INTRODUCTION

Carcinoma gallbladder was described as early as 1788 by DeStoll as a rare malignancy.1 Its incidence ranges widely in different areas of the world ranging from 0.5%-1.15% in Western countries to approximately 10% in Eastern countries. The problem with these figures is small sample size and uncontrolled research protocols used.2-4 The disease has a female predominance of around four times as compared to male population. The poor outcome of carcinoma gallbladder can only be improved by early diagnosis,5 which is possible by a good Ultrasonography (USG) and Fine Needle Aspiration Cytology (FNAC) or open/laparoscopic biopsies of suspicious thick GB wall.6 Traditionally, open/laparoscopic techniques are used to take the representative tissue for histopathology. Both these procedures require general anaesthesia and additional surgery to achieve this goal.

The present study determines the significance of ultrasound guided FNAC as a useful technique for diagnosis of this condition. FNAC is a breakthrough technique from extensive surgical procedures to establish histopathological diagnosis. The rapid diagnosis possible with FNAC can shorten or avoid hospital admission and speeds up patient’s route to an appropriate specialist. Risks of open/laparoscopic biopsy are greater than FNAC. Ultrasound guided FNAC in gallbladder mass lesion is still in infancy. In Pakistan, ultrasound guided fine needle aspiration cytology in intra abdominal lesion gained popularity in last two decades as diagnostic modality.

FNAC has been used with interest only in cases of liver masses or lumps in breast or thyroid nodules. Quite a few international studies are available but local studies are lacking.

METHODOLOGY

This comparative study was done in 50 cases. Purposive sampling was done at Surgical Units of Mayo Hospital, Lahore and Lahore General Hospital, Lahore, in collaboration with the Department of Radiology, Sir Ganga Ram Hospital, Lahore and Department of Pathology of PGMI, Lahore, Pakistan. The study was done between September 2006 to September 2007. Both genders with a provisional diagnosis of
"gallbladder mass" on the basis of history, physical examination and abdominal ultrasonography were included. Cases with co-existent pancreatic or primary liver tumours or acute gallbladder mass were excluded due to variable diagnosis, while cases having deranged PT and APTT (double than normal) were also excluded as a contra-indication for FNAC.

Informed consent was taken from each patient. Symptoms and signs were recorded and liver functions test done along with special emphasis on the bleeding profile (PT/APTT/INR). Computerized Tomography (CT) scans were done in all cases to see any extension of the Gallbladder (GB) mass into the surrounding structures and lymph node enlargement in the hepatoduodenal ligament.

Ultrasound guided FNAC of the “suspicious lesion” in gallbladder was done in supine position, using LP needle 22G. After withdrawing the needle, the aspirated material was expressed on pre-labeled clean slides and smeared, using pull apart technique. Few of the smears were air dried and then stained with MGG (May Grunwald's Giemsa stain) method. Rest were fixed while still wet by inserting in a jar containing 95% alcohol and later stained them with H and E stain. Cytological examination was done, blinded by codes for each case. Diagnosis was confirmed by subjecting each patient to laparoscopic or open biopsy under general anaesthesia and H & E stained sections were again examined. The data thus collected was tabulated and compared.

The objective of this study was to determine the significance of FNAC under ultrasound guidance for the diagnosis of carcinoma gallbladder and compare the results with more conventional but invasive options like open biopsy.

Statistical analysis was done, using the SPSS software version 14.0. Descriptive analysis was done for demographic variables including age, gender and clinical presentation of the patients. Test of significance was applied and reliability of the technique was calculated by determining sensitivity, specificity, positive predictive value, negative predictive value and accuracy using cross tables or formulae to calculate these values.

RESULTS

Ages of these 50 patients with gallbladder mass ranged between 40 and 80 years (mean=60.71±11.073 years). Eleven patients were male and 39 patients were female. Male to female ratio was 1:3.50.

The clinical features in the study were dyspeptic symptoms 64% (n=32/50), pain RHC 84% (n=42/50), vomiting 44% (n=22/50), jaundice 48% (n=24/50), palpable mass 26% (n=13/50), ascites 18% (n=9/50), fever 22% (n=11/50). Ultrasound findings in these 50 patients were gallbladder mass present in all patients (n=50/50), gallstones in 90% patients (n=45/50), involvement of adjacent liver area in 48% patients (n=24/50), metastatic lesions in the liver in 16% patients (n=8/50), dilatation of intrahepatic biliary channels in 42% patients (n=21/50) and ascites in 30% patients (n=15/50). Lymphadenopathy was not detected in any patient.

CT scan findings in these 50 patients were gallstones in 90% patients (n=45/50), involvement of adjacent liver area in 64% patients (n=32/50), metastatic lesions in the liver in 20% patients (n=10/50), dilatation of intrahepatic biliary channels in 66% patients (n=33/50), ascites 36% (n=18/50), cystic lymphadenopathy in 10% (n=5/50), involvement of CBD in 50% (n=25/50), involvement of duodenum in 12% (n=6/50) and involvement of colon in 8% (n=4/50).

In 28 patients, specimens of whole of the gallbladder were received either after cholecystectomy or radical cholecystectomy. Gross examination of gallbladder in these specimens concluded increased size of gallbladder in 26 patients, normal size in 2 patients, thickened wall in 18 patients and polyloid mass in 10 patients. Gallstones were found in all these specimens. On cut section, all these specimens had opaque grey white surfaces. In 22 patients, incisional biopsy specimens were hard in consistency and grey white on cut section.

Smears showed adenocarcinoma in 23, undifferentiated carcinomas in 7, haemorrhagic background and no malignant cells in 10 cases. Five smears showed dysplasia of various degrees and had suspicion of malignancy, while 3 smears showed inflammatory cells and no malignancy. Two smears showed necrotic material.

Laparoscopic/open biopsy histological findings showed 35 adenocarcinoma, 10 undifferentiated, one squamous cell carcinoma, 2 adenosquamous carcinoma and 2 specimen showed chronic inflammation. Ultrasound guided FNAC findings versus laparoscopic/open biopsy findings are shown in Table I. Reliability of USG guided FNAC is shown in Table II.

Table I: Comparison of FNAC with open/laparoscopic biopsy in 50 cases of gallbladder mass.

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>Report on ultrasound guided FNAC</th>
<th>Open/laparoscopic biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Inflammatory cells no malignancy seen</td>
<td>Adenocarcinoma (1) Dense fibroses chronic cholecystitis (2)</td>
</tr>
<tr>
<td>02</td>
<td>Necrotic degenerated cells</td>
<td>Adenocarcinoma (1) Squamous cell carcinoma (1)</td>
</tr>
<tr>
<td>07</td>
<td>Undifferentiated carcinoma</td>
<td>Undifferentiated carcinoma</td>
</tr>
<tr>
<td>05</td>
<td>Number of dysplastic cells</td>
<td>Adenocarcinoma (2) Undifferentiated carcinoma (1) Adenosquamous carcinoma (2)</td>
</tr>
<tr>
<td>10</td>
<td>Haemorrhagic background. No malignant cells seen</td>
<td>Adenocarcinoma (8) Undifferentiated (2) Carcinoma</td>
</tr>
<tr>
<td>23</td>
<td>Adenocarcinoma of gallbladder</td>
<td>Adenocarcinoma of gallbladder</td>
</tr>
<tr>
<td>08</td>
<td>Squamous cell carcinoma</td>
<td>Squamous cell carcinoma</td>
</tr>
<tr>
<td>20</td>
<td>Undifferentiated carcinoma</td>
<td>Undifferentiated carcinoma</td>
</tr>
<tr>
<td>04</td>
<td>Inflammatory cells no malignancy seen</td>
<td>Adenocarcinoma (1)</td>
</tr>
<tr>
<td>18</td>
<td>Number of dysplastic cells</td>
<td>Adenocarcinoma (2)</td>
</tr>
<tr>
<td>06</td>
<td>Number of dysplastic cells</td>
<td>Adenocarcinoma (2)</td>
</tr>
<tr>
<td>12</td>
<td>Haemorrhagic background. No malignant cells seen</td>
<td>Adenocarcinoma (8) Undifferentiated (2) Carcinoma</td>
</tr>
<tr>
<td>01</td>
<td>Necrotic degenerated cells</td>
<td>Adenocarcinoma (1) Squamous cell carcinoma (1)</td>
</tr>
</tbody>
</table>
DISCUSSION

This study of 50 cases with gallbladder mass had a higher female presentation (M:F ratio 1:3.5). Highest number of cases were in 6th and 7th decade of life as also reported in most studies on carcinoma gallbladder.7-11 Gallstones disease is associated with carcinoma gallbladder from 65-100% that is comparable to 90% incidence.8,12,13 CT scan is more sophisticated and costly radiological investigation. It also provides information regarding the level of biliary obstruction till the level of tertiary biliary radicals and involvement of lymph nodes, effectively staging the malignant disease.14 Ultrasound guided FNAC is an important diagnostic modality for gallbladder mass lesions. In this study, the sensitivity of ultrasound guided FNAC for detection of gallbladder malignancy was 72.91% and specificity 100%. Krishnani et al. (2000) in a retrospective 7 years study on ultrasound guided FNAC showed overall sensitivity for detecting the carcinoma as high as 90.63% and specificity 94.74%.15 In another study of 99 cases on carcinoma gallbladder, the diagnosis was obtained by ultrasonography in 93 cases and confirmed by FNAC in 70 patients (Pandey et al. 2001).16 All these studies conclude that FNAC is a safe, rapid, reliable, cost-effective and accurate procedure in detecting gallbladder carcinoma.

Zargar et al., (1991) performed ultrasonically guided fine needle aspiration biopsy in 88 patients, who had gallbladder masses. All masses were less than 4.8 cm in diameter and accurately confirmed 88% (n=69/78) malignant and 100% (n=10/10) benign lesions.17 Open/laparoscopic biopsy is an invasive procedure for establishment of histopathological diagnosis. These procedures require pre-operative preparation, general anaesthesia and postoperative hospital stay but tissue for histopathology can be taken and architectural pattern is preserved. Studies (Mohammad et al. 1993, Askari et al. 1993) on carcinoma gallbladder conducted in Pakistan show adenocarcinoma is the commonest histological variety similar to the present study experience.18,19

In this study, ultrasound guided FNAC has sensitivity of 72.91% as compared to 100% sensitivity of open/laparoscopic biopsy. Ultrasound guided FNAC is an outdoor procedure and patient does not require any admission or general anaesthesia in contrast to open/laparoscopic biopsy. Complications of general anaesthesia, especially in old patients emaciated due to malignancy, can easily be avoided.

Carcinoma gallbladder is the most common tumour of the hepatobiliary tract and despite RO resection, the 5-year survival is only 21-69% and improvement is only possible by early diagnosis of the malignancy. FNAC provides information pre-operatively and operative procedure can be planned accordingly. The advance cases, confirmed on FNAC can be subjected to palliative procedure like stenting to relief the jaundice. In this way unnecessary anaesthesia and laparotomy can be avoided in advanced cases.20

CONCLUSION

We have concluded from this study that USG guided FNAC is a useful investigation that can be put to good use in early diagnosis of occult carcinoma of gallbladder. Considering the easy availability, less invasiveness and cost-effectiveness, ultrasound guided FNAC should be practiced with confidence as primary procedure for cytopathological diagnosis which will be a replacement of laparoscopic/open biopsy histological diagnosis. The technique effectively determines patients who can benefit from extensive resection pre-operatively rather than per-operatively and aids in early referral to oncology department for palliation.

Acknowledgement: We are grateful to Ms. Nadia Arshad and Ms. Sana for their valuable assistance in statistical analysis of the data.

REFERENCES


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