Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 10, 2023

A Prospective study on assessment of Epithelial Changes of Gall Bladder in the Gallstone Disease

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Abstract

Background: Gallstone disease is a widespread health condition that accounts for about 95% of biliary system diseases globally. The estimated frequency of gallstone disease in India is between 2 and 29%. This illness is seven times more frequent in the north (stone belt) of India than in the south. It seems to have become more common in India during the last several decades.

Materials and Procedures: The SCB Medical College and Hospital in Cuttack hosted this prospective research. The research included 100 cholelithiasis patients who were hospitalised and operated on at our hospital, either open or laparoscopically, regardless of age, gender, physique, or parity.

The current investigation found that most patients (46%) had mixed type gallstones. Gallstones were pigmented in 30% of the instances and pure cholesterol in 24% of the cases. Multiple gallstones were found in 58% of the cases studied, with single gallstones being found in 30% of the instances. In the current research, faceted gallstones were found in 32% of the patients, followed by irregular gallstones in 29% of the cases, and round gallstones in 22% of the instances. In 15% of instances, ovoid gallstones are found. Only 5% of the patients had normal mucosa. As previously stated, the other patients had various forms of epithelial changes. The most prevalent epithelial changes found were focally ulcerated changes, which were followed by hyperplastic changes. Atrophic alterations were seen in 9% of the patients. This change, however, was statistically insignificant.

Conclusion: The kind and number of gallstones were not substantially associated to gallbladder epithelial lesions. Histopathological testing is therefore essential in all cases with Cholecystectomy is used to detect hyperplasia, metaplasia, dysplasia, and cancer.

INTRODUCTION

The gallbladder is a pear-shaped saccular organ located on the visceral surface of the right hepatic lobe in a shallow fossa. It measures 10 cm in length, 3-4 cm in breadth, and has a mural thickness of 1-2 mm in adults. Its capacity is typically 40 to 70 ml, but it may be increased to 100 ml. It has traditionally been separated into three sections: the fundus, the body, and the neck. The

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gallbladder is not usually situated on the liver's underside [1]. It may sometimes be suspended from the liver by a mesentery or entirely buried in liver material. Intrahepatic gallbladders, which are lodged in the liver, are prone to calculi. Histologically, the gallbladder wall has four distinct layers: a mucosa composed of columnar epithelium and underlying lamina propria, a smooth muscle cell layer (muscularis), peri muscular sub serosal connective tissue (also known as sub serosa or adventitia), and serosa (present only on the free surface of the gallbladder) [2].

Gallstone disease is a major health concern around the globe, accounting for about 95% of all biliary system problems. The estimated frequency of gallstone disease in India is between 2 and 29%. This illness is seven times more frequent in the north (stone belt) of India than in the south. It seems to be on the rise in India and the Western world during the last several decades, owing to an increase in fatty and high-calorie diets, as well as rising alcohol consumption [3]. Cholelithiasis is quite frequent in people between the ages of forty and fifty who are obese, reproductive, and female. These disorders are characterised by signs and symptoms such as severe pain at Murphy's point in the right upper quadrant of the abdomen, bilious vomiting, mild to moderate increase in fever, obstructive jaundice, loss of appetite, and weight [4]. It is widely assumed that bile stasis is the primary cause of gallstone development. Gallbladder dyskinesia, which may be caused by gallbladder wall disease, is a primary cause of bile stasis [5]. Cholelithiasis causes a variety of histological alterations in the gallbladder mucosa, including acute and chronic inflammation, glandular hyperplasia, granulomatous inflammation, cholesterolosis, dysplasia, and carcinoma [6]. As a result, the current research was carried out to evaluate the epithelial alterations of the gallbladder in gallstone disease.

Materials and procedures

This prospective research was carried out at the SCB Medical college and Hospital. The research included 100 cholelithiasis patients who were hospitalised and operated on at our hospital, either open or laparoscopically, regardless of age, gender, physique, or parity. A comprehensive clinical history was collected in all instances and documented on a predesigned Proforma. Simple random sampling was used to pick the patients for the investigation. Before beginning the research, the Institutional Ethics Committee approved it, and all patients provided written and informed permission for the operation. The patient's name and data were kept strictly secret and were never divulged.

Following cholecystectomy, the presence of adhesions, gallbladder wall thickness, condition of gallbladder whether contracted or distended with presence of gallstones, single, double, or multiple and round, irregular, or faceted and pigmented or cholesterol type were all noted. The surgically removed gallbladder specimens were embedded in paraffin and preserved in 10% formalin solution. For patients with no obvious abnormalities, typical three sections were obtained, comprising the fundus, body, and neck. For regular histochemistry, haematoxylin and eosin stain were utilised. All data was entered into a Microsoft Excel spreadsheet and analysed using SPSS v22 software at 10% alpha and 90% confidence intervals. Based on the obtained and organised data, p values less than 0.05 were deemed statistically significant associations between research variables.

RESULT

The research comprised cholelithiasis patients who were hospitalised and operated on at our hospital, either open or laparoscopically, regardless of age, gender, physique, or parity. The current research found that 74% of Cholelithiasis patients were female. The female to male ratio is three to one. The average age of the participants in the research was 42.9 5.8 years. The highest number of cholelithiasis cases (33%) were reported in the fourth decade of life, followed by 25% in the fifth decade. Many patients (46%) in the current research had mixed type gallstones. Gallstones were pigmented in 30% of the instances and pure cholesterol in 24% of the cases.

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Multiple gallstones were found in 58% of the cases studied, with single gallstones being found in 30% of the instances. In the current research, faceted gallstones were found in 32% of the patients, followed by irregular gallstones in 29% of the cases, and round gallstones in 22% of the instances. In 15% of instances, ovoid gallstones are found. According to table 3, only 5% of cholelithiasis patients had normal mucosa. As previously stated, the other patients had various forms of epithelial changes. The most prevalent epithelial changes found were focally ulcerated changes, which were followed by hyperplastic changes. Atrophic alterations were seen in 9% of the patients. This change, however, was statistically insignificant.

Table 1: Cases of Cholelithiasis: Distribution According to Sex

Sex	Number of patients	Percentage
Male	26	26%
Female	74	74%
Total	100	100%

Table 2: Cases of Cholelithiasis: Distribution According to Type of Gallstones

Types of gall stones	Number of patients	Percentage
Pure Cholesterol	24	24%
Pigmented	30	30%
Mixed	46	46%
Total	100	100%

Table 3: Distribution of Type of Gallstone According to Changes in Epithelium

Epithelium	**Cholesterol**	**Mixed**	**Pigmented**	**Total No of cases**
Normal	**1**	**3**	**1**	**5**
Focally ulcerated	**5**	**7**	**7**	**19**
Diffuse Ulcerated	**4**	**8**	**1**	**13**
Atrophic	**4**	**2**	**3**	**9**
Hyperplastic	**1**	**8**	**5**	**14**
Hyperplastic And Metaplastic	**0**	**3**	**2**	**5**
Atrophic & Mild Hyperplastic	**0**	**0**	**1**	**1**
Focally Ulcerated & Mild Hyperplastic	**4**	**5**	**4**	**13**
Focally Ulcerated & Atrophic	**4**	**3**	**2**	**9**
Focally Ulcerated & Metaplastic	**1**	**5**	**3**	**9**
Diffuse Ulcerated & Metaplastic	**0**	**2**	**1**	**3**

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Discussion

Cholelithiasis is a prevalent illness that affects 10% to 20% of adults in underdeveloped nations. Gallstones are a leading source of illness and death worldwide. Gallstones may be asymptomatic for many years before symptoms arise. Gallstones in the gallbladder were usually associated with chronic cholecystitis [5]. Chronic cholecystitis is associated with a wide range of lesions, including cholesterolosis, muscle hypertrophy, parietal fibrosis, adenomatous mucous gland proliferation, hyperplasia, metaplasia, and dysplasia, with the last three lesions being universally recognised as precursor lesions with cancerous potential [6].

The research comprised cholelithiasis patients who were hospitalised and operated on at our hospital, either open or laparoscopically, regardless of age, gender, physique, or parity. The current research found that 74% of Cholelithiasis patients were female. The female to male ratio is three to one. The average age of the participants in the research was 42.95.8 years. The most instances of cholelithiasis (33%) were reported in the fourth decade of life, followed by 25% in the fifth decade.

The majority of cholelithiasis patients in this research were in their fourth to fifth decade of life, with the youngest being 12 years old male and the oldest being 86 years old female. The male to female ratio in our research was 1:3. The mean age in the current research was 42.9 years, which is similar to the results of Khanna R. et al, 2006[7] and Aslam M.H. et al, 2013[8], but different from the findings of Terada Tadashi et al, 2013[9].

Gallstones were diagnosed as cholesterol in 24 (24%) instances, pigmented in 30 (30%) cases, and mixed in 46 (46%) cases in the current investigation. During the current investigation, mixed forms of gallstones were detected in the majority (46%) of patients and in the minority (24%) of cases. These results agree with those of Weerakoon H. et al, 2014[10] and Mathur S.K. et al, 2012 [11]. However, our findings contradict the findings of Tadashi T. et al, 2013[9], who discovered the most pigmented gallstones (47%). Only 5% of the cholelithiasis patients in the current research had normal mucosa. As previously stated, the other patients had various forms of epithelial changes. The most prevalent epithelial changes found were focally ulcerated changes, which were followed by hyperplastic changes. Atrophic alterations were seen in 9% of the patients. This change, however, was statistically insignificant. Cholelithiasis causes epithelial pathological alterations that may be precursor lesions to gallbladder cancer. Hyperplasia, metaplasia (pyloric and intestinal), and dysplasia are examples of these alterations. Our findings are analogous to those of Seretis C. et al, 2014, with a nearly same distribution of different epithelial lesions [12].

Conclusion

The current research found that the total mean age was 42.9 years. The majority of cholelithiasis patients were in their fourth to fifth decades of life. Age, gender, weight, and eating habits had no effect on the kind of gallstones. The kind and amount of gallstones were not substantially associated to gallbladder epithelial lesions. Histopathological investigation is therefore required in all cholecystectomy cases to detect hyperplasia, metaplasia, dysplasia, and cancer.

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