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Ultrasound Guided Biopsy By Free Hand Technique And Its Usefulness

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Abstract: *Focal liver lesions are one of the most common findings detected in day to day practice. Ultrasound, now a day, has become first choice of investigation for screening of patients with suspected liver diseases as Focal liver lesions mainly comprise of liver abscess, cystic lesions, primary malignant neoplasm metastases, focal fatty infiltrations and hematoma. Due to non-specific signs and symptoms of such lesions and having limitations in diagnosing these lesions by biochemical tests, real-time ultrasonography has been proven as one of the most economical and accurate modality in diagnosis of focal liver lesions. It gives valuable information regarding specific parameters such as site, size, number of lesions, nature of lesions and relation to surrounding structures. Ultrasound is the most suitable imaging modality for biopsy of the liver in terms of versatility, ability to image in real-time, decreased cost, portability and absence of ionizing radiation [1]. This article examines ultrasound-guided liver biopsy, and describes the process involved in Free Hand liver biopsy technique, stressing the advantages of ultrasound in these biopsy procedures.*

Keywords: - *Focal liver lesions, Doppler Ultrasound Machine, Free hand technique.*

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I. Introduction

Hepatic focal lesions, solid or cystic masses range from benign lesions with an indolent clinical course to aggressive malignant tumors. Increase in the number of positive cases is the result of increasing use of imaging modalities in patients with nonspecific abdominal complaints. The definite diagnosis is obtained by using both imaging techniques and histopathology [2]. Due to economical and availability issues of the higher imaging modalities such as contrast enhanced CT SCAN, MRI and recently emerging contrast agent use in ultrasonographic evaluation, real time ultrasonographic evaluation of liver pathology has provided an upper edge in diagnosis. Though, it lacks the characterization of liver lesions which is essential for the final diagnosis and then treatment strategy decision, still it is one of the best modality of choice as it helps in reaching the biopsy site in real time and helps to reach the pathological diagnosis. Pathological study is highly accurate in the evaluation of focal liver lesions when the diagnosis cannot be reliably confirmed radiologically, Which is useful in showing the characteristics and origin of metastatic lesions, and to distinguish dysplastic lesions from hepatocellular carcinoma, to differentiate liver adenoma from FNH, or to confirm the nature of atypical lesions [2].

II. Selection Of Patients

The study was approved by the institutional ethical committee, and an informed consent was taken from all the patients participated in this study. This was an observational study of 205 cases with suspected hepatic focal lesions at SIDDHIVINAYAK CANCER INSTITUTE, SANGLI that was conducted from February 2016 to October 2016.

III. Material And Method

``Free hand technique'' ultrasound-guided biopsy Conventional gray scale sonography and vascularity of lesions were performed with 2-5 MHZ frequency curvilinear transducer on a real time Doppler Ultrasound Machine, VOLUSON E10 manufactured by GE. All patients underwent FNAC with 20-22 G spinal needle. The examination was begun with the patient in the supine position. Scan was performed in all planes. Patient was asked to take in and hold breath or to push out the anterior abdomen for better visualization of hepatic dome. The lesions were identified, characterized and vascularity of the mass was assessed. The observations were noted in a pre-decided pro forma. Those patients with sonological diagnosis of metastasis or HCC were further evaluated by USG guided FNAC. FNAC was performed after explaining the procedure to the patient and taking an informed written consent. The area was cleaned with betadine. Betadine was used as coupling agent for USG.

Local anesthesia was given only in highly apprehensive patient. The right lobe lesions and left lobe lesions usually underwent aspiration by a sub-costal approach with patient in supine position. The lesions in the dome or high right lobe were approached by an intercostals approach with the patient in the left posterior oblique position and needle passed in the suspended respiration. The procedure was done using 20-22 gauge spinal needles. Free hand technique under the guidance of USG done and aspiration achieved by multiple passages through the lesion. Four wet slides were prepared and sent for cytological evaluation in the preservative of absolute alcohol. After the procedure the patients were observed and repeat USG done to look for complications. No procedure related complications were observed in any of the cases.

By using ultrasound in this fashion complications were reduced, primarily by reducing the number of passes into the liver [4]. The incidence of bleeding and hematoma formation cannot be prevented by using ultrasound guidance [5], but it reduced the complication rate associated with inadvertent biopsy of other viscera or with pneumothorax, although these complications seldom require intervention [4]. Using ultrasound in this manner to assist in the biopsy of focal disease of liver is reported to be cost-effective [3, 6].

Tables

1.Types Of Lesions Detected On Biopsy Under Usg Guidance

Type Of Lesions	**Frequency**	**Percentage**
I. Metastatic Adenocarcinoma	88	42.90%
Ii. Hepatocellular Carcinoma	43	20.97%
Iii. Matastatic Squamous Cell Carcinoma	27	13.24%
Iv. Metastatic Malignant Melanoma	3	1.46%
V. Hepatitis	2	0.97 %
Vi. Hepatitis With Cirrhosis	2	0.97%
Vii. Cirrhosis	8	3.90%
Viii. Dysplastic Nodule	6	2.92%
Ix. Tumour Necrosis	2	0.97%
X. Hemangioma	6	2.92%
Xi. Normal Tissue	18	8.78%
Total	205	100

2. Distribution According To Sex

Sex	Frequency	Percentage
Male	118	57.56%
Female	87	42.44%

3. Distribution According To Lobe Involvement

Lobe	Frequency	Percentage
Right	114	55.60%
Left	91	44.40%
Both	37	18.05%

IV. Results

The present study was conducted on 205 patients, out of which 118 participants were male and 87 were female, with suspected focal liver lesions detected by trans-abdominal ultra-sonography and confirmed by histopathological examination at SIDDHIVINAYAK CANCER INSTITUTE, SANGLI. After pathological confirmation of all lesions, the following observations were made. There were 88 cases of METASTATIC ADENOCARCINOMA, 43 cases of HEPATOCELLULAR CARCINOMA, 27 cases of MATASTATIC SQUAMOUS CELL CARCINOMA, 8 cases of liver CIRRHOSIS, 3 cases of METASTATIC MALIGNANT MELANOMA, 6 cases of DYSPLASTIC NODULES and HEMANGIOMA each, 2 cases of HEPATITIS, HEPATITIS WITH CIRRHOSIS and TUMOR NECROSIS each. Right lobe involvement was found in 114 cases while in 91 cases there was involvement of left lobe of liver. Both the lobes were involved in approximately 18% of cases.

V. Discussion

Ultrasound is a safe and effective method of detecting focal liver lesion. Its flexibility, easy availability and lack of dependence on organ function makes it most ideal for imaging the liver and taking therapeutic decision quickly. By this rapid method, even small lesions can be detected. The liver can be scanned in multiple planes providing the exact location of lesions by recognizing their echo pattern. Apart from detecting lesion, it also helps us to get other valuable information like ascites, vessel involvement and primary source of malignancy in abdomen and pelvis. Ultrasonography is highly sensitive in diagnosing focal liver lesions such as

metastases and primary malignant liver tumors which constituted majority of focal liver lesions for which ultrasound was indicated in the present study.

Sonography-guided liver biopsy is reported to be safer, more efficient, more comfortable, and only marginally more expensive than blind biopsy [7, 9]. This accounts for the recent trend toward interventional radiologists performing these biopsies [9, 10]. Real-time sonography guidance minimizes the moderate and potential high risks inherent in percutaneous core liver biopsies. Significant hepatic hematoma has been shown to be proportional to the risk of significant hemorrhage after liver biopsy [8, 11]. Kader et al. [12] showed that sonography resulted in a location change in 25% of the sites determined by physical examination and concluded that sonographic determination of the biopsy site should be considered before liver biopsy in children. The conclusion that the use of sonographic guidance leads to lower complications has also been supported in large randomized and prospective series in the adult literature [13, 14]. The Patient Care Committee of the American Gastroenterological Association has stated that liver biopsy "appears to be more accurate and perhaps more safe when performed in conjunction with ultrasound guidance" [15].

VI. Conclusion

Our present study concludes that Free Hand Technique of Ultrasound guided biopsy is a safe, effective, and convenient method for performing image-guided biopsies, often preferred as it is relatively inexpensive and portable and does not depend on ionizing radiation. It is, however, operator dependent, and its use is limited to sonographically visible lesions.

References

[1]. Dodd GD, Esola CC, Memel DS, et al. Sonography: the undiscovered jewel of interventional radiology. Radiographics 1996;16:1271±88.
[2]. Pons F, Llovet JM. Approaching focal liver lesions. Rev Esp Enferm Dig. 2004;96: 567-5.
[3]. Pasha T, Gabriel S, Therneau T, Dickson ER, Lindor KD. Cost-eVectiveness of ultrasound-guided liver biopsy. Hepatology 1998;27:1220±6.
[4]. 4.Stotland BR, Lichtenstein GR. Liver complications and routine ultrasound. Am J Gastroenterol 1996;91:1295±6.
[5]. Vautier G, Scott B, Jenkins D. Liver biopsy: blind or guided? BMJ 1994;309:1455±6.
[6]. Younossi ZM, Teran JC, Ganiats TG, Carey WD.Ultrasound-guided liver biopsy for parenchymal liver disease: an economic analysis. Dig Dis Sci 1998;43:46±50.
[7]. Rockey DC, Caldwell SH, Goodman ZD, Nelson RC, Smith AD. Liver biopsy. Hepatology 2009; 49:1017–1044
[8]. Nobili V, Comparcola D, Sartorelli MR, et al. Blind and ultrasound-guided percutaneous liver biopsy in children. Pediatr Radiol 2003; 33:772–775
[9]. Banerjee S, Bishop W, Valim C, Mahoney LB, Lightdale JR. Percutaneous liver biopsy practice patterns among pediatric gastroenterologists in North America. J Pediatr Gastroenterol Nutr 2007; 45:84–89
[10]. Angtuaco TL, Lal SK, Banaad-Omiotek GD, Zaidi SS, Howden CW. Current liver biopsy practices for suspected parenchymal liver diseases in the United States: the evolving role of radiologists. Am J Gastroenterol 2002; 97:1468–1471
[11]. Sugano S, Sumino Y, Hatori T, Mizugami H, Kawafune T, Abei T. Incidence of ultrasound-detected intrahepatic hematomas due to Tru-cut needle liver biopsy. Dig Dis Sci 1991; 36:1229–1233
[12]. Kader HA, Bellah R, Maller ES, Mamula P, Piccoli DA, Markowitz JE. The utility of ultrasound site selection for pediatric percutaneous liver biopsy. J Pediatr Gastroenterol Nutr 2003; 36:364–367
[13]. Lindor KD, Bru C, Jorgensen RA, et al. The role of ultrasonography and automatic-needle biopsy in outpatient percutaneous liver biopsy. Hepatology 1996; 23:1079–1083
[14]. Beddy P, Lyburn IL, Geoghegan T, Buckley O, Buckley AR, Torreggiani WC. Outpatient liver biopsy: a prospective evaluation of 500 cases. Gut 2007; 56:307
[15]. Jacobs WH, Goldberg SB. Statement on outpatient percutaneous liver biopsy. Dig Dis Sci 1989; 34:322–323

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