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,
hemangiomatas 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),
- Disopovan 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 benzoin 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 Papanicolaui’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>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Secondaries in liver</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Metastatic moderately differentiated adenocarcinoma</td>
<td>34</td>
<td>34</td>
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<tr>
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<td>Metastatic undifferentiated adenocarcinoma</td>
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<td>4</td>
</tr>
<tr>
<td>Metastatic well differentiated adenocarcinoma</td>
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<td>3</td>
</tr>
<tr>
<td>Metastatic mucin secreting adenocarcinoma</td>
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<td>2</td>
</tr>
<tr>
<td>Metastatic seminoma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Metastatic melanoma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Metastatic neuroendocrine carcinoma</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Adenocarcinoma gall bladder</td>
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<td>24</td>
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<td>Primary hepatocellular carcinoma</td>
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<td>Fibrolamellar HCC</td>
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<td>1</td>
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<tr>
<td>Cholangiocarcinoma gall bladder</td>
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<td>1</td>
</tr>
<tr>
<td>Squamous cell carcinoma GB</td>
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<td>1</td>
</tr>
<tr>
<td>Benign</td>
<td>7</td>
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<tr>
<td>Liver abscess</td>
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<tr>
<td>Hydatid disease</td>
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<tr>
<td>Hepatic adenoma</td>
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<td>Cysticercosis liver</td>
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<td>1</td>
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<tr>
<td>Inconclusive</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>

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.

**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 Hemnlatha.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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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES
