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Original Article

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Evaluation of Histopathogical Changes in Gallbladder Mucosa in Gallbladder Stone Patients: An Institutional Based Prospective Study

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Abstract

Background: Mucus, calcium and lipids act together and lead to the formation of the gallstones. Gallbladder and biliary tract epithelium is unprotected from the high concentrations of harmful compounds both exogenous and endogenous that are excreted into the primary bile. The present study was conducted with the aim to evaluate the histopathogical Changes in Gallbladder Mucosa in Gallbladder Stone Patients. **Subjects and Methods:** The present retrospective study was conducted in the Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India. For histopathological examination, Gall bladder was sectioned from neck to fundus and carefully washed with 0.15 N saline. All the data thus obtained was arranged in a tabulated form and analysed using SPSS software. Percentage of the whole data was calculated. **Results:** There were a combination of alterations observed in single bladder, some part was normal while the other showed signs of hyperplasia. Normal epithelium was seen in 20% cases, there were 44.7% cases that showed epithelial hyperplasia. **Conclusion:** Pathological alteration on the epithelium of gall bladder plays a pivotal role in the gall stone formation and if unmanaged or untreated it can lead to dysplastic changes and ultimately carcinoma in situ.

Keywords: dysplastic, hyperplasia, gall stones, epithelial.

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Introduction

Disease of gall stones is a frequently observed health issue amongst the World and produces varied histopathological alterations in the mucosa of the gallbladder like acute inflammatory alterations, chronic Inflammatory changes, granulomatous alterations, hyperplasia, Cholesterol deposits, dysplasia and metaplasia.[1] The mucus present in the gallbladder plays a controlling role in cholelithiasis as it encourages the nucleation of the gall stones.[2] Mucus, calcium and lipids act together and lead to the formation of the gallstones.[3] Gallbladder and biliary tract epithelium is unprotected from the high concentrations of harmful compounds both exogenous and endogenous that are excreted into the primary bile.[4] Diseases of gallbladder like cholecystitis and cholelithiasis are very frequent amongst fatty, fertile and females in the age group between forty to fifty but equal effects are observed amongst male and children's.[5] Cholecystitis and cholelithiasis seem to be advancing in the incidence since past few couple of years in India and in the western world because of increased uptake of fatty and high calorie diets and increased usage of alcohols.[6] The present study was conducted with the aim to evaluate the histopathogical Changes in Gallbladder Mucosa in Gallbladder Stone Patients.

Subjects and Methods

The present retrospective study was conducted in the Department of Pathology, JLN Medical College, Ajmer, Rajasthan, India. Ethical committee clearance was obtained from institute's ethical board before the initiation of the study. Subjects aged between 20-75 years were enrolled in the study. Only subjects who underwent cholecystectomy for gall stone removal were enrolled in the study. For histopathological examination, Gall bladder was sectioned from neck to fundus and carefully washed with 0.15 N saline. The section was then fixed using 10% formalin followed by processing for light microscopy. From evaluating the general histology 4 mm H& E stained sections were prepared. Histological findings were noted and compared with each other. A trained pathologist was made to analyze all the results to avoid error due to human oversight. All the data thus obtained was arranged in a tabulated form and analysed using SPSS software. Percentage of the whole data was calculated.

Results

The present study evaluated 150 specimen of gall bladders. The mean age of the subjects was 47.87+/-6.3 years. There were 70 females and 80 males in the study. Table 1 and

graph 1 illustrates the histopathological findings observed in our study. There were a combination of alterations observed in single bladder, some part was normal while the other showed signs of hyperplasia. Normal epithelium was seen in 20% cases, there were 44.7% cases that showed epithelial hyperplasia. In 28% cases, intestinal metaplasia was observed. Dysplastic features were seen in 2 cases. Cholesterolosis was seen in 21 cases.

Table 1: Histopathological findings

Histopathological appearance	Frequency	Percentage
Normal epithelium	30	20
Epithelial hyperplasia	67	44.7
Intestinal metaplasia	42	28
cholesterolosis	21	14
dysplasia	2	1.3

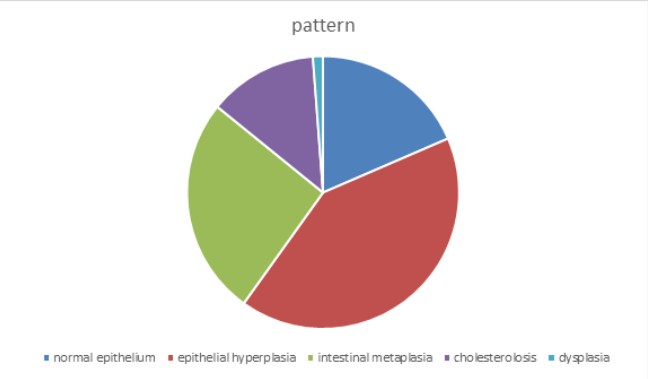

Figure 1: Age variation amongst the subjects

Discussion

Cholelithiasis presents with different sign and symptoms such as pain at the Murphy's point, vomiting, mild to moderate pyrexia .This condition also leads to mild to moderate yellow coloration of cornea and nail beds in the later stages due to obstructive jaundice. Severe anorexia and weight loss are also observed.[7] The columnar epithelium of bladder is lined by a layer of mucosa, that is a negative physiological gel like mucus which separates the host cells from the external environment.[8] The mucus of gallbladder plays a regulatory role in cholelithiasis as it encourages the nucleation of the gall stones.[9] Mucus, calcium and lipids act together in the formation of gallstones. The mucin of gallbladder is pivotal factors in the formation of gallstone. However, there is not enough information Regarding the variation in mucin secretion as per the stone composition.[10] A prime reason for biliary stasis is gallbladder dyskinesia that in turn may be due to pathology of wall of gallbladder.[11] However it was seen that tension of gallbladder wall increased, rather than decreasing in the initial stages of formation of gallstones.[12] Cholelithiasis harvests varied histopathological alterations in mucosa of gallbladder chiefly acute inflammation, hyperplasia, granulomatous inflammation, cholesterosis, dysplastic changes and carcinoma.[13] In the present study, 150 specimen of gall bladders. The mean age of the subjects was 47.87+/-6.3 years. There were 70 females and 80 males in the study. [Table 1 & Figure 1] illustrates the histopathological findings observed in our study. There were a combination of alterations observed in single bladder, some part was normal while the other showed signs of hyperplasia. Normal epithelium was seen in 20% cases, there were 44.7% cases that showed epithelial hyperplasia. In 28% cases, intestinal metaplasia was observed. Dysplastic features were seen in 2 cases. Cholesterolosis was seen in 21 cases. Gallstones seem to be most commonly seen risk factor, observed in 98% cases of gall bladder carcinomas, which is far higher than in age-matched general population.[14] According to a study by Albores S et al a small frequency of hyperplasia of bladder evolved towards atypical hyperplasia and that may lead to carcinoma in situ that finally became invasive carcinoma.[15]

Conclusion

Majority of subjects elder than 45 years of age underwent cholecystectomy. Pathological alteration on the epithelium of gall bladder plays a pivotal role in the gall stone formation and if unmanaged or untreated it can lead to dysplastic changes and ultimately carcinoma in situ.

References

1. Shukla HS, Avasthi K, Naithani YP. A clinicopathological study of the carcinoma of the gallbladder. Indian J Cancer 1981;18:198-201
2. Afdhal NH, Smith BF. Choleterol crystal nucleation: A decade-long search for the missing link in gallbladder pathogenesis. Hepatology 1990;11:699-702.
3. Jacyna MR: Interactions between gallbladder bile and mucosa; Relevance to gallstone formation. Gut 1990;31:568-70.
4. Mohamed Zaki, Abdullah AI-Rafeidi. Histological changes in the human gallbladder epithelium associated with gallstones. Omen Medical Journal 2009;24(4):8-13.
5. H.Mohan. Extra biliary apparatus-gall bladder (textbook of pathology. chapter 19, 5th edition, 658-664 , 2005 .
6. M C Carey. Pathogenesis of gallstones. Am J. Surg, 1993;165:410.
7. Pani J.P, Pandey M S ,Pani D S, Maderakar M N and Katti H K. Estimation of predominate histologic alterations in cholecystitis and cholithiasis of human gallbladder an analytical and statistical study through the approach of routine histochemistry. IOSR Journal of Dental and Medical Sciences, 2013;6(6):35-43.
8. Kuver R,Klinkspoor JH, Osborne WR, Lee SP. Mucous granule exocytosis and CFTR expression in gallbladder epithelium. Glycobiology, 2000;10:149-157.
9. Afdhal NH. Cholesterol crystal nucleation: a decade long search for the missing link in gallbladder pathogenesis. Hepatology, 1990;11:669-702.
10. Kim HJ, Kim JS, Kim KO, park KH, Kim JY et al. expression of MUC3 ,MUC5A, MUC6 and epidermal growth factor receptor in gallbladder epithelium according to gallstone composition. Korean Journal Gastroenterol, 2003;42: 330-336.
11. Velanovich VF. Biliary dyskinesia and biliary crystals: a prospective study. Am J Surg. 1997;63:69-73.
12. Lange K, Gottschalk M, Gallbladder contractility in early stages of lithogenesis in the lithogenic fed guinea pig. Z. Gastroenterol, 1995;139:179-191.
13. Baig S J ,Biswas S, Das S, Basu K and Chattopadhyay. Histopathological changes in gallbladder mucosa in cholelithiasis: correlation with chemical composition of gallstones. Trop. Gastroenterol,2001;23:25-27.

14. Al-Hadeedi SY, Moorchead RJ, Leaper DJ, Wong J. Carcinoma of the gallbladder: A diagnostic challenge. J Coll Surg Edinb 1991;36:174-7.
15. Albores-Saavedra J, Molberg K, Henson DE. Unusual malignant epithelial tumors of the gallbladder. Semin Diagn Pathol 1996;13:326-

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