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Original Research Article

Role of ultrasound guided fine needle aspiration cytology of right hypochondrial masses

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ABSTRACT

Background: Patients having right hypochondrial intra-abdominal masses are commonly encountered in clinical practice. The study was done to know the role of ultrasound guided fine needle aspiration in diagnosing right hypochondrial masses and its most common cause.
Methods: 112 cases were collected from department of surgery, SVBP hospital meerut. FNAC was done using 22-23 G disposable lumbar puncture needle with trochar fitted with 20 ml syringe, introduced under radiological guidance and aspiration is done under negative pressure. Smears were stained with Leishman's stain, May Grunwald Geimsa (MGG) and Papnicolou stain.
Results: Out of total 112 cases, 12 cases excluded from study as only blood was aspirated. Therefore, out of 100 cases, 83% (83/100) cases were malignant, 7% (7/100) benign and 10% (10/100) inconclusive/ due to low cellularity. Among the malignant masses, majority 52 (52.0%) cases were of liver secondaries followed by 24 (24.0%) cases of adenocarcinoma gall bladder, 5 (5.0%) cases of primary hepatocellular carcinoma (HCC) and single case (1%), each of cholangiocarcinoma GB and squamous cell carcinoma GB. Among the benign lesions, 3 (3.0%) cases of liver abscess, 2 (2.0%) cases of hydatid disease followed by single case (1.0%) of hepatic adenoma and cysticercosis liver. In this study, overall accuracy of USG guided FNAC was 96.66%. Sensitivity, specificity, positive predictive value, negative predictive value and efficacy of USG guided FNAC in right hypochondrial masses were 96.66%, 100%, 100%, 66.67% and 96.87% respectively.
Conclusions: USG guided FNAC is simple, quick, safe, reliable and economical tool without any significant complication in diagnosing right hypochondrial masses.

Keywords: Gall bladder adenocarcinoma, Gall bladder, Liver, Secondary hepatocellular carcinoma

INTRODUCTION

Patients having right hypochondrial intra-abdominal masses are very commonly encountered in day to day clinical practice in various medical and surgical specialty clinics. Most of the time accurate diagnosis is not possible by proper clinical examination alone, so there is a need for a diagnostic investigation which should be quick and reliable on one hand and minimally invasive and complication free on other hand. The study was done in department of pathology and cases were collected from outpatient and inpatient Surgery department of S.V.B.P hospital attached to L.L.R.M Medical College, Meerut within a period ranging from August 2015 to July 2016.

Ultrasound guided fine needle aspiration technique has achieved wide spread use because of its inherently low morbidity and speed of the procedure. The wide

availability of various imaging technique has given great impetus to the FNAC procedure because of the precise localization of the fine needle within the lesion. Hemorrhagic diathesis, pheochromocytoma, hemangiomas are absolute contraindications of the procedure.

Complications like infection, hemorrhage, seedling of malignant cells, bile peritonitis and intrahepatic hematoma are much less with fine needle aspiration cytology than the true-cut biopsy.

We conducted a study on role of ultrasound guided fine needle aspiration in right hypochondrial masses in order to evaluate rapid diagnosis, to correlate clinical finding with ultrasound guided fine needle aspiration, study acceptability and diagnostic accuracy and also to assess the reliability of cytodiagnosis as compared to conventional histological paraffin sections wherever feasible.

METHODS

The present study was a randomized cohort based prospective study carried out to evaluate the accuracy of ultrasound guided fine needle aspiration cytology in patients having right hypochondrial masses. The study was done in department of pathology and cases were collected from outpatient and inpatient Surgery department of S.V.B.P. hospital attached to L.L.R.M. Medical College, Meerut within a period ranging from August 2015 to July 2016. The study was undertaken in following manner.

Patients clinically suffering from mass in right hypochondrium were selected for FNAC. A detailed clinical history and physical examination was done in all the patients. Routine blood investigation and radiological investigations were done in all patients. The clinical findings were noted on the prescribed proforma. The equipment's used in the guidance technique were as follows

- Real time B scans ultrasound,
- Linear and sector transducer with needle guiding attachments,
- 22 and 23-gauge needle including Chiba's needle (150 or 200mm) and L.P needle (0.7 x 90mm),
- Dispovan 20 ml syringe,
- 2% lignocaine,
- Microscopic glass slides with marks engraved on them by diamond pencil,
- Fixative (mixture of 95% ethyl alcohol and glacial acetic acid/ether in equal proportion),
- Cotton, gauge pieces, antiseptic lotion, spirit, tincture iodine and tincture benzoine compound for part preparation and to seal puncture site,
- A filled requisition forms.

In the present study a real time B scan ultrasound (RT 300) equipment with 3.5 MHz transducer and a sector probe is used.

Under aseptic precautions, a 22-23G needle for superficial lumps and a lumbar puncture needle of the same thickness for deep seated lesions which was fitted with 20 ml syringe, was introduced immediately under radiological guidance and the aspiration was done under negative pressure. On an average, two to three needle passes were made in each case to obtain adequate material. The sample was expelled onto slides, air dried and stained with Geimsa and Papanicolau's stain. Special stain was used whenever required.

The patients were carefully monitored after the procedure, any complication found was noted and managed accordingly.

The diagnosis was taken to be confirmed if clinical and ultrasonographically diagnosis correlated with each other and with US guided FNAC diagnosis. If the diagnosis by these varied techniques did not correlate with each other, histopathology was done to arrive at final diagnosis.

RESULTS

The total number of ultrasound guided aspirations of right hypochondrial region were 112 cases, out of which in 12 cases only blood was aspirated, therefore these cases excluded from the study. The male:female ratio was 1:1.41. Age range varied from 22-76 years with mean age of 49 years.

Out of total 100 cases, 83 (83%) cases were malignant, 7 (7%) cases benign and 10 (10%)cases inconclusive due to low cellularity. Among the malignant masses, majority 52 (52.0%) cases were of liver secondaries followed by 24 (24.0%) cases of adenocarcinoma gall bladder, 5 (5.0%) cases of primary hepatocellular carcinoma (HCC) and 1 (1%) each of cholangiocarcinoma GB and squamous cell carcinoma GB. Among the benign lesions, 3 (3.0%) cases of liver abscess, 2 (2.0%) cases of hydatid disease followed by single case (1.0%), each of hepatic adenoma and cysticercosis liver.

Out of 52% (52/100) secondaries, majority being metastatic moderately differentiated adenocarcinoma, 34% (34/100), followed by metastatic poorly differentiated adenocarcinoma, 6% (6/100), metastatic undifferentiated adenocarcinoma, 4% (4/100), metastatic well differentiated adenocarcinoma, 3% (3/100) metastatic mucin secreting adenocarcinoma, 2% (2/100) and one case (1.0%), each of metastatic seminoma, metastatic melanoma and metastatic neuroendocrine carcinoma were also found.

Among primary hepatocellular carcinoma, 2% (2/100) cases were of well differentiated HCC while single case (1%), each of moderately differentiated HCC, poorly

differentiated HCC and fibrolamellar HCC were found. In 52% (27/52) cases of secondaries, primary was found in gall bladder, colon, ovary and prostate while in 48% (25/52) cases, primary site could not be ascertained.

Table 1: Total distribution of right hypochondrial masses (n= 100).

Diagnosis	Number of cases	Percentage
Malignant	83	83
Secondaries in liver	52	52
Metastatic moderately differentiated adenocarcinoma	34	34
Metastatic poorly differentiated adenocarcinoma	6	6
Metastatic undifferentiated adenocarcinoma	4	4
Metastatic well differentiated adenocarcinoma	3	3
Metastatic mucin secreting adenocarcinoma	2	2
Metastatic seminoma	1	1
Metastatic melanoma	1	1
Metastatic neuroendocrine carcinoma	1	1
Adenocarcinoma gall bladder	24	24
Primary hepatocellular carcinoma	5	5
Well differentiated HCC	2	2
Moderately differentiated HCC	1	1
Poorly differentiated HCC	1	1
Fibrolamellar HCC	1	1
Cholangiocarcinoma gall bladder	1	1
Squamous cell carcinoma GB	1	1
Benign	7	7
Liver abscess	3	3
Hydatid disease	2	2
Hepatic adenoma	1	1
Cysticercosis liver	1	1
Inconclusive	10	10
Total	100	100

In present study, histopathology was done in only 32% cases and in all the cases, histopathology correlated well with FNAC. It was observed that clinical diagnosis showed true positivity in 60% cases, USG diagnosis in 85% cases, USG guided FNA in 90% cases and histopathology showed true positivity in 100% cases.

Table 2: Diagnostic accuracy in right hypochondrial masses by various authors in different series.

Author	Year	Accuracy (%)
Shukla et al	1997	95.0
Pandey et al	2001	95.9
Munnaza et al	2009	74.0
Uma Handa et al	2010	93.3
Present study	2016	96.6

In present study, overall accuracy of USG guided FNAC in malignant liver and gall bladder masses was 96.66%. Sensitivity was found to be 96.66%, specificity 100%, positive predictive value 100%, negative predictive value 66.67% and efficacy 96.87%.

DISCUSSION

The present study has been undertaken to evaluate the acceptability, reliability and accuracy of cytodiagnosis in comparison to various methods. It was a prospective study involving 112 aspirations in patients having right hypochondrial masses.

The diagnostic parameters were based on the clinical diagnosis, ultrasound guided aspiration cytology and histopathology, which was available in only 32 cases and by follow up in rest of the cases.

In this study Male to Female ratio was 1:1.4. Results of Iqbal (M:F-1:3.5), Nazir Sidhalingreedy sharda were comparable with our study.[1-4] Out of total 100 cases, 83 (83%) cases were malignant, 7 (7%) cases benign and 10 (10%) cases inconclusive due to low cellularity. Among the malignant masses, majority 52 (52.0%) cases were of liver secondaries followed by 24 (24.0%) cases of adenocarcinoma gall bladder, 5 (5.0%) cases of primary hepatocellular carcinoma (HCC) and 1 (1%) case each of cholangiocarcinoma GB and squamous cell carcinoma

GB. Among the benign lesions, 3 (3.0%) cases were of liver abscess, 2 (2.0%) cases of hydatid disease followed by single case (1.0%) of hepatic adenoma and cysticercosis liver. 10 cases were reported as inconclusive due to low cellularity. Out of 7 (7%) benign lesion of liver, 3 (3%) were abscess, 2 (2%) hydatid cyst and 1 (1%) each of hepatic adenoma and cysticercosis liver. The overall accuracy of ultrasound guided FNAC was 96.6% in diagnosis of right hypochondrial masses.

The finding in this study was comparable with Nazir Swamy, Reddy, Shashi and it has been observed that overall accuracy increased by guided technique. Accuracy of different studies is given in Table 2.[2,5-7] In present study sensitivity, specificity, positive predictive value, negative predictive value and efficacy of USG FNAC of right hypochondrium masses were found to be 96.66%, 100%, 100%, 66.67% and 96.87% respectively. Findings of present study are comparable with Munnaza, Asghar C M Swamy, and Hemlatha.[6,8-10] In this study, no fatal or severe complications were noted which may be attributed to complete pre-aspiration work up and careful choice of patients.

CONCLUSION

Therefore, it is concluded from this study that liver secondaries are most common cause of hypochondrial masses in this region and USG guided FNAC is highly reliable and it takes the place of more invasive procedures, obviates surgical exploration especially in high risk patients facilitating initiation of appropriate therapy and thus saving time, manpower and cost of hospitalization.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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