Liver biopsy: choosing the correct approach

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Disclosures

• Consulting: Medtronic, Grifols
• Speaker Bureau: Grifols
### Objectives

- Types of different biopsy techniques
- Use of liver biopsy in diagnosis
- Use of liver biopsy in prognosis
- Patient suitability for use of EUS-guided liver biopsy and cases

*AASLD Position Statement- Rockey et al. Hepatology March 2009; 1017*

### Liver biopsy

- Cornerstone of evaluation and management of patients with liver disease
- Despite the increasing availability of non-invasive tests to assess liver histology
  
  **BUT**
  
  - Depends on quality of the sample

  **AND**
  
  - Availability of expert pathology interpretation
Role of liver biopsy

- Diagnostic tool
  - NAFLD/NASH
  - PBC/PSC/autoimmune hepatitis
  - cancer
- Assessment of prognosis
  - NAFLD
  - PBC/HCV
- Assisting in therapeutic management decisions
  - Autoimmune hep
  - Liver transplant

Types of liver biopsy techniques

- Percutaneous (blind or US-guided)- various types of needles
- Transvenous (transjugular or transfemoral)
- Surgical/Laparoscopic
- EUS-guided
US-guided percutaneous biopsy

- Avoids gallbladder puncture
- Avoids large vessels/colon/lung
- Theoretical benefits are difficult to prove in practice because of rarity of complications
  (one study showed a rate of 0.5% vs 2.2% and less pain associated with US guided procedures).

Contraindications to percutaneous Bx

- All relative and may not be applicable anymore
- Ascites
- Mass lesions- seeding
- Platelets/INR
- Amyloid
- Von Willebrand’s, hereditary bleeding disorders
Transvenous liver biopsy

- Ascites
- Morbidly obese
- Coagulopathic/unable to come off aspirin
- Measurement of Hepatic venous pressure gradient (HVPG)

Complications

- Pain
- Bleeding (incidence of 1:2,500 to 1:10,000)- percutaneous
- Death (< 1 in 10,000) after percutaneous bx but higher after transvenous approach (9 in 10,000)
EUS guided liver biopsy

- Can achieve more than the liver biopsy in a single procedure
- Investigation of upper GI tract - EGD
- Investigation of biliary tree - ERCP

- Less pain/better tolerated

Case 1

- 52 year old man hospitalized with abnormal liver tests and abdominal pain
- ?history of hep B
- 10 beers daily
- CT abdo showed possible pancreatitis and focal lesion in pancreas
• Abdo US: fatty liver, no ascites
• Tumor markers- negative
• Bile ducts – normal
• LFTs: AST 62 ALT 76 ALP 85 bil 1.3 Alb 4.2
• Platelets – normal
• INR - normal

Investigations

• Fibroscan: F3-4 (in the setting of heavy alcohol use)
• ? Does he have cirrhosis
• ?does he have pancreatitis
• ?does he have pancreatic cancer
How do we investigate this further?

Could have the following…  Or

- Percutaneous liver biopsy
- EGD to investigate pain
- EUS to investigate pancreas
- MR elastography/fibrosure

- EUS + guided liver biopsy

Single procedure- same day

RESULT

- EUS- no pancreatic mass/ bile ducts normal
- Biopsy- hepatic steatosis with no fibrosis
Case 2

- 67 year old lady with a 5 year hx of abnormal liver tests
- Epigastric pain worsening in severity and frequency
- Came to hepatology clinic and gave a hx of ‘mild’ NAFLD
- ALT 100/ AST 98/ ALP 180
- Abdo US: Normal apart from minimal bile duct dilatation
- ANA 1:160, normal IgG. Fibroscan – F0

Potential diagnoses

- ? Peptic ulcer disease
- ?autoimmune hepatitis/ ?NAFLD
- ?Biliary obstruction
# Investigations

<table>
<thead>
<tr>
<th>Needs the following…</th>
<th>OR</th>
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<tbody>
<tr>
<td>• EGD- for abdo pain</td>
<td>• EUS guided liver biopsy</td>
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<tr>
<td>• ?liver biopsy</td>
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<td>• ?ERCP</td>
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- EGD- mild gastritis
- EUS- no biliary obstruction seen or mass. ERCP not performed
- EUS guided liver biopsy
  - minimal changes/ 15% steatosis.
  - No evidence of autoimmune hepatitis
Case 3

- 74 year old man - liver transplant in 2008 for NASH
- Hx of previous acute cellular rejection in Jan 2016 (8 years post Tx) treated with steroids- recovered
- ?adherence to medications- admits to forgetting doses
- Tac level 2-6

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Dec 2016</th>
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<tr>
<td>AST 16</td>
<td>113</td>
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<tr>
<td>ALT 23</td>
<td>109</td>
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<td>ALP 140</td>
<td>209</td>
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- Suspicious for acute cellular rejection (ACR) but unusual to see high ALP
- Ideally needs a liver biopsy AND investigation of biliary tree
## Investigations

| Abdo US: Non-specific dilatation of left lobe ducts. Probably present in previous US in 2014 | ? ERCP first |
| ? Liver biopsy first |

| EUS/ERCP | Choledocholithiasis- balloon extraction |
| moderate-severe biliary stricture was found in the post-transplant anastomosis |
  - dilation and fully covered metal stent placement. |
  - Liver biopsy at the same time- no rejection |
Case 4

- 62 year old lady with fever
- Abdo pain/nausea and vomiting
- with abnormal LFTs
- Jaundiced with a bilirubin of 22
- ?cholangitis

- Hx of breast cancer- 2004
- Incidental finding of gallbladder cancer-post cholecystectomy 2012
- Hx of cirrhosis ?seen at time of cholecystectomy

What is the cause of her bilirubin elevation?

a) decompensated cirrhosis
b) Biliary obstruction- likely cholangitis
c) Malignancy- unremarkable US/CT
Investigations

• Single procedure ERCP/EUS + liver biopsy
• ERCP for stone clearance/stent insertion
• EGD for varices
• liver biopsy to confirm cirrhosis and rule out malignancy

• all done in a single procedure

Case 5

• 62 y/o with elevated liver tests and itching since 2011 of unknown cause coming recently with worsening of his liver tests

• Labs
  • AST 40 $\rightarrow$ 168
  • ALT 60 $\rightarrow$ 246
  • ALP 200 $\rightarrow$ 409
  • TB 1.4 $\rightarrow$ 2.5

• MR elastography: advanced fibrosis
• US: Sonographic findings suggestive of fatty liver infiltration and cirrhosis.
Differential diagnosis

• ? Cirrhosis - etiology
• ?biliary disease

• Needs liver biopsy to confirm cirrhosis and etiology
• Check for esophageal varices and band if needed

Options

Several days of Ix

1. Percutaneous liver biopsy
2. EGD
3. MRCP
4. ERCP

EUS/ERCP + biopsy

1. EUS
   • Multiple CBD stones
   • EUS-Liver biopsy
2. ERCP
Results

- EUS-LB:
  - No cirrhosis
  - Cholestatic hepatitis
- ERCP; Stones, PSC

Summary

- Discussed the usefulness of liver biopsy in the diagnosis and management of liver disease
- Cases presented illustrate the use of a relative novel technique (EUS-guided liver biopsy) to streamline the investigation and management of a subset of patients with liver disease
- Single day, outpatient procedure under anesthesia
- Safe and appears to have a favorable pain profile compared to percutaneous procedure
- Time saving and potentially cost effective (although the cost benefits have not been demonstrated)
• EUS guided liver biopsy is useful for the simultaneous investigation of the upper GI tract/pancreas and biliary tree while at the same time providing access to liver tissue for histologic examination.