A CLINICOPATHOLOGICAL STUDY AND MANAGEMENT OF CHOLELITHIASIS

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ABSTRACT

BACKGROUND

Cholelithiasis is a chronic recurrent disease of hepatobiliary system. The impaired metabolism of cholesterol, bile acids and bilirubin(1) are characterised by gallstone formation. The prevalence of gallbladder stone varies widely in different parts of the world. In India, it is estimated to be around 4%. Diagnosis of gallstone is by proper history and physical examination and combining it with appropriate investigations.

The aims and objectives of the present study are-
1. To study the age and sex distribution of cholelithiasis in Northern Andhra Pradesh.
2. To study the various modes of presentation of cholelithiasis.
3. To evaluate the incidence of complications of cholelithiasis.
4. To compare and evaluate the advantages and disadvantages of laparoscopy versus open cholecystectomy.

MATERIALS AND METHODS

This study was done at Department of Surgery, King George Hospital, Visakhapatnam. About 100 consecutive cases were admitted, examined, investigated and operated during the period of September 2013 to October 2015.

RESULTS AND CONCLUSION

In this study, there was an increased incidence of cholelithiasis in the 4th decade. In the present study, 60% patients were female and 40% patients were male. Pain was the commonest presenting symptom present in all 100 patients, 37 patients had nausea and vomiting, 21 patients had jaundice, fever was present in 12 patients. In this study, 83 patients had tenderness in the right hypochondrium, 6 patients had guarding. Jaundice was present in 21 cases, of which 16 had cholelithiasis associated with choledocholithiasis, 4 patients had mass in the right hypochondrium. Ultrasound abdomen(3) was the main investigation carried out. Isolated cholelithiasis was the commonest finding in ultrasound, 66% had multiple stones and 34% had solitary stone. Cholelithiasis with choledocholithiasis accounted for 16% of cases. Dilated bile duct was seen in 12% of cases and gall bladder wall thickening was seen in 26% of cases. Complications of cholelithiasis observed are 1) most of the patients (76) had chronic cholecystitis, 2) 24 patients presented with features of acute cholecystitis of which 4 had empyema of the gall bladder confirmed during surgery and 4 patients had perforation of the gall bladder. Out of these 100 patients, 16 had stones both in gall bladder and CBD. Open cholecystectomy was done in a total of 28 patients of whom 4 also had CBD exploration also, while 72 patients underwent laparoscopic cholecystectomy. Post-operative complications were minimal. In the present study, 76 patients were reported as having chronic cholecystitis, 5 patients had acute cholecystitis and 4 had gangrenous changes. 15 patients’ gall bladders showed acute-on-chronic cholecystitis. No case of malignancy was noted in our study.

KEYWORDS

Cholelithiasis, Gall Stones, Cholecystectomy, Laparoscopy.


BACKGROUND

The prevalence of gallbladder stone varies widely in different parts of the world. In India, it is estimated to be around 4%. Diagnosis of gallstone is by proper history and physical examination and combining it with appropriate investigations.

Cholelithiasis is a chronic recurrent disease of hepatobiliary system. The impaired metabolism of cholesterol, bile acids and bilirubin(1) are characterised by gallstone formation.
The aims of the present study are: 1. To study the age and sex distribution of cholelithiasis in Northern Andhra Pradesh. 2. To study the various modes of presentation of cholelithiasis. 3. To evaluate the incidence of complications of cholelithiasis. 4. To compare and evaluate the advantages and disadvantages of laparoscopy versus open cholecystectomy. This study was done at Department of Surgery, King George Hospital, Visakhapatnam. About 100 consecutive cases were admitted, examined, investigated and operated during the period of September 2013 to October 2015. In this study, there was an increased incidence of cholelithiasis in the 4th decade. In the present study, 60% patients were female and 40% patients were male. Pain was the commonest presenting symptom present in all 100 patients, 37 patients had nausea and vomiting, 21 patients had jaundice, fever was present in 12 patients. In this study, 83 patients had tenderness in the right hypochondrium, 6 patients had guarding, Jaundice was present in 21 cases, of which 16 had cholelithiasis associated with choledocholithiasis, 4 patients had mass in the right hypochondrium. Ultrasound of abdomen\(^{1}\) was the main investigation carried out. Isolated cholelithiasis was the commonest finding in ultrasound, 66% had multiple stones and 34% had a solitary stone. Cholelithiasis with choledocholithiasis accounted for 16% of cases. Dilated bile duct was seen in 12% of cases and gall bladder wall thickening was seen in 26% of cases. Complications of cholelithiasis observed are 1) Most of the patients (76) had chronic cholecystitis, 2) 24 patients presented with features of acute cholecystitis of which 4 had empyema of the gall bladder confirmed during surgery and 4 patients had perforation of the gall bladder. Out of these 100 patients, 16 had stones both in gall bladder and CBD. Open cholecystectomy was done in a total of 28 patients of whom 4 also had CBD exploration also, while 72 patients underwent laparoscopic cholecystectomy. Post-operative complications were minimal. In the present study, 76 patients reported as having chronic cholecystitis, 5 patients had acute cholecystitis and 4 had gangrenous changes. 15 patients’ gall bladders showed acute-on-chronic cholecystitis. No case of malignancy was noted in our study.

MATERIALS AND METHODS
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Inclusion Criteria
1. Symptomatic gall stone disease with or without complications.
   a. Acute and chronic cholecystitis.
   b. Mucocele of the gall bladder.
   c. Empyema of the gall bladder.
   d. Perforation.
   e. Pancreatitis.
   f. Malignancy.
2. Asymptomatic gall stones of size more than 1.5 cm.
3. Patients with stones both in the gall bladder and the common bile duct.

Exclusion Criteria
1. Acalculus cholecystitis.
2. Primary CBD stones without gallstones.
3. Comorbid conditions like cardiac disease and renal Failure.
4. Asymptomatic gallstones of size less than 1.5 cm.
5. Gall bladder stones with congenital malformations of the biliary tree or stricture of the CBD.

RESULTS
Age distribution of patients was as per Graph -1, majority in the 4th decade, High predilection for females (60%), shown in pie diagram-1.
Clinical symptoms shown in Graph -2, Clinical signs in Graph -3, Ultrasound imaging findings in Graph -4, Complications of cholelithiasis is shown in Graph-5, Type of operation performed in Graph-6, Intraoperative complications of procedure in Graph-7, Post-operative complications,\(^2,3,4,5,6\) in Graph-8, Post-operative recovery comparison in Graph-9, Histopathological reports shown in Graph-10.
Graph 2. Clinical Symptoms of Cholelithiasis

Graph 3. Clinical Signs of Cholelithiasis

Graph 4. Ultrasound Findings
SS: Solitary Stone.  
MS: Multiple Stones.  
BDS: Bile Duct Stones.  
DBD: Dilated Bile Duct.  
TG: Thickening of Gall bladder wall.

Graph 5. Complications of Cholelithiasis

Graph 6. Types of Operation

Graph 7. Intraoperative Complications

Graph 8. Post-operative Complications

Graph 9. Post-operative Recovery
DISCUSSION

Our study is the prospective study of clinicopathological features and management of cholelithiasis. It included 100 cases presenting to the OPD of Department of Surgery, King George Hospital/Andhra Medical College, Visakhapatnam with symptomatic gall stones, confirmed by imaging studies and admitted for further management. Duration of study was from September 2013 to October 2015.

Graph 10. Histopathological Reports

<table>
<thead>
<tr>
<th>Age Group in Years</th>
<th>Present Study</th>
<th>%</th>
<th>Herman et al</th>
<th>%</th>
<th>Rushad et al</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td>00</td>
<td>0</td>
<td>25</td>
<td>1.60%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21-30</td>
<td>17</td>
<td>17%</td>
<td>92</td>
<td>5.90%</td>
<td>04</td>
<td>3.33%</td>
</tr>
<tr>
<td>31-40</td>
<td>34</td>
<td>34%</td>
<td>226</td>
<td>14.60%</td>
<td>36</td>
<td>30%</td>
</tr>
<tr>
<td>41-50</td>
<td>22</td>
<td>22%</td>
<td>325</td>
<td>21%</td>
<td>30</td>
<td>25%</td>
</tr>
<tr>
<td>51-60</td>
<td>17</td>
<td>17%</td>
<td>473</td>
<td>30.60%</td>
<td>29</td>
<td>24.16%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>10</td>
<td>10%</td>
<td>352</td>
<td>23.57%</td>
<td>21</td>
<td>17.5%</td>
</tr>
</tbody>
</table>

Comparison of Age Wise Distribution

The incidence in Herman.7 et al series was (6th decade). Hanif.8 series showed peak incidence in 5th decade.

SEX WISE DISTRIBUTION COMPARISON

Battacharya.9 series showed 71.4% female & 28.6% male incidence. Similar sex predominance in the favour of females were noted by A.P.Tamhankar,10 Ganey et al.11 In Major Alok Sharma et al12 series, 70% were female & 30% were male.

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of Cases</th>
<th>%</th>
<th>Battacharya’s Series</th>
<th>%</th>
<th>Alok Sharma Series</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>60</td>
<td>60</td>
<td>65</td>
<td>71.4</td>
<td>41</td>
<td>70</td>
</tr>
<tr>
<td>Male</td>
<td>40</td>
<td>40</td>
<td>26</td>
<td>28.6</td>
<td>17</td>
<td>30</td>
</tr>
</tbody>
</table>

Sex wise Comparison of the Cases

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Clinical Presentation</th>
<th>Present Study</th>
<th>Alok Sharma</th>
<th>Ganey</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Cases</td>
<td>% of Cases</td>
<td>Number of Cases</td>
<td>% of Cases</td>
</tr>
<tr>
<td>1.</td>
<td>Pain</td>
<td>100</td>
<td>100%</td>
<td>58</td>
</tr>
<tr>
<td>2.</td>
<td>Vomiting</td>
<td>37</td>
<td>37%</td>
<td>48</td>
</tr>
<tr>
<td>3.</td>
<td>Fever</td>
<td>12</td>
<td>12%</td>
<td>NA</td>
</tr>
<tr>
<td>4.</td>
<td>Jaundice</td>
<td>21</td>
<td>21%</td>
<td>03</td>
</tr>
</tbody>
</table>

Comparison of Clinical Presentation of the Cases

Similar presentations were noted in the series of Alok Sharma, Ganey, Goswitz et al13

<table>
<thead>
<tr>
<th>Clinical signs</th>
<th>K. L. Kapoor et al</th>
<th>Karl A et al (N=1261)</th>
<th>Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenderness in RH/epigastrium</td>
<td>89.6%</td>
<td>96%</td>
<td>83%</td>
</tr>
<tr>
<td>Icterus</td>
<td>2.10%</td>
<td>10%</td>
<td>21%</td>
</tr>
<tr>
<td>Mass</td>
<td>6.20%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Comparison of Different Clinical Signs
In this study, there were several minor complications but no major ones. There was no peri-operative mortality and no CBD injury. The complications observed peri-operatively were bile leak, stone spillage and blood loss which were found to be comparable in both the groups.

**LAPAROSCOPIC VS. OPEN CHOLECYSTECTOMY**

Traditional cholecystectomy is an integral part of every surgical training programme and is performed by most general surgeons. The advent of laparoscopic cholecystectomy has created an excitement and a flurry of activity in the medical community. This study showed that morbidity rate is more with open cholecystectomy than laparoscopic cholecystectomy. The operating time was almost equal in both the procedures, 96 min. (60-150 min.) for OC and 90 min. (60-130 min.) for LC, slightly more mean time in Open Cholecystectomy was due to dense adhesions and in patients requiring CBD exploration & T-tube insertion.

As experience is gained, an operating time of about 50 min. can be achieved during laparoscopic cholecystectomy. This learning curve represents adapting to operating in the 2-D screen, becoming familiar with the instrumentation and becoming accustomed to the technique.

In this study, there were several minor complications but no major ones. There was no peri-operative mortality and no CBD injury. The complications observed per-operatively were bile leak, stone spillage and blood loss which were found to be comparable in both the groups.

**CONCLUSION**

1. The highest age incidence of cholelithiasis was in the 4th decade, even though no age group was exempt from the disease process.
2. The incidence of cholelithiasis was more in females.
3. The commonest symptom was pain abdomen.
4. The commonest sign was tenderness.
5. Ultrasonogram is the imaging modality of choice.

**Comparison of Ultrasound Findings**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Imaging Findings</th>
<th>Number of Cases</th>
<th>% of Cases</th>
<th>Alok Sharma Series</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Stones in gallbladder</td>
<td>100</td>
<td>100%</td>
<td>57</td>
<td>98.3%</td>
</tr>
<tr>
<td>2.</td>
<td>Solitary stone</td>
<td>34</td>
<td>34%</td>
<td>15</td>
<td>26.3%</td>
</tr>
<tr>
<td>3.</td>
<td>Multiple stones</td>
<td>66</td>
<td>66%</td>
<td>42</td>
<td>73.7%</td>
</tr>
<tr>
<td>4.</td>
<td>Gall stone with Bile duct stone</td>
<td>16</td>
<td>16%</td>
<td>3</td>
<td>5.2%</td>
</tr>
<tr>
<td>5.</td>
<td>Dilated bile duct</td>
<td>12</td>
<td>12%</td>
<td>10</td>
<td>17.2%</td>
</tr>
<tr>
<td>6.</td>
<td>Gall bladder wall Thickening</td>
<td>26</td>
<td>26%</td>
<td>3</td>
<td>5.2%</td>
</tr>
<tr>
<td>7.</td>
<td>Mass</td>
<td>04</td>
<td>04%</td>
<td>1</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

**Comparison of Histopathological Diagnosis of the Cases**

<table>
<thead>
<tr>
<th>Histopathology Report</th>
<th>Our Study %</th>
<th>Blackpool Victoria Hospital Series (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute cholecystitis</td>
<td>5</td>
<td>15.98</td>
</tr>
<tr>
<td>Acute-on-chronic Cholecystitis</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Chronic cholecystitis</td>
<td>76</td>
<td>77.68</td>
</tr>
<tr>
<td>Gangrenous gall bladder</td>
<td>4</td>
<td>3.78</td>
</tr>
</tbody>
</table>

Chronic cholecystitis was the most common histopathology of the gallbladder in patients with biliary calculi, present in 76% of patients in our study similar to that in Blackpool Victoria Hospital series.
6. The most common complication of gallstone disease was chronic cholecystitis.
7. Laparoscopic cholecystectomy is a safe and effective treatment for most patients with symptomatic gallstones.
8. One should not hesitate to convert to an open cholecystectomy if significant adhesions or inflammation is identified during laparoscopy.
9. Technically, the dissection of the cystic artery and cystic duct is very precise and results in less perioperative blood loss in laparoscopic technique.
10. Laparoscopic cholecystectomy patients tolerate oral feeds earlier and are mobilised faster.
11. The duration of hospital stay is less and patients can be discharged quickly from the hospital in Laparoscopic cholecystectomy.
12. Patients of laparoscopic cholecystectomy group can resume their work earlier.
13. The cosmetic advantage in laparoscopic cholecystectomy is obvious.

REFERENCES