Original Research Article

Study of correlation of sonographic and FNAC findings in hepatic lesions

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Abstract

Background: Fine needle aspiration cytology under image guidance has gained increasing acceptance as the diagnostic procedure of choice for patients with focal hepatic lesions. Present study was conducted to assess the validity of ultrasonographic diagnosis of liver lesions in relation to FNAC diagnosis. **Material and Methods:** This prospective, observational study conducted in patients with radiologically suspected liver lesions and underwent FNAC examination for confirmation of liver pathologies. **Results:** After applying inclusion and exclusion criteria, total 56 patients were included in present study. Most common age group was 51-60 years (34 %), followed by 41-50 years age group (27 %) and 31-40 years (13 %). Mean age in present study was 52 years. Male patients were 57 % and female were 43 %. Male to female ratio was 1.33:1.77 % patients had single lesion seen on USG and 20 % had more than 2 lesions. Radiologically hepatocellular carcinoma (25%) was most common diagnosis followed by heterogenous lesion (21%), hydatid lesion (18%), liver abscess (11%). As per FNAC reports hepatocellular carcinoma (32%) was most common diagnosis followed by hydatid lesion (20%), adenocarcinoma (18%), liver abscess (13%). **Conclusion:** Ultrasound proved to be a cost efficient, safe, sensitive and easily available imaging modality for the diagnosis and follow-up of various focal liver lesions and should therefore be the first line of investigation in suspected cases.

Key Word: Hepatic Ultrasonography, Liver FNAC, liver malignancy

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INTRODUCTION

Hepatic disorders are routinely encountered in day to day practice in OPD's of physician, surgeon, radiologists, etc. Hepatic involvement can be seen in wide spectrum of disorders such as infections, metabolic and neoplastic disorders that finally results in hepatic dysfunction and responsible for a significant morbidity and mortality in patients. The diagnosis of various hepatic mass lesions is a common clinical problem and their appropriate management depends on accurate diagnosis[1]. Preferred non-invasive imaging modalities of hepatic lesions are sonography and CT (Computed Tomography) for various clinical settings, such as neoplasm screening, portal hypertension work up, suspected cases of portal or hepatic venous thrombosis and also in pre- and post-operative assessment in liver surgeries[2]. Sonography offers additional advantages like easy availability, portability, cost effectiveness and complementary Doppler mode for vascular study, hence, advocating for sonography as the first line noninvasive imaging modality in imaging liver and its vasculature. The advent of ultrasonography as routine imaging tool has enabled prompt detection of focal liver lesions. Ultrasonography is effective in guiding biopsy needles for sampling hepatic secondaries which are 1.5 cm or smaller along with the added advantage of guiding the needles along non-axial planes as well[3]. It can be used as an imaging guide for FNAC and therapeutic drainage of abscesses. Fine needle aspiration cytology under image guidance has gained increasing acceptance as the diagnostic procedure of choice for patients with focal hepatic lesions[4]. Present study was conducted to assess the validity of ultrasonographic diagnosis of liver lesions in relation to FNAC diagnosis.

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MATERIAL AND METHODS

This prospective, observational study conducted at Krishna University of Medical Science, Karad during Jan 2018 to Dec 2018. Total study duration was 1 year. Institutional ethics committee approval was taken.

Inclusion criteria

1. Patients with radiologically suspected liver lesions underwent FNAC examination for confirmation of liver pathologies.

Exclusion criteria

1. Liver hemangioma
2. Non co-operative patients
3. Failed FNAC
4. Postoperative patients.
5. Patients with bleeding disorders
6. Not willing to participate in present study

Written informed consent was obtained prior to participation in study. Demographic details, clinical details, radiological findings, cytological diagnosis were recorded for patients included in present study. Laboratory investigations complete blood count, bleeding time, clotting time, liver function test, prothrombin time, etc. were recorded. Conventional gray scale sonography and vascularity of lesions were performed with 2-5 MHZ frequency curvilinear transducer on a real time Doppler Ultrasound Machine (Name of USG machine). Scan was performed in all planes. The lesions were identified, characterized and vascularity of the mass was assessed. The observations were noted in a pre-decided proforma. Those patients with sonological diagnosis such as of metastasis, abscess, hepatocellular carcinoma, etc. were further evaluated by USG guided FNAC. FNAC was performed after explaining the procedure to the patient and taking an informed written consent. Local area was cleaned with beta dine. Local anesthesia not used routinely, given only in highly apprehensive patient. The procedure was done using 20-22-gauge spinal needle. Patient was asked to take in and hold breath or to push out the anterior abdomen for better visualization of hepatic dome. 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. Slides were processed and reported by department of pathology. After the procedure the patients were observed and repeat USG done to look for complications. No procedure related complications were observed in present study. All details, cytological and radiological opinions were entered in proforma and compared statistically.

RESULTS

After applying inclusion and exclusion criteria, total 56 patients were included in present study. Most common age group was 51-60 years (34 %), followed by 41-50 years age group (27 %) and 31-40 years (13 %). Mean age in present study was 52 years.

Table 1: Age Distribution

Age group (in years)	No. of patients	Percentages (%)
0-20	1	2%
21-30	5	9%
31-40	7	13%
41-50	15	27%
51-60	19	34%
61-70	5	9%
71 and above	4	7%
Total	56	100%

Male patients were 57 % and female were 43 %. Male to female ratio was 1.33:1

Table 2: Gender Distribution

Sex	No. of Patients	percentage
Male	32	57%
Female	24	43%
Total	56	100%

77 % patients had single lesion seen on USG and 20 % had more than 2 lesions.

Table 3: USG lesions

USG lesions	Percentages
Single	77%
Two	4%
More than two	20%
Total	100%

Radiologically hepatocellular carcinoma (25%) was most common diagnosis followed by heterogenous lesion (21%), hydatid lesion (18%), liver abscess (11%). Other less common were liver SOL (7%), multicentric hepatocellular carcinoma (7%), multiple liver masses (5%), metastasis lesions (4%), biliary cystadenoma (2%).

Table 4: Radiological Diagnosis

Radiological Diagnosis	No. of patients	Percentages
Hepatocellular Carcinoma	14	25%
Heterogenous lesion	12	21%
Hydatid lesion	10	18%
Liver abscess	6	11%
Liver SOL	4	7%
Multicentric Hepatocellular Carcinoma	4	7%
Multiple liver masses	3	5%
Metastasis lesions	2	4%
Biliary cystadenoma	1	2%
Total	56	100%

As per FNAC reports hepatocellular carcinoma (32%) was most common diagnosis followed by hydatid lesion (20%), adenocarcinoma (18%), liver abscess (13%).

Other cases were reported as cysts (9%), metastatic carcinoma (5%), biliary cystadenoma (2%), b cell lymphoma (2%).

Table 5: Cytological Diagnosis

Cytological Diagnosis	No. of patients	Percentages
Hepatocellular Carcinoma	18	32%
Hydatid lesion	11	20%
Adenocarcinoma	10	18%
Liver abscess	7	13%
Cysts	5	9%
Metastatic carcinoma	3	5%
Biliary cystadenoma	1	2%
B cell lymphoma	1	2%
Total	56	100%

DISCUSSION

FNAC is a simple, rapid, safe and relatively painless, cost-effective technique and sufficiently accurate procedure, an attractive alternative to percutaneous biopsy[5]. FNAC has high degree of sensitivity in cases of malignancy which is reported to be as high as 99.5% and 95.3% by various researchers[6]. Diagnosis is easier on FNAC in malignant hepatic lesions as compared to benign lesions as recent work done by Nasit *et al* reported 87.3% sensitivity of diagnosis of malignant lesions[7]. Ultrasonography is also a better modality for diagnosis of hepatic lesions. Being non-invasive, office procedure, better pre-operative screening, USG is preferred for initial assessment of hepatic lesions. Regular B-mode USG has excellent resolution and therefore gives complete assessment of hepatic contour and liver lesions without contrast agents[8]. Doppler study provides rapid, comprehensive and accurate evaluation of the hepatic as well as intra-lesional vascularity[9].In present study, we evaluated 56 patients with diagnosis of hepatic lesions underwent USG and USG guided FNAC. Various focal and diffuse hepatic lesions encountered in the study were primary malignant liver tumor, metastasis, hemangiomas, liver abscess, cystic and Hydatid lesions, fatty liver, cirrhosis, hepatitis, diffuse hepatocellular carcinoma. The age group of the patient ranged from 15-80 years. The male female ratio was 1.33: Malignant lesions were 57 % in present study. Discordance was noted in 4 (7%) cases of HCC which were diagnosed as heterogenous lesions or multiple liver masses on radiology as these were multicentric HCC. The same was reported by other researchers where secondaries liver reported by radiology turned out to be HCC on FNAC[10]. HCC can be small and focal, solitary and large, multifocal or diffuse, and infiltrating, thereby, mimicking benign lesions on one hand and metastases on the other, especially in imaging studies[11]. A retrospective study to evaluate the diagnostic usefulness of 244 sonographically guided FNAC in 226 patients with ultrasonologically suspected hepatic malignant lesions. The diagnostic sensitivity of this technique was 93 % with 100 % specificity and the correlation of 80 %. In cases with hepatic abscess, 6 cases were provisionally diagnosed on USG, while 7 total cases were seen in FNAC. One patient with diagnosis of Multiple liver masses had hepatic abscess. Commonest site was right lobe in present study. Ultrasonography revealed sensitivity of 100% and specificity of 98.3% and accuracy of 99% in diagnosing liver abscess. Sonography-guided percutaneous drainage showed anchovy pus in all abscesses except one case and all, on subsequent imaging, showed reduction in size of the collections. USG had a diagnostic sensitivity of 91.4%, specificity of 97.4%, positive predictive value of 91.4% and accuracy of 95.3 % in diagnosis of hepatic lesions. Histopathology remains gold standard for confirmation of USG diagnosis. The diagnostic yield in our study was 95.3% which is high as compared to other researchers, as the study jointly conducted by both radiologists and pathologists, immediate cytological assessment by means of rapid staining procedures which is recommended by various researchers. The reported diagnostic yields in other studies range from 83.4% -90.4%[1,12]. Hepatic FNAC have rare complications as, 0.5% minor complications, 0.05% major complications requiring surgery and less than 0.01% mortality[13]. In our study, we did not notice any complication.

CONCLUSION

Ultrasound proved to be a cost efficient, safe, sensitive and easily available imaging modality for the diagnosis and follow-up of various focal liver lesions and should therefore be the first line of investigation in suspected cases.USG-guided FNAC is very useful modality in the diagnosis of hepatic lesions as it is a quick, safe, simple, cost-effective and accurate method.

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