Clinicopathological Study of Cholecystectomy Specimens

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**Article History:**
Received on: 26 Sep 2020
Revised on: 26 Oct 2020
Accepted on: 31 Oct 2020

**Keywords:**
Cholecystectomy specimens, Cholecystitis, Gallbladder, Acalculous cholecystitis, Pathologies

**ABSTRACT**
In this study, there are possible causes of two years from June 2015 to May of 2017. During study includes 130 cases of cholecystectomy specimens from January 2013 to June 2017. The objective/purpose of the study is to correlate histopathological findings with various biochemical parameters viz. fasting blood sugar level, lipid profile, etc. Amongst the four cases of adenocarcinoma, 3 (75%) cases showed serosal infiltration and liver infiltration. Out of a total of 130 cases, 69 (53%) were female, and 61 (47%) were male. Out of 4 patients of adenocarcinoma 2 (50%) patients expired during the postoperative period, while 2 (50%) patients improved. Diabetic patients constitute 13.84% of total cholecystectomy patients, so diabetes proved to be a risk factor for the development of gallbladder diseases with statistically significant Odds Ratio (2.66). Results from this study show that a variety of gallbladder lesions are observed in cholecystectomy specimens. The most common lesion observed was chronic cholecystitis with cholelithiasis 99 cases (76.1%), followed by acute cholecystitis 12 cases (9.2%). The present study was undertaken to emphasize the role of histopathological examination in cholecystectomy specimens and its correlation with clinical presentation. Histopathological examination many time reveals an unusual diagnosis bearing significant implications on the treatment, prognosis and outcome of the patient. Hence, the study was undertaken to emphasize the role of histopathological examination in cholecystectomy specimens and its correlation with clinical presentation.

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ISSN: 0975-7538
DOI: https://doi.org/10.26452/ijrps.v11iSPL4.4478

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**INTRODUCTION**
The gallbladder is part of the hepatobiliary system. It is a pear-shaped sac located in a shallow fossa on the surface of the intestine of the lobe of the right liver. Except for stone, several conditions can cause gallbladder pathologies especially acalculous cholecystitis which may not be directly related to gall bladder itself; conditions like stress, sepsis, trauma, starvation. In hospital admitted patients of sepsis and trauma, diagnosis of acalculous cholecystitis might get ignored (Savoca et al., 1990; Lindberg et al., 1970). Clinical diagnosis of the cholecystitis is made, based on history and physical examination along with laboratory and radiological findings. However, a histopathological study is a gold standard for the diagnosis of cholecystitis. Histopathological examination many time reveals an unusual diagnosis bearing significant implications on the treatment, prognosis and outcome of the patient. Hence, a study was undertaken to emphasize the role of histopathological examination in cholecystectomy specimens and its correlation with clinical presentation.
Aim
To study histopathology of cholecystectomy specimens and correlate it with a clinical profile.

Objectives
To study various lesions encountered in cholecystectomy specimens on histopathology. To correlate histopathological findings with various biochemical parameters viz. fasting blood sugar level, lipid profile, etc. wherever possible to correlate histopathological findings with clinical and radiological findings.

Review of literature
William Steward Halsted, popular American surgeon description of his mother’s illness found her very ill, slightly jaundiced, with tumefaction, and great tenderness in the region of the gall bladder. So at 2 am I operated, incised the gall bladder, which was distended with pus and extracted seven stones were probably one of the first cholecystectomy surgery performed and the year was 1882. In the year of 1922, Halsted became ill with the biliary disease and was then operated on by surgeon (Welch) he had trained for removal of gall stones. The operation was successful, but on September 7th he died of postoperative pneumonia. (Symmers, 1994; Colp, 1984).

Except for stone, there are many conditions like stress, sepsis, trauma, starvation that can cause gallbladder pathologies especially acalculous cholecystitis which may not be directly related to gall bladder itself. Duncan reported the first case of acute acalculous cholecystitis in 1844 in a patient who developed the disease after femoral hernia repair. Grossly, gall bladder appears swollen, distended, enlarged, tensed, with dilated veins on its surface. If that attack is acute on chronic inflammation in that case gallbladder will be shrunken, having a dull surface with adhesions on its surface. On microscopy, acute cholecystitis shows ulceration of mucosa; oedema, polymorph infiltration, haemorrhage in all layers. Small vessels may be occluded by thrombus resulting in an area of necrosis.

In some cases, arterioles show an area of fibrinoid necrosis. If this acute inflammatory pathology continues, that may lead to acute gangrenous cholecystitis or acute necrotizing cholecystitis which may lend into perforation and biliary peritonitis and biliary fisula1 (Terada, 2013). In acute cholecystitis marked reactive changes may be present in epithelium and that should not be confused with dysplasia or carcinoma in situ. Most of the acute cholecystitis have chemical rather than infective pathogenesis. 20-50% of bile cultures from acute cholecystitis are sterile, and that is why perforation is rarely followed by bacterial peritonitis. (Rosai, 2011).

Merely positive bile culture also does not justify operative interference. That statement is supported by the argument that as if we found infected material in the lumen of the appendix, we would not accept that finding as proof of appendicitis; nor if we find infected urine in the urinary bladder, would we be justified in making the diagnosis of cystitis. If infected material can exist in other mucous lined cavities without setting up inflammation there, why not gallbladder? So if at the operation gall bladder appears normal the regional glands are not involved, and the aspirated bile on gross does not differ widely from a normal, operative interface is not justified even if bile is shown to be infected (Meachern, 1921). The occurrence of intra- and perineural invasion in gallbladders affected by chronic cholecystitis with pyloric gland metaplasia and with segmental adenomyomatous hyperplasia has been reported thus adding the gallbladder to the increasing list of organs in which this phenomenon can occur in the absence of malignant disease (Albores-Saavedra et al., 2007; Albores-Saavedra and Henson, 1999).

Table 1: Age Wise Distribution of Total Cases Studied

| Age group | Number of cases (N=130) | Percentage |
|-----------|-------------------------|------------|
| 11-20     | 7                       | 05.3%      |
| 21-30     | 10                      | 07.7%      |
| 31-40     | 19                      | 14.6%      |
| 41-50     | 34                      | 26.1%      |
| 51-60     | 27                      | 20.8%      |
| 61-70     | 24                      | 18.4%      |
| 71-80     | 9                       | 06.9%      |
| Total     | 130                     | 100%       |

Cholecystitis Follicularis- It is a type of chronic cholecystitis characterized by the formation of lymphoid follicles with hyperplastic germinal centres in all layers of the gallbladder. In full-blown cases, this can be recognized on the gross specimen as numerous prominence of firm consistency, round in shape and elevated above the inner surface of gallbladder. Synonym for this condition is cholecystitis lymph-follicularis given by Anderson in 1957 ( Estrada et al., 1960). This condition can be misinterpreted as lymphoma on histopathology or vice versa. That is why it is also known as pseudolymphoma. IHC study is necessary to rule out lymphoma. (Rana et al., 2014). Metastasis is rare even so the prognosis is
Table 2: Sex Wise Distribution of Total Cases Studied

| Age group (years) | Sex- (N=130) | Percentage of male patients (%) | Percentage of female patients (%) |
|-------------------|--------------|---------------------------------|----------------------------------|
|                   | Male         | Female                          |                                  |
| 11-20             | 4            | 3                               | 3.0                              | 2.3                             |
| 21-30             | 7            | 3                               | 5.3                              | 2.3                             |
| 31-40             | 3            | 16                              | 2.3                              | 12.3                            |
| 41-50             | 12           | 22                              | 9.2                              | 16.9                            |
| 51-60             | 11           | 16                              | 8.4                              | 12.3                            |
| 61-70             | 15           | 9                               | 11.5                             | 6.9                             |
| 71-80             | 8            | 1                               | 6.1                              | 0.8                             |
| Total             | 61           | 69                              | 47                               | 53                              |

Table 3: Clinical Features in Patients of Cholecystectomy

| Clinical features                  | Number of cases (N=130) | Percentage |
|------------------------------------|-------------------------|------------|
| Abdominal pain                     | 130                     | 100 %      |
| Vomiting                           | 101                     | 78 %       |
| Fever                              | 11                      | 8.5 %      |
| Icterus                            | 5                       | 3.8 %      |
| Palpitations and sweating          | 2                       | 1.5 %      |
| Diarrhoea                          | 1                       | 0.8 %      |
| Loss of appetite                   | 1                       | 0.8 %      |

Table 4: Laboratory Findings in Cholecystectomy Patients

| Test                                      | Number of patients having positive test results (N=130) | Percentage of patients having a positive result |
|-------------------------------------------|--------------------------------------------------------|-----------------------------------------------|
| Total Leucocyte Count (>11000/mm3)        | 90/130                                                  | 69.23 %                                       |
| Random blood sugar level (>175 mg/dl)     | 18/130                                                  | 13.84 %                                       |
| Serum cholesterol (>200 mg/dl) None       | None                                                   | None                                          |
| Serum bilirubin (>1.2mg/dl)               | 13/72                                                   | 18.00 %                                       |
| Serum alkaline phosphatase (>140 iu/ml)   | 15/29                                                   | 51.72 %                                       |
| Serum aspartate aminotransferase (AST) (>40 units/L) | 05/11                                               | 45.45 %                                       |
| Serum Alanine aminotransferase (ALT) (>45 units/L) | 04/11                                               | 36.36 %                                       |
poor because of cholangitis and liver failure. The prolonged absence of slow metastasis development of the disease has led to the suggestion that liver transplant would be suitable treatment (Albores-Saavedra et al., 1990; Guzmán et al., 1991; Neumann et al., 1976).

Villous papillomas of the gallbladder (not to be confused with villous adenomas) have been seen in infants and adults with metachromatic leukodystrophy and may result in massive hemobilia. (Wartef and Hull, 1984)

MATERIALS AND METHODS

The present study includes prospective cases of two years from June 2015 to May 2017 and also includes cases from retrospective archival of data of two and a half years, i.e. Jan 2013 to May 2015. Thus it includes 130 cases of cholecystectomy specimens from Jan 2013 to June 2017. All Cholecystectomy specimens received in the department of Pathology in our institute from Jan 2013 to June 2017.

OBSERVATIONS AND RESULTS

The present study includes prospective cases of two years from June 2015 to May 2017 and also includes cases from the retrospective period (archival of data) of two and half years, i.e., Jan 2013 to May 2015. Thus it includes 130 cases of cholecystectomy from Jan 2013 to June 2017.

Maximum numbers of patients were in the age group of 41-50 years (26.1%) followed by 51-60 years (20.8%) and 61-70 (18.4%) years. Mean age of the patient was 50 years. The oldest patient was 80 years, and the youngest was 17 years of age. (According to the Table 1)

Females were common in the age group of 31 to 60 years. After 60 years, male patients were more common. Out of a total of 130 cases, 69 (53%) were female, and 61 (47%) were male. (According to the Table 2)

The most typical symptom was abdominal pain (100%), followed by vomiting (78%) and fever (8.5%). The most common symptoms in cholecystectomy cases were abdominal pain (100%) and vomiting (78%). Fever was present in a few cases (8.5% patients). Icterus was present in only 5 (3.8%) out of 130 cholecystectomy cases. The complaint of loss of appetite with low-grade fever was present in only 1 case of adenocarcinoma of the gallbladder. (According to the Table 3)

Table 4 shows TLC and RBSL were done in all 130 patients. Out of 130 patients, 90 patients (69.23%) were having high total leucocyte count, while 18 patients (13.84%) patients had high random blood sugar level. Investigation Serum Bilirubin was available in only 72 patients out of a total of 130 study cases. Level of Serum Bilirubin was raised in 13 patients (18%). Investigation Serum alkaline phosphatase was available in 29 patients out of a total of 130 study cases. Level of Serum alkaline phosphatase was raised in 15 patients (51.72%). Investigation Serum aspartate aminotransferase (AST) and Serum Alanine aminotransferase (ALT) values were available in 11 patients out of a total of 130 study cases. Levels of Serum aspartate aminotransferase (AST) were raised in 5 patients (45.45%), and Serum glutamic-pyruvic transaminase was raised in 4 patients (36.36%). Investigation Serum cholesterol was available in only 7 patients out of a total of 130 study cases. None of the patients showed a level of Serum cholesterol more than 200mg/dl.

DISCUSSION

Diseases of the gallbladder are known since ancient times. Cholecystitis remains the most important cause of acute abdominal pain, peritonitis and emergency abdominal operation. In addition to the findings of acute or chronic inflammation, the excised gallbladder can be the site of a variety of unusual pathologies and neoplasms. In the present study, we have studied histopathological findings in all cholecystectomy specimens done at our institution for four and a half years and correlated these findings with the clinical presentations. We have studied all cholecystectomy specimens removed, including those removed as a part of major abdominal surgery (Pancreatcoduodenectomy). We studied a total of 130 cholecystectomy specimens. Out of these 130 cases, 129 (99.2%) gallbladders were surgically resected as a therapeutic measure for clinically suspected cholecystitis and remaining (0.8%) was removed in the course of Pancreatcoduodenectomy.

CONCLUSIONS

The present study includes a total of 130 cholecystectomy specimens. Gross and microscopic findings in cholecystectomy specimens were studied, and correlated with clinical details. Results from this study show that a variety of gallbladder lesions are observed in cholecystectomy specimens. The most common lesion observed was chronic cholecystitis with cholelithiasis 99 cases (76.1%), followed by acute cholecystitis 12 cases (9.2%). The study showed the predominance of female patients between the age group 41-50 years. Patients with...
a history of diabetes, alcohol consumption, non-vegetarian diet pattern, high BMI were found to be affected by gallbladder diseases.

**Conflict of interest**
The authors declare that they have no conflict of interest for this study.

**Funding support**
The authors declare that they have no funding support for this study.

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