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HISTOPATHOLOGICAL STUDY OF CHOLECYECTOMIES PERFORMED FOR GALL STONE DISEASE

Pathology

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ABSTRACT

Backgroud –Biliary tract disease affects significant number of population in the world. Over 95% of the biliary tract disease is due to cholelithiasis .This study has been undertaken to study the histological spectrum of changes seen in gall bladder removed for gall stones.The findings were mucosal hyperplasia, ulceration, inflammation ,fibrosis, metaplasia and carcinoma.

Material and method: 211 specimens of cholecystectomy performed for gall stone were included in this study over a period of 24 months.

Result: There was female preponderance with maximum cases in age group 41-50yrs .The most common histological finding were mucosal hyperplasia 74.46% inflammation 78.19% ,RA sisuses70.28% and fibrosis 81.04%. Metaplastic changes (both pyloric and intestinal) were seen in 12.79% .Incidental Carcinoma was detected in five cholcystectomy specimens removed for gall stones(2.36%).Other histological finding were mucosal ulceration 23.22%. and choleterolosis 2.36% .

Conclusion: Gall stone disease is common in age group of 41-50yrs with female preponderance.No age was exempt. Gall stone cause spectrum of histological changes in gall bladder mucosa most significant is metaplasia which can be precursor lesion for carcinomatous changes. Cholecystectomies done for gall stones can also harbour incidental carcinomas which have poor prognosis.

KEYWORDS

Cholecystectomy ,histopathology , gallstones, metaplasia,carcinoma.

Introduction :

Gallstones are a major cause of morbidity throughout the world necessitating hospitalization and cholecystectomy.

The basic chemical constituents of gall stones is cholesterol, calcium bilurubinate and calcium carbonate either alone or in combination.. The formation of gall stones is closely linked to bile and mucosal epithelial interactions[9].

Histology of gallbladder consists of mucosa resting on lamina propria, muscularis propria and perimuscular connective tissue. The mucosa is lined by columnar epithelium with pale eosinophilic cytoplasm and basally located nuclei. Microscopically gall stones can cause spectrum of histopathological changes in the various layers of gall bladder. Mucosal changes can be ulceration, necrosis,hyperplasia , inflammatory infiltrates,cholesterolosis ,fibrosis and metaplastic changes of glandular epithelium [12] .It may be associated with metaplastic or dysplastic changes at other foci.

Metaplasia is not seen in normal gall bladder mucosal epithelium. Metaplastic changes are more common in cholecystecotmies done for gall stones . It can be of gastric or intestinal type. Gastric metaplasia is usally of pyloric type. Intestinal metaplasia is characterized by columnar cells of intestinal type interspersed with goblet cells. It is widely accepted that metaplastic epithelium is more susceptible to malignant transformation than normal epithelium[7]. The importance of extensive sampling in the histolopathological detection of intestinal metaplasia was emphasized by Durate et al (1993)[5] .

GB is the most common site for malignancy in the biliary tract and common in females with increasing age .There is definite epidemiological assocaiation with gall stones.Also gall stone induces changes in GB mucosa like metaplasia and dysplasia which can be precursors for carcinomatous changes. GB carcinoma has poor prognosis because of its late detection, after the tumour has spread widely.Signs and symptoms of carcinoma gall bladder are non specific and usually mimic cholecystitis.In fact many GB malignancy are incidently discovered in cholecystectomies performed for gall stones.

Materials and Methods:

A total of 211 specimens of cholecystectomy performed for gall stone,over a period of two years were included in this study .The specimen was received and fixed in in 10% neutral buffered formalin . Sections were taken from the fundus, body and neck of the gall bladder. Additional sections were taken from grossly abnormal appearing mucosa if present. This was followed by processing with routine histological techniques for paraffin embedding and sectioning at 4.0 micron thickness.Sections were stained by Hematoxylin and Eosin stains.

Result:

There was female preponderance with male is to female rato of 1:2.4. Maximum cases were in age group 41-50 yrs followed by 51-60 yrs. No age group was exempt.(Table 01) Histopathological changes were as follows (Table 02) Mucosal changes-157 cases out of 211 showed mucosal hypeprlasia(74.40), Mucosal ulceration- 49 cases(23.22%).

Inflammatory infiltrates were seen in 165 cases(78.19%).

RA sisuses in 149 (70.29%) and fibrosis was seen in 171 cases(81.04 %) respectively.In 5 cases showed cholesterolosis (2.36%) . In 27 cases the gall bladder mucosa showed metaplastic changes (12.79%). Incidental Carcinoma was detected in 5 (2.36%) cholcystectomy specimen removed for gall stones.

Table 01-Age wise and Genderwise distribution

Age	Number of cases male	No of cases female
0 to 10	01	01
11 to 20	01	03
21 to 30	05	11
31 to 40	10	23
41 to 50	21	62
51 to 60	13	27
61 to 70	07	13
71- 80	03	05
80 and above	01	04
Total	**62**	**149**

Table 02-Gall stone induced histological changes

Histopathology	Number Of Cases	Percentage(%)
Mucosal hyperplasia	157	74.46
Mucosal ulceration	49	23.22
Inflammatory infiltrates	165	78.19
Cholesterolosis	8	3.79
RA sinuses	149	70.28
Fibrosis	171	81.04
Metaplasia	27	12.79
Malignancy	5	2.36

Discussion :

Gall stone affect many people all over the world.The Most common indication for cholecysectomy is presence of gall stones causing varying clinical symptoms.(fig-01)

In the present study we analysed the histo pathological features of 211GB removed for gall stones.All age groups were affected, maximum cases belong to age group of 41-50yrs with female preponderance.This study correlated with study of the Rakesh B.H et al(2013)[10].Male to female ratio of 1:2.4 was in present in the study.This again correlated well with the study of Rakesh B.H et al (2013)[10] and Sharma LB et al (1999)[11] which showed maximum incidence in females.Histopatholgy of gall bladder revealed various mucosal changes –hyperplasias, ulceration with associated necrosis in few cases,metaplasia and carcinoma. Chronic irrtitation caused by long standing gall stones may causes mucosal changes.Mucosal hyperplasia(fig-02)was most common change seen in 157 cases (74.40%).This was slightly higher than studies done by Khanna et al who reported mucosal hyperplasia in 69% of cases[7]. Three cases showed spongiod and adenomatous type of hyperplasia . Mucosal ulceration was seen in 43 cases (20.22). all them were seen in cholecystectomies perfomed for acute calculous cholecysititis. Mucosal necrosis was associated with ulceration in 11 cases. These were from cases of gall stone causing gangrenous cholecystitis.

Presence of gall stones in lumen of GB causes increased intraluminal pressure leading to weakening of wall and inward mucosal proliferation.In our study 149 cases (70.28%) showed presence of RA sinuses .Gall stones cause lymphocytic infiltration by chronic irritation[4]. inflammatory infiltration was seen in165 (78.19%)cases.Most cases had moderate lymphop lasmacytic infiltrates and were diagnosed as chronic cholecy stitis(fig-03). Kumar and kinni et al in their study showed 72.5% of lymphoplasmacytic infiltrates in their study[8]. Cholecystectomies done for acute cholecystitis did not show any inflmmatoy infiltrates.Gangrenous GB showed neutrophilic infiltrates. Mixed inflammatory infiltrates was seen in cholecystectomies reported as chronic active cholecystitis. Cholesterolosis was seen only in 8 (3.79%) of cases.This was much lower than reported by Baidya et al at 14%[3].Fibrosis was seen 171 (81.04 %)cases. It was common finding in GB wall of chronic cholecystitis.and chronic active cholecystitis[1].Metplasia of antral and intestinal type are frequently seen in GB with stones .There may be hyperplastic changes of mucosa elsewere Albores-saavedra suggested that some of these metaplasia can progress to carcinoma[2].

In our study total of 27 cholecystectomies (12.79%) showed metaplastic chages.This is was lower than study of kumar and kinni who reported 23%[8].13 cases had of mucosal hyperplasia elsewere. Out of 27 cases pyloric metaplasia was seen in 16 cases ,11 showed intestinal metaplasia with presence of goblet cells(fig-04)

It is widely accepted that metaplatic epithelium is more susceptible for malignant tranfromation if the chronic irritation persists.Yamato et all have proposed that metaplastic epithelium was one of the two histogenetic pathway for GB carcinoma. Presence of metaplastic changes should prompt the pathologist to sample more tissue as not to miss foci of dysplastic and carcinomatous changeselseware[5].

Carcinoma of gall bladder has poor prognosis because of late diagnosis when the tumour has spread .In most cases it is incidently discoverd in cholecystectomies performd for other causes.In our study carcinoma gall bladder was incidently diagnosed in five (2.36%)gall bladders removed for gall stone associated chronic cholecystitis.In study done by the incidence of GB carcinoma was 2.7%[6] Faisal G Siddiqui et al .Various studies have reported incidence of GB malignancy from 1.0 to 12.4% .In all these studies there was 100% association with gall stones.This was similar to findings in our study.

Summary and Conclusion:

Gall stone disease are common in age group of 40-50 yrs with female preponderance.Noage group was exempt.Gall stone cause spectrum of histological changes in gall bladder mucosa from innocuous mucosal hyperplasias to more significant metaplasia which may be precursor lesion for carcinomatous change. Cholecystectomies done for gall stones can also harbour incidental carcinomas which have very poor prognosis.

Abbreviations used;
GB- Gall Bladder
Rasinus –Rokitansky Aschoff sinus.

Figure 1: G/A- Gall bladder Stone.

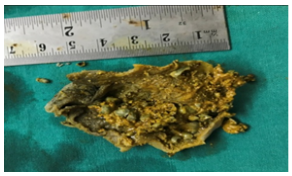


Figure 2: Hyperplastic Gall bladder mucosa &E (100X)

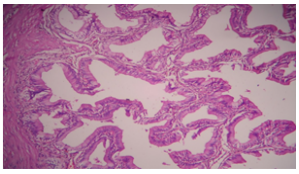


Figure 3:Severe (Grade-3) Inflammation- Gall Bladder

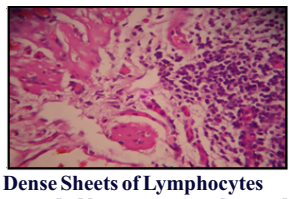
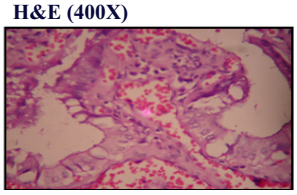


Figure 4:Intestinal metaplasia characterised by Goblet cells in the Gall Bladder mucosa. H&E (400X)



Dense Sheets of Lymphocytes extended between smooth muscle bundles. H&E (400X)

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