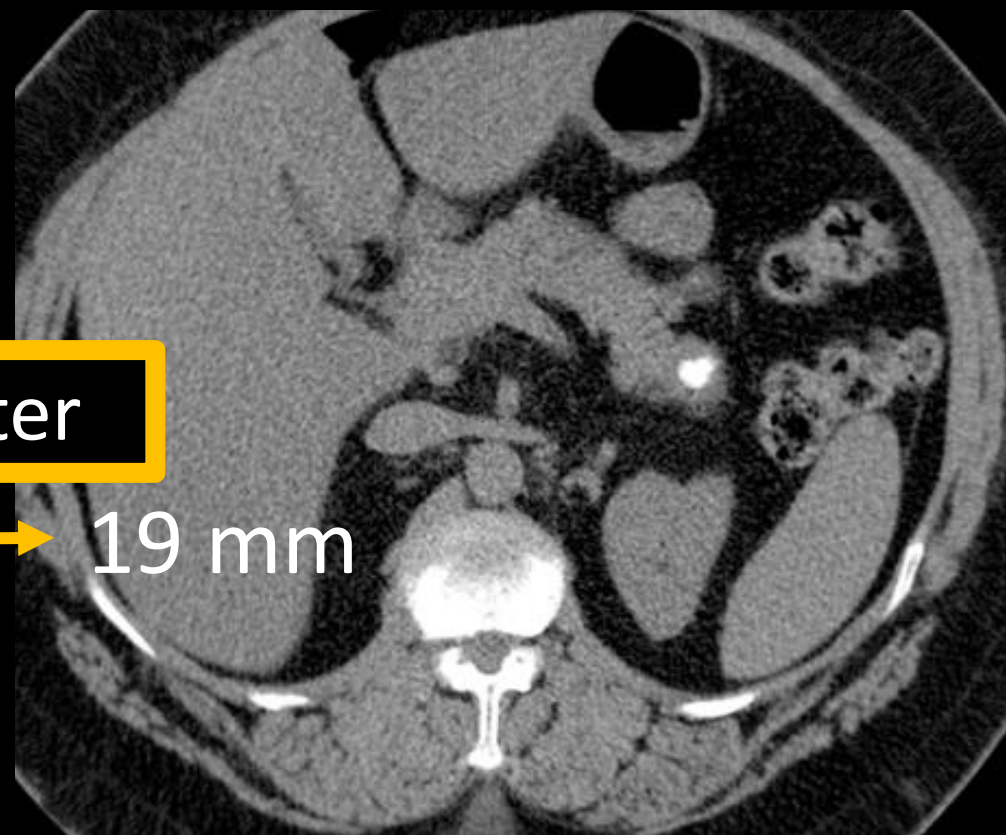
- ✓ Acinar cell carcinomas (50%), solid pseudopapillary tumors (30%);
- ✗ Large at presentation, calcifications within an obvious mass;
- ✗ Most common in men (acinar cell carcinoma);
- ✗ Age group not compatible (solid pseudopapillary tumors).

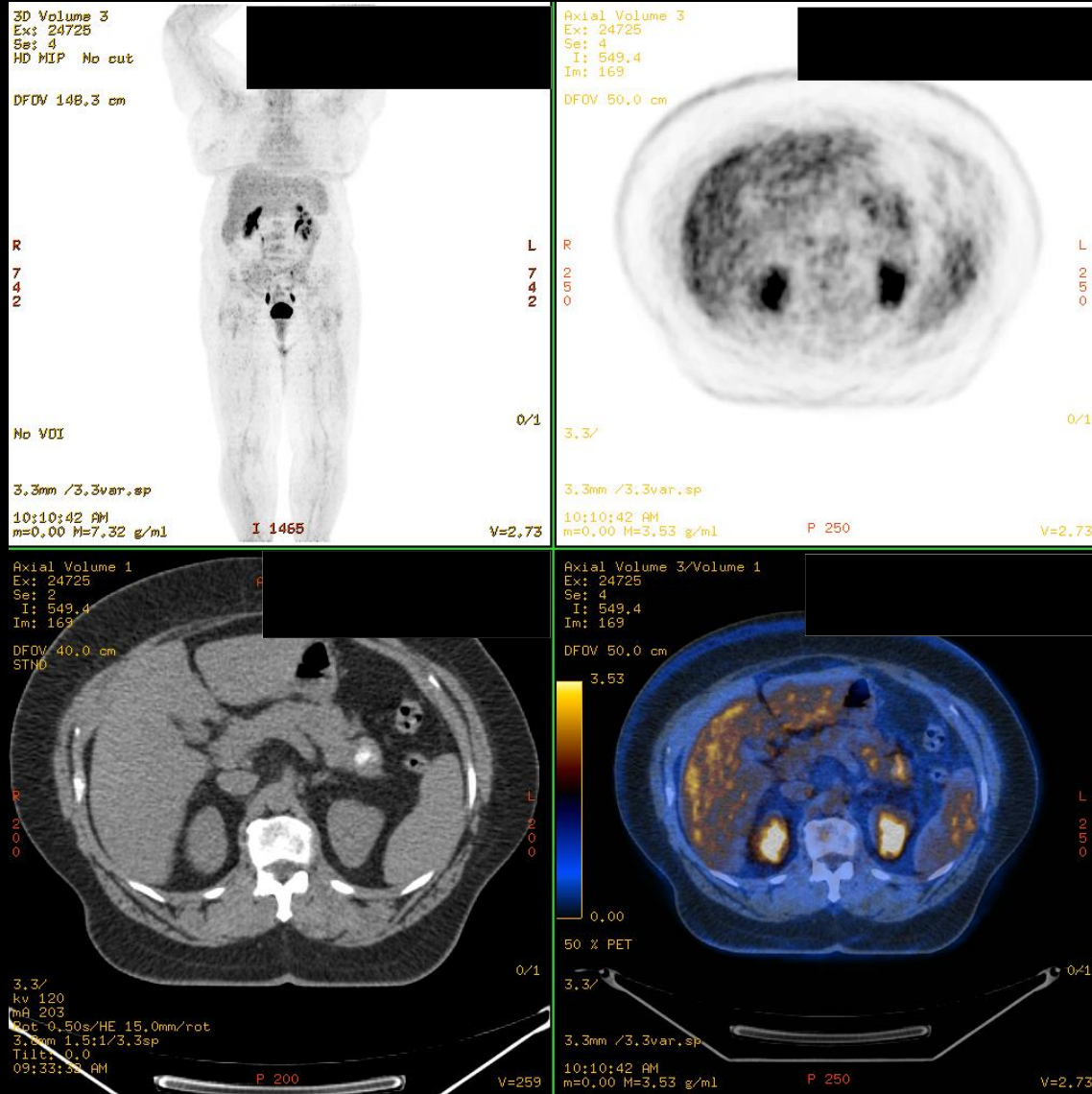


November 2016



6 months later





✓ + FDG-PET at the tail of the pancreas;

✓ no other metabolically active lesions;

Question 1



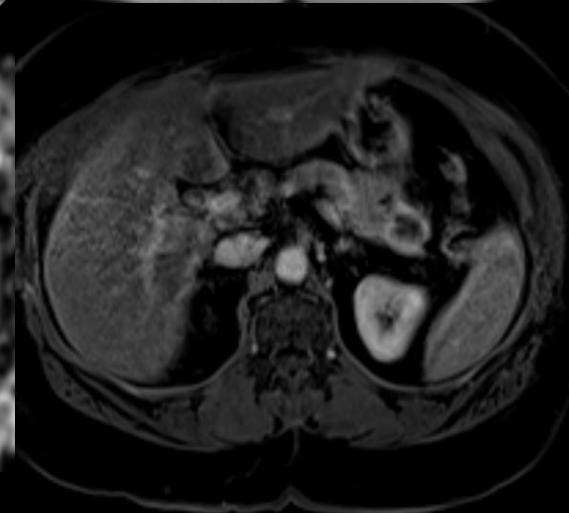
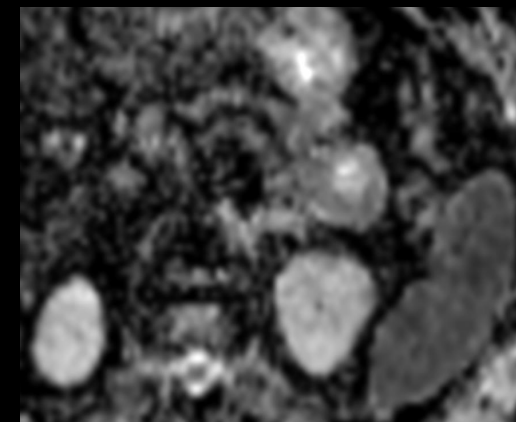
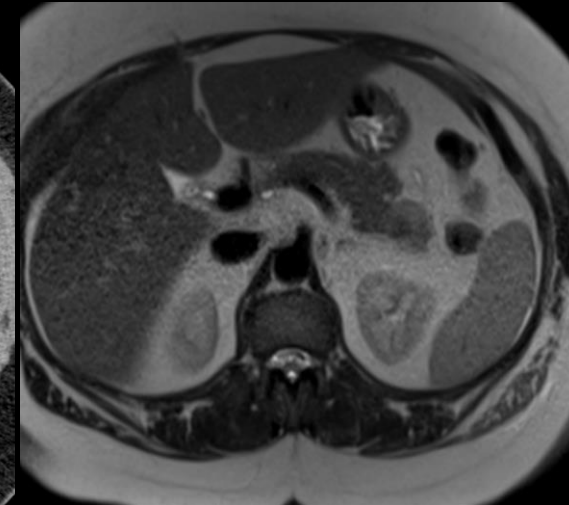
■ What is the most likely diagnosis?

~~1. Mass-forming chronic pancreatitis?~~

2. Undifferentiated PNET?

3. Pancreatic calcified metastasis?

~~4. Malignant epithelial pancreatic tumor?~~

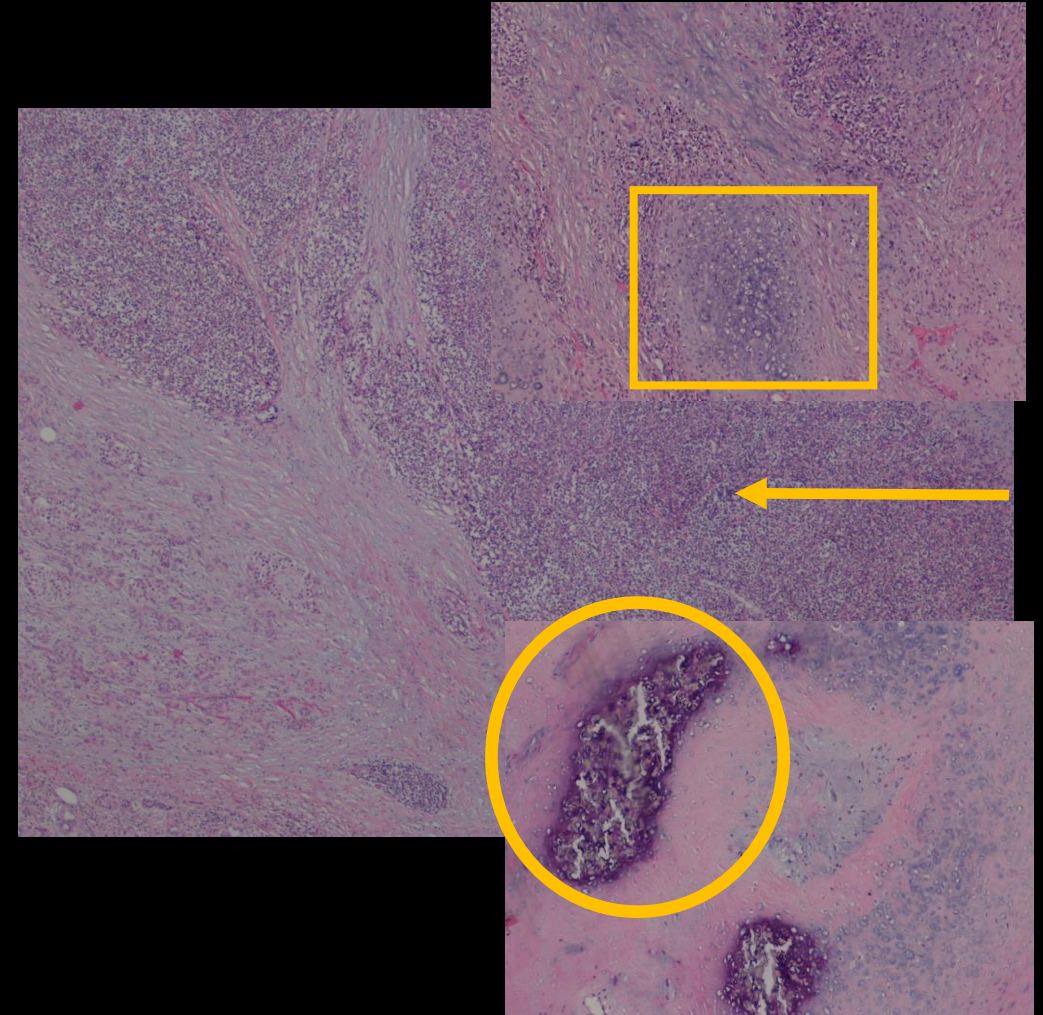


Pathology

- Pleomorphic neoplastic cells
- Mature cartilaginous tissue
- Multiple dystrophic calcifications



Calcified chondrosarcoma metastasis



Teaching Points

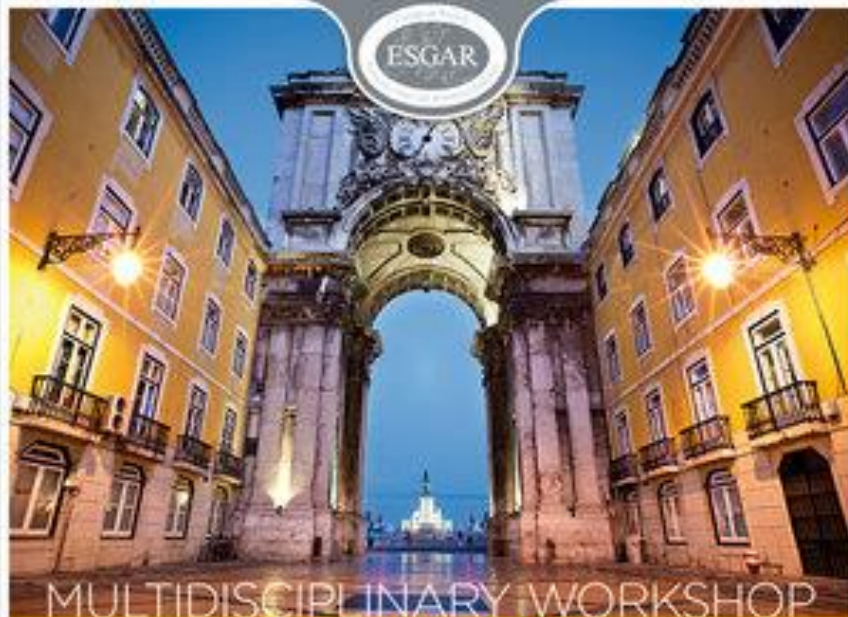


- CP calcifications are usually multiple and +++ pancreatic head;
- Calcification of PNET is more common in non-hyperfunctioning tumors;
- Pancreatic metastasis are rare (about 2% of all pancreatic malignancies);
- Usually secondary to kidney, breast and lung cancer;
- Calcified pancreatic metastases may occur in renal cancer, mucin-producing CRC, ovary and bone forming tumors.

References



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- [4] - Scatarige, J.C.; Horton, K.M.; Sheth, S.; Fishman, E.K. Pancreatic parenchymal metastases: observations on helical CT. *Am J Roentgenol* (2001);176 (3): 695, 697, 698
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- [11] - Andreou, D.; Ruppini, S.; Fehlberg, S.; Pink, D.; Werner, M.; Tunn, P.U. Survival and prognostic factors in chondrosarcoma: results in 115 patients with long-term follow-up. *Acta Orthop* 2011 Dec;82(6):749-55.



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