Original Research Article

ENDOSCOPIC ULTRASOUND-GUIDED LIVER LESIONS BIOPSY WITH ATYPICAL MALIGNANCIES- AN ALTERNATIVE TO RADIOLOGICAL BIOPSY

Abstract

Background: Endoscopic ultrasound (EUS) is gaining attraction as an alternative method of obtaining biopsies. It offers a more targeted approach for focal lesions in liver especially for those areas which are accessible via EUS-guided method.

Materials and Methods: A total of 8 patients underwent EUS-guided liver lesions biopsies (LLB). EUS Guided LLB was performed using the 22G FNA needle, 2 passes were done with slow pull technique over one minute with 10–15 strokes done in each pass to obtained core samples. The average duration of the procedures ranged from 15–30 minutes.

Results: Out of 8 patients, majority were males. Most of these patients had presented with nonspecific signs and symptoms including weight loss, abdominal pain, jaundice etc. All of the 8 patients had an atypical liver lesions on initial radiological evaluation with inconclusive tumour markers and atypical CT radiological findings. Screening for Hepatitis B and C virus were negative in all of them. EUS guided biopsy performed in them revealed the following diagnosis: well differentiated adenocarcinoma, sarcomatoid carcinoma, neuroendocrine tumour, smooth muscle tumour, metastatic adenocarcinoma, lymphoproliferative disorder and malignant melanoma.

Conclusions: EUS-guided LLB is an alternative new technique for biopsy of liver lesions with suspected atypical malignancies.

Keywords: Endoscopic Ultrasound; Liver lesion; Radiological Biopsy; Atypical malignancies

Introduction:

A Liver biopsy often plays a crucial role when making decisions for patients with liver disease [1]. A through history, physical examination along with the laboratory parameters are all critical when establishing a diagnosis, however the role of liver biopsy for diagnostic purposes is still there and can pick up significant fibrosis and cirrhosis even in those abnormal LFTs having normal serological results [2]. A percutaneous liver biopsy can have sampling variability and thus sampling errors may lead to misdiagnosis [1]. Hence image guided liver lesion biopsies via CT scan or MRI for these atypical malignancies are recommended [3].

Endoscopic ultrasound (EUS) is gaining attraction as an alternative method of biopsy [1]. It offers a more targeted approach for focal lesions in liver especially those areas which are accessible via EUS-guided method with its high diagnostic yield and limited adverse event profile making it more promising [2].

Material and methods:

All the patients were inducted via the outpatients' department of the department of Hepatogastroenterology, Sindh Institute of Urology and Transplantation,SIUT,Pakistan and were discharged the same day. A total of 8 patients were included in this study for EUS guided liver lesion biopsy. The procedure was carried out under conscious sedation and informed written

consent was obtained from the patients prior to the procedure. Standard base line laboratory investigations were performed prior to the procedure.EUS guided liver lesion biopsy was done by using a 22-gauge FNA needle. 2 passes were done using slow pull technique over 1 minute with 10-15 strokes in each pass to obtain core samples. The total duration of the procedures ranged from 15 minutes to 30 minutes.

Results:

Case 1, A 78-years-old male having a history of gastrectomy done 5 years ago for a biopsy proven gastric cancer, presented to us having weight loss and vague epigastric pain since 3 months. His CT scan abdomen showed left lobe SOL (space occupying lesion), EUS guided biopsy of which showed **well differentiated adenocarcinoma from GI (gastrointestinal) Tract** (as shown in Figure 1).

Case 2, A 58-years-old male presented with weight loss of 10kgs in 2 months and on further workup was found to have a large atypical liver lesion on CT Scan. Hepatitis B & C serology were negative with normal AFP levels. EUS guided Biopsy was done which revealed **Sarcomatoid Carcinoma** (as shown in Figure 1).

Case 3, Another case showed a 53-Year-old male who was evaluated for weight loss and abdominal pain for 2 months. His CT Scan abdomen had revealed multiple lesions in the liver, EUS guided biopsy of one of those lesions revealed a **Neuroendocrine Tumor** (as shown in Figure 2).

Case 4, A 35-years-old male presented with abdominal pain on and off since 4 months. Laboratory tests showed anti-HCV reactive, HCV RNA detected with normal AFP levels. CT Scan had shown a liver lesion suggestive of atypical hepatocellular carcinoma. Biopsy revealed **Smooth Muscle Tumor (as shown in Figure 1)**. As part of workup he also had gastroscopy and Colonoscopy with no evidence of luminal malignancy.

Case 5, A 60-years-old female, recently diagnosed with diabetes, presented with weight loss, CT scan showed pancreatic malignancy with liver metastasis. EUS guided biopsy revealed **metastatic Adenocarcinoma (as shown in Figure I)**.

Case 6, 42-years-old female presented with obstructive jaundice secondary to ampullary carcinoma. She underwent EUS staging which revealed left lobe lesion, biopsy revealed **Metastatic Adenocarcinoma (as shown in Figure 1)**.

Case 7, A 32-year-old male being worked up for weight loss and obstructive jaundice for 3 months, CT scan showed left lobe malignancy consistent with Cholangiocarcinoma with normal AFP and CA19-9 levels, his hepatitis B & C screen negative, biopsy revealed **Lymphoproliferative disease (Lymphoma) (as shown in Figure 3).**

Case No 8, 48-years old male presented with weight loss and abdominal discomfort, Hepatitis B and C screen was negative with normal AFP levels. Ct scan showed multiple liver lesion, Biopsy was done which showed **Malignant melanoma (as shown in Figure 4).**

Discussion:

The percutaneous liver biopsy, first performed in the 1920s, has seen various phases of evolution and has gone from a blind approach to an ultrasound (U/S) or CT guided. The use of the image guided techniques has significantly reduced the complication rates [1]. The main complication of the image guided techniques include pain at the biopsy site or at the right shoulder [1]. The trans jugular approach for liver biopsy is employed when the percutaneous approach is contraindicated that is in the presences of ascites, coagulopathy, morbid obesity and a non-cooperative person [1]. The complications include hematoma, carotid puncture, risk of Horner's syndrome and supraventricular arrhythmias [1].

The EUS guided liver biopsy is a recently introduced technique having a low side effect profile. By providing high resolution images of the both the right and left lobes of the liver, the biopsy needle is used safely for sampling [4] . By using its Doppler, the intervening vessels and structures are avoided. Hence EUS allows safe sampling from either lobes of the liver [5].The 19 gauge Tru cut needle or the FNA needle is used to obtain the sample [6,7].

Having the ability to pick up pancreatic lesions which are less than 5cm in size, EUS has the ability to target liver lesions which are less than 1cm in size [3]. The trans-gastric approach offers an easy access to these liver lesions even in the presence of ascites [3].

The main advantages for using EUS for liver biopsy is that it can be done in an outpatients' setting and hence reduces the patient's anxiety and stress. Secondly, sampling of both lobes of the liver are possible through it, more easily approachable by EUS then with conventional CT since a larger surface area is visible through the EUS. Thirdly nearby vasculature structures can be avoided [8]. Even though currently the standards for an EUS guided liver specimen have not been established, but these should be the same as those obtained via the percutaneous approach,

with the length of the specimen, number of complete portal tracts along with the needle type being important parameters [9]. Lastly biopsies obtained via EUS can help avoid major vessels and the biliary tree hence reduce chances of complications [3].

Conclusion:

EUS guided liver lesion biopsy is an attractive options with a better safety profile, less side effects and better patient related outcome.

What is known:

Identification and characterization of malignant lesions requires image guided biopsies

What is new:

Image guided biopsy has now evolved and now endoscopic ultrasound guided biopsy has over taken it, being not only safe but also very effective.

Our study shows how EUS guided biopsies can be obtained for different liver lesions inorder to reach a diagnosis

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Figures:

Figure 1: A collage of the 8 EUS guided liver biopsies

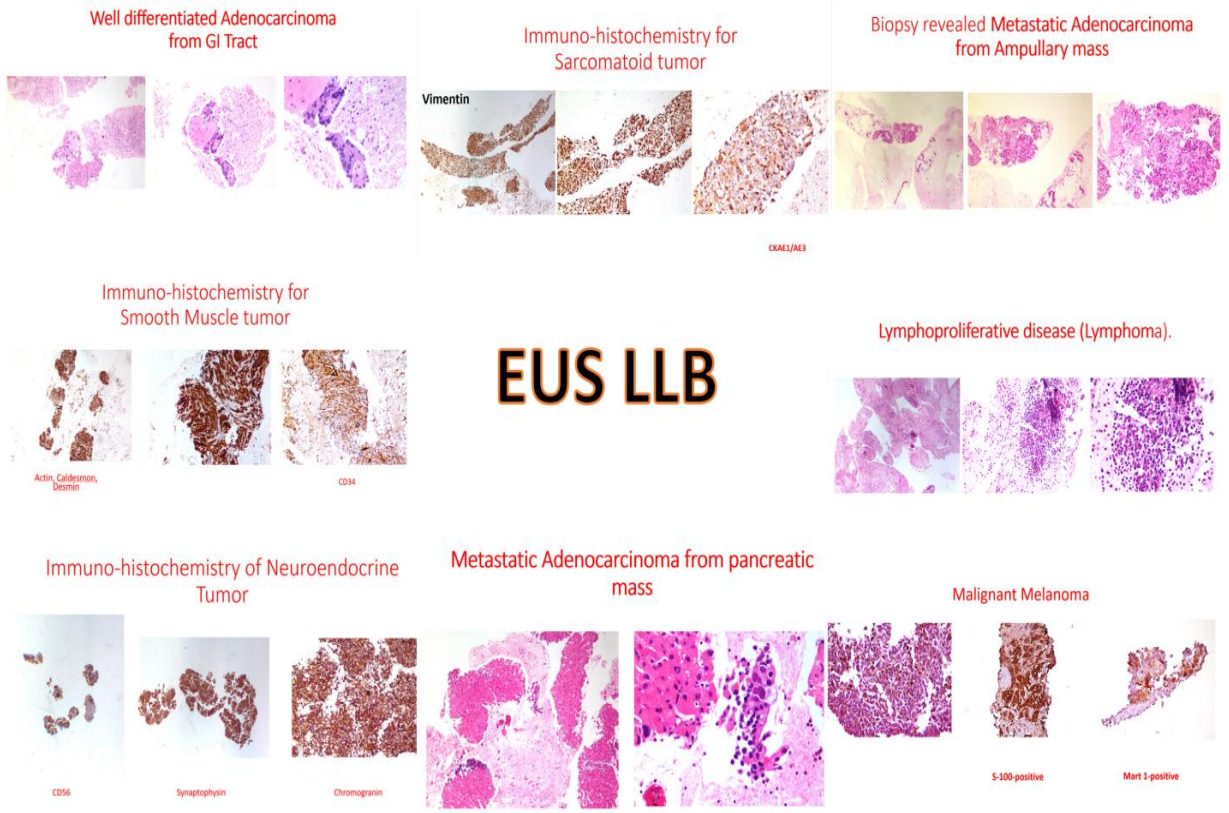
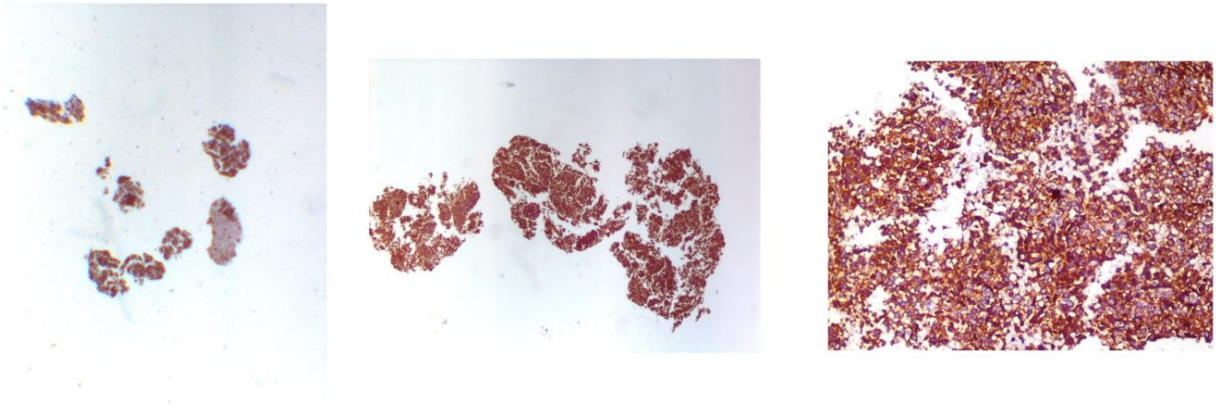


Figure 2: Neuroendocrine Tumor



CD56, Synaptophysin, Chromogranin

Figure 3: Lymphoproliferative Disease (Lymphoma)

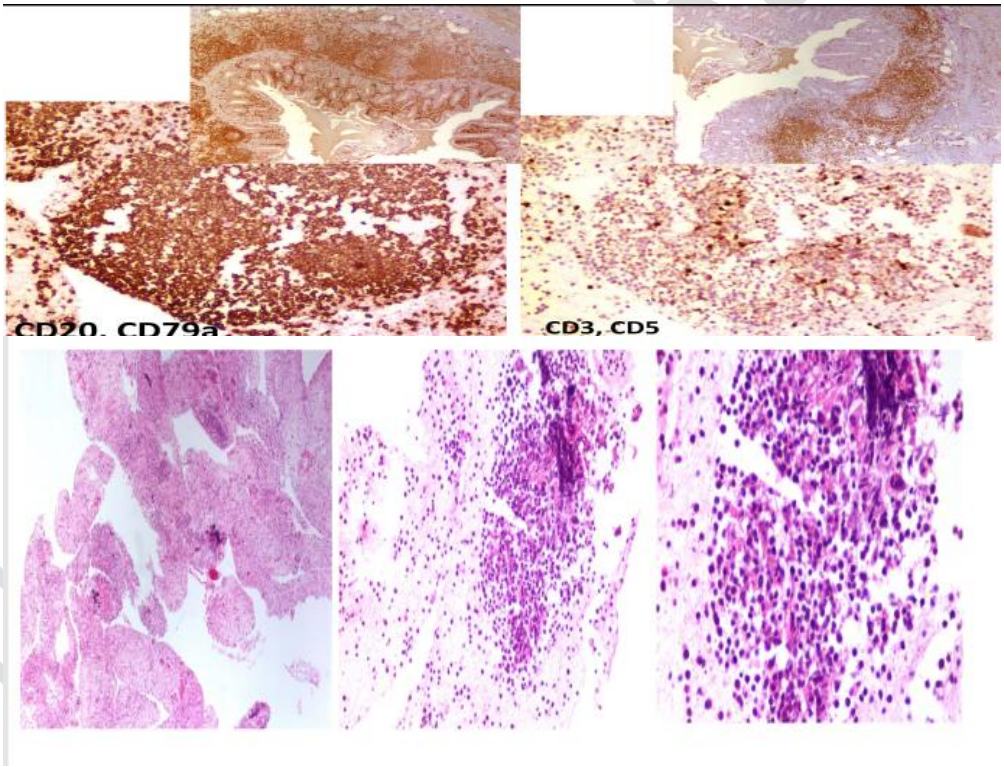


Figure 4: Malignant Melanoma