Journal of Rangpur Medical College, September 2019; Vol. 4, No.2: 1-2

Assessment of Histomorphologiocal Changes in Gall Bladder Wall Operated for Chronic Cholecystitis

Golam Rahman[1], Md. Golam Rasul Rakhi[2], Shah Shahjada Miah[3], Md. Abdul Hadi[4], Md. Golam Mostafa Kamal[5], Anowar Hossain[6]

Abstract:
Context: Chronic cholecystitis is a cause of morbidity and mortality throughout the world. Most of the cases of chronic cholecystitis are due to gall stone. The main objective of the study was to find out the histomorphological changes in gall bladder wall in chronic cholecystitis. **Methods:** This cross sectional study was conducted in the Department of Surgery in Dhaka Medical College, Dhaka from Nov 2005 to Oct. 2006 over a period of one year. A total of 104 patient were included in the study with diagnosis of chronic cholecystitis underwent cholecystectomy and the histopathological examination of the gallbladder was done in the Department of Pathology, Dhaka Medical College Hospital, Dhaka and final diagnosis made on histopathological report. **Results:** In the study of 104 patients, spectrum of charge in gallbladder wall ranges from minimal mucosal lesion, metaplastic change to malignant charge. Out of these 86(82.7%) diagnosed as chronic cholecystitis, followed by 8(7.7%) acute on chronic" cholecystitis, chronic cholecystitis in cholesterolosis (3.8%) chronic cholecystitis with metaplastic change 3(2.9%), carcinoma gallbladder (adenocarcinoma) 3(2.9%). **Conclusions:** The study revealed that metaplastic change and gall bladder carcinoma arise in the setting of chronic cholecystitis. Chronic gall bladder inflammation is likely a part of the cause of the malignant transformation to gall bladder cancer. Studying the spectrum of histomorphological changes certainly contribute to etiopathogenests and hence prevention.

Indexing words: Histomorphology, Gall Bladder, Chronic Cholecystitis

Introduction:

Chronic cholecystitis is the most common form of symptomatic gall bladder disease and associated with gall stones in nearly every case.[1] It is probably inappropriate, although classical, to subdivide cholecystitis into chronic and acute calculous cholecystitis. They are part of same spectrum of disease and are related to inflammation within the gall bladder secondary to obstruction of the cystic duct by stones. With stone in a gall bladder it appears that there is always some degree of inflammatory change, but there is insufficient evidence to suggest that this is cause of symptom.[2] Chronic inflammation of gall bladder is most commonly due to stones and the term 'chronic cholecystitis' should be restricted to gall bladders containing gall stones with varying degrees of inflammation from mild mucosal/submucosal change to gross transmural fibrosis leading to a contracted fibrous encasement of the biliary calculi.[3]

The morphological changes in chronic cholecystitis are extremely variable and some times minimal. The serosa is usually smooth and glistening but often it is dulled by sub-serosal fibrosis following inflammation. Dense fibrous adhesions may remain as a sequelae of pre-existing acute inflammation. On sectioning, the wall is variably thickened rarely to more than thrice normal. The wall has an opaque gray white appearance and less flexible than normal. In uncomplicated cases, the lumen contains fairly clear green -yellow mucoid bile and usually stones. The mucosa itself is generally preserved. On histological examination, the degree of inflammatory reaction is variable. In more established cases there is marked sub-epithelial

1. Associate Professor, Dept. of Sugery, Rangpur Medical College.
2. IMO, Dept. of Sugery, Rangpur Medical College.
3. Assistant Professor, Dept. of Sugery, Rangpur Medical College.
4. Senior Consultant, Dept. of Sugery, Rangpur Medical College.
5. Assistant Professor, Dept. of Ophthalmology, Rangpur Medical College.
6. Associate Professor, Dept. of Sugery, Rangpur Medical College.

and sub- serosal fibrosis accompanied by mono nuclear cell infiltration. Inflammatory proliferation of the mucosa and fusion of the mucosal fold may give rise to buried crypts of epithelium within the gall bladder wall. Outpouching of the mucosal epithelium through the wall (Rokitansky - Aschoff's Sinuses) may be prominent; superimposition of acute inflammatory changes implies acute exacerbation of a previously chronically injured gall bladder. In rare instances, extensive dystrophic calcification within the gall bladder wall may yield a porcelain gall bladder notable for a markedly increased incidence of associated cancer.[4]

Diffuse calcification of the gall bladder considered to be the end stage of chronic cholecystitis has all been associated with carcinoma of gall bladder and an indication of early cholecystectomy[5]. However, most of the patients are unaware of the disease and remain asymptomatic for life. Only small percentage develops symptoms necessitating treatment. Cholecystectomy either open or laparoscopic is a treatment of choice in most patients. The diseased gall bladder shows a spectrum of histomorpholigical changes ranging from inflammation to malignancy. The present study aimed to analyze the change. To demonstrate the spectrum of changes in gall bladder wall in chronic cholecystitis, the present study was aimed at to demonstrate the histopathological changes in the gall bladder wall in chronic cholecystitis.

Methods:

This cross-sectional study was done in the Department of Surgery, Dhaka Medical College & Hospital, Dhaka, between the periods of November 2005 to October 2006. The study was done on one hundred and four patients (both sexes) who were preoperatively diagnosed as chronic cholecystitis admitted into Surgery Department undergoing operative treatment. Purposive convenience sample method was followed as per inclusion and exclusion criteria. Evaluations of the patients were done by based on history, clinical physical examination and necessary investigation. Patients with severe complicating medical illness, patient requiring emergency surgery, and patient with obvious malignancy were excluded from the study.

All patients were given an explanation of the study and informed consents were taken.

At first, a detailed history was taken and a thorough clinical examination was done to detect the cases of chronic cholecystitis. Subsequently necessary laboratory and other special investigations were carried out with all possible means- a preoperative diagnosis was made.

The final diagnosis was done based on operative findings and histopathological findings of the patients gall bladder suffering from chronic cholecystitis. Clinical diagnosis was correlated with operative findings and histopathological examination done in every case to see the histopathological changes.

Collected data was collated and appropriate statistical analysis were done using computer based SPSS (Statistical Program for Scientific Study) package.

Results:

Among the studied patients, 23(22.1%) were male and 81(77.9% were female with male and female ratio was 1:3.5. The mean age of the patients were 42.8±12.0 years ranging from 17 to 75 year. The mean age of the male patients was 42.9±11.8 years and that of female patients was 42.1±12.1 years.

The histological findings indicated that 78.8% had flattened mucosa and 21.2% ulcerated mucosa. Microscopic findings indicated that 84.6% had chronic cell infiltration in the lamina propria and muscle layer followed by 79.8% had perimuscular fibrosis and 2.9% had malignant cell. However, 12.5% had both had chronic infiltration of cell and malignant cell. In the serous layer, 82.7% had vascular congestion followed by chronic cell Infiltration (75.0%).

Table 1: Distribution of patients by histological findings (N=104)

Histological finding	Frequency	Percent
Mucosa		
Flattened	82	78.8
Ulcerated	22	21.2
Lamina propria and muscle layer		
Chronic cell Infiltration (lymph. macro)	88	84.6
Perimuscular fibrosis	83	79.8
Both	13	12.5
Malignant cell	3	2.9
Serous layer		
Vascular congestion	86	82.7
Chronic cell Infiltration (lymph. macro)	78	75.0

Histological diagnosis indicated that 82.7% diagnosed as chronic cholecystitis followed by acute on chronic cholecystitis (7.7%), adenocarcinoma (2.9%), chronic cholecystitis

with cholesterosis (3.8%) and chronic cholecystitis with metaplastic changes (2.9%) that is 90.4% chronic cholecystitis and 9.6% diagnosed as carcinoma and metalastic changes.

Table 2: Distribution of patients by histological diagnosis (N=104)

Histological findings	Frequency	Percent
Chronic cholecystitis	86	82.7
Acute on chronic cholecystitis	8	7.7
Adenocarcinoma	3	2.9
Chronic cholecystitis with cholesterosis	4	3.8
Chronic cholecystitis with metaplastic changes	3	2.9
Total	**104**	**100.0**

Discussion:

Biliary disease, specially cholecystitis with cholelithiasis is very common in our country. An increased incidence of carcinoma also been observed in recent years. The primary objective of the study was to find out the histomorphological changes in gallbladder wall operated for chronic cholecystitis.

In this study, 104 patients were anatyzed irrespective of age a sex. Clinical and laboratory parameters, serological are ultrasonographic findings and the final diagnosis were done by histopathological findings.

All the patient with diagnosis of chronic cholecystitis underwent cholecystectomy and gallbladder histopathological study was done. Numerous and variable histomophological findings varying from minimal to gross alteration was found in the gall bladder wall.

Among the studied patient 23 (22.1 %) were male and 81 (77.9%) were female and male and female ratio was 1.3:5. The mean age of the patient were 42±12 years ranging from 17 to 75 years. The gallbladder diseases are more common in female and female are more sufferer than male findings are consistent with previously published reports.[6]

It is well known that cholelithiasis is more common is female and more than 90% of cases of chronic cholecystitis are associated with cholelithiasis.[7]

Considering the symptoms and signs 38.5% patient present with upper abdominal pain followed by nausea (9.6%), vomiting (6.7%), and fever (9.6%) and chill (9.6%). However no patient had anaemia, jaundice or palpable liver.

The ultrasonographic findings indicated that 38.5% patient has increased wall thickness followed by 61.5% patient has normal wall thickness. However 99% patients were gallstone detected ultrasonographically. The other parameters were within normal limit.

The morphological finding indicated that majority of the patient had bile stained velvety mucosa (85.6%) followed by atrophied (8.7%) and flattened (8.5%) mucosa and 99% had gallstone in resected gallbladder.

The histological diagnosis revealed that 82.7% diagnosed as chronic cholecystitis followed by acute on chronic cholecystitis (7.7%), chronic cholecystitis with cholesterolosis (3.8%), and chronic cholecystitis with metaplastic charge (2.9%), carcinoma gallbladder (adenocarcinoma) (2.9%) in decreasing order of frequency.

The histological finding revealed that 78.8% had flattened mucosa are 21.2% ulcerated mucosa. There were chronic inflammatory cell infiltration in the lamina propria and muscle layer 84.6% and perimuscular fibrosis 79.8%, malignant cell infiltration was 2.9%. In serous layer 82.7% was vascular congestion followed by chronic cell infiltration (75.0%).

In the study, out 104 patients it was found that chronic cholecystitis and other benign lesion were 101(97%) and only 3(2.9%) was malignant lesion.

In the study stone was found in 97% patient and carcinoma gallbladder was 2.9%. Gallstone are found in 65-90%of patients with carcinoma gallbladder.[8] However there may be several other important factor involved in the development of carcinoma gall gladder and only a small proportion of patient (1-3%) of all cholelithiasis patients develop carcinoma gall bladder. Two School of thought have emerged as to pathogenesis of carcinoma gallbladder due to gallstone disease, (i) Epithelial hyperplasia, (ii) Epithelial metaplasia leading to dysplasia, carcinoma in situ and invasive cancer current thinking favour the second hypothesis 1 that adenocarcinoma develops in displasia of metaplastic gallbladder.[8]

Carcinoma gall bladder is rare but highly lethal disease. In present study, there were only 3 cases (2.9%). Different studies have reported different incidence of carcinoma gallbladder ranging from1% to 12.4%. Even to day, with multiple diagnostic tests available, gall bladder

cancer is usually first recognized during a laparotomy performed for a presumptive diagnosis of benign gall bladder disease.

However, the study was conducted in a short period of time and included limited number of patients in surgical department of Dhaka Medical College Hospital, Dhaka and selected by convenience sampling may not represent the actual histopathological change in gallbladder wall in chronic cholecystitis of the whole country. Although findings of the present study consistent with the findings of the different published studies, a large number of patients should be studied in different centers to correlate with this study.

Conclusion:

The study revealed that in chronic cholecystitis histomorphological changes ranging from minimal mucosal lesion, metaplastic change to malignant change. Cholecystectomy seems to be best prevention of carcinoma gallbladder in any case of cholecystitis with cholelithiasis symptomatic or not in absence of any contraindication. A selective approach to histopathology of gallbladder is justifiable.

References:

1. Way, W. Lawrence. Doherty M. Gerard., Current surgical diagnosis and Treatment, 11th ed; 2003; p: 605,
2. Russel, R.C.G., Williams. Norman, S., J.K. Bulstrode, Christopher, Bailey and loves short practices of surgery. 24th ed; 2004; p: 1104 1105.
3. Robert, J.C. Steele , Moossa , Rahmin, Abdool., Cuschieri, S.A., Essential Surgical practice, 24th ed; 2002; R 605.
4. Cotran, Ramzi, S, Kumar, vinay., Kume`r,Collins,Tucker., Robbins pathologic basis of disease, 5th ed; 1999; p: 897.
5. Kumar, Perveen, Clark, Michale. , Kumar and Clark Clinical medicine, 5th ed; 2003; p: 394.
6. Nazma A. Precursor lesions of gallbladder carcinoma in surgically resected specimen (Thesis): IPGMR: 1995: p: 100-101.
7. Rosai J ed. Ackermen's Surgical Pathology 7th edition, CV, Mosby Co. Missouri 1989: p: 737-756.
8. Taylor I, Johnson, CD Recent advances in surgery: 20, Churchill livingstone, 1997, p: 69-88.