T2 HEPATIC “STEALTH” LESIONS

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OUTLINE & OBJECTIVES:

- Definition
- Significance
- Differential
- Image Interpretation criteria
  - Pearls
  - Pitfalls

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DEFINITION:

T2 “STEALTH” lesion is...

- Lesion that is inconspicuous
  - T2-TSE
  - T2-IR
STEALTH LESIONS: SIGNIFICANCE:

- May be missed on routine T1 & T2
- Underscores importance of dynamic Gd
- May be indication for EOVIST®,
  - “a paramagnetic MRI contrast agent that combines features of both an extracellular contrast agent and a hepatocyte-specific agent. EOVIST® has a dual route of excretion with approximately 50% eliminated through the liver and 50% eliminated through the kidney. Detection and characterization of malignant and benign focal liver lesions with EOVIST® may help enhance diagnostic accuracy and increase diagnostic confidence”
STEALTH LESIONS:
SIGNIFICANCE:

TREATMENT VARIES
DIFFERENTIAL:

- Focal nodular hyperplasia
- Adenoma
- Hepatocellular carcinoma
- (Metastases)

HYPERVASCULAR!
DIFFERENTIAL: FNH

- Abnormal arrangements of normal hepatocytes (regenerative benign nodule)
  - Central stellate scar w/ radiating septa
    - Thick walled vessels from HA
    - Bile ducts that DO NOT connect to biliary tree
  - Lack normal central veins & portal tracts
  - Contain Kupffer cells

- 8 Female: 1 Male

- Two types: Classic (80%) & Non-classic
SIGNIFICANCE: FNH

NO TREATMENT
**CRITERIA: FNH**

- **T1**: Iso or ↓ SI (94-100%)
- **T2**: STEALTH or slightly ↑ SI (94-100%)
  - High SI central scar (84%)
- **Gd-T1**:
  - Arterial: Intense & homogeneous
  - Later Phases: Equilibrate
    - Central Scar w/ ↑ ing SI
- **Sensitivity**: 70%; **specificity**: 98%

CRITERIA: FNH CENTRAL SCAR

- Not specific for FNH
  - DDx Fibrolamellar HCC & giant hemangiomas

- Scar features that favor Fibrolamellar hepatocellular carcinoma:
  - Scar: Necrosis, scarring and/or ca^{2+}:
    - T1: ↓ SI
    - T2: ↓ SI
    - Gd-T1: Does not enhance
Differential: Adenoma

- Cords of abnormal cells separated by dilated sinusoids (premalignant nodule)
  - Absent bile ductules and PV supply
  - Reduced number of Kupffer cells
  - Incomplete or absent tumor capsule
- Rare & solitary: Assoc w/ BCP’s (30-40/1x10^6), GSD I, anabolic steroids
- Female > Male
SIGNIFICANCE: ADENOMA

- Excise to prevent bleeding
CRITERIA: ADENOMA

- **T1**: Variable
  - ↑ SI: Blood, rarely macroscopic fat
  - ↓ SI: OOP b/c of microscopic fat
- **T2**: STEALTH; slightly ↑ SI
  - Heterogeneous if complicated by blood
- **Gd-T1**: 
  - Arterial: Early
    - Homogeneous or Heterogeneous
  - Later Phases: Equilibrate

DIFFERENTIAL: HCC

- Malignant cells with hepatocellular differentiation
  - Diminution in PV & HA; ↑ in unpaired art & sinusoids
  - Fat, copper, glycogen
  - Massive, nodular or diffuse
- Stepwise & de novo carcinogenesis
- Incidence is rising (Hep B & C)
SIGNIFICANCE: HCC

- 5 year survival rates for curative therapies
  - 40-75%
- ~30% w/ cirrhosis are candidates for cure

TREAT!
**IMAGE INTERPRETATION**

**CRITERIA: HCC**

- **T1**: Variable
  - ↑ SI: Fat, copper, glycogen
  - ↓ SI: OOP b/c of microscopic fat

- **T2**: STEALTH or slightly ↑ SI
  - Size dependent (Large: “mosaic”)

- **Gd-T1**: 
  - Arterial: Early
    - Homogeneous or heterogeneous
  - PV & equilibrium: Equilibrate
  - Delayed: Washout & ↑ing SI of pseudocapsule

- Invades venous structures

HEPATOBILIARY AGENTS
(Eovist, Primovist)

- Extracellular properties: Dynamic exam
- Liver-specific uptake: Characterization
- Hepatocyte phase: 10-20 min post inj
  - Isointense or hyperintense
    - FNH
    - Well differentiated HCC
THANK YOU!