

The Incidence of Gall Stones among Different Age Group and Sex at a Tertiary Care Hospital

Mohammed Abdul Baseer^a, Girish Noola^b

^aAssistant Professor ^bProfessor, Department of General Surgery, KBN Medical College, Kalaburgi-585104, Karnataka, India.

Abstract

Introduction: Gall stones have been classified into three classes based upon their physio-chemical characteristics. Cholesterol stones, pigment stones and mixed stones. Cholesterol stones are formed in gallbladder, while pigment stones are mostly formed in bile canaliculi of liver and mixed stones in entire biliary tract and ultimately grow and settle down in gallbladder. Chemical analysis of these gallstones has revealed that cholesterol stones contained cholesterol, a principle constituent and mixed stones have calcium bilirubinate as principle constituent and mixed stones consists of salts of cholesterol and bilirubin as major constituent. *Methodology:* All adult patients diagnosed as Cholelithiasis admitted in hospital during the study period formed the study subjects. *Results:* Study population had mean age of 49 years. Majority of patients were in 51-60 years age group. Age group of 31-40 and more than 60 years group had equal incidence, while other age groups form small subset. *Conclusion:* The relation between gender and gall stone formation is not statistically significant in this study

Keywords: Gall Stones; Incidence; Gender.

Introduction

The incidence and pattern of gall stones varies from place to place, & gall stones disease is a common

gastrointestinal problem in day to day practice, attributed to biologic environment and socioeconomic status. The long said and taught 5 'F' (Fat, Fertile, Flatulent, Forty, Female) is no longer acceptable because studies seems to negate this dictum. Non obese young and older females consuming less fat also seem to be especially at risk. There is no doubt about high prevalence among females and much has been studied in last one decade on various risk factors like role of sphincter of Oddi tone, colonic transit time, proportion of unconjugated bilirubin in the bile, hyperinsulinaemia, and genetic role. The factors predisposing a north Indian to cholesterol stones is reported to be similar to that in west. In south, a sample of over 500 stones that were removed from patients in Madras were subjected to analysis and chemical composition was found to be entirely different from what found in rest of country and west due to different race, culture, ethnicity and diet patterns. The pigment stones are usually a sequel to sepsis. Ascending sepsis, from the GI tract, infects the gall bladder and biliary tree and hence most of the stones are pigment in nature. The chemical analysis needs to be compared with spectroscopy.

Gall stones effects 10% or more of the population in Western countries. Over 20 million people have been found to have gall stones in US (1992) and about one million people are newly diagnosed every year. 50,000 people per anum in UK & 500,000 in the US (Motson & Menzies, 1997) undergo cholecystectomy. In US alone, the diagnosis and treatment of gallstones disease accounted for more than \$5 billion in direct cost in 1990, including a half million cholecystectomies [1,2].

Gall stones have been classified into three classes based upon their physio-chemical characteristics. Cholesterol stones, pigment stones and mixed stones. Cholesterol stones are formed in gallbladder, while

Corresponding Author: Girish Noola, Professor, Department of General Surgery, KBN Medical College, Kalaburagi - 585104 Karnataka, India.
E-mail: kpomesh@gmail.com

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pigment stones are mostly formed in bile canaliculi of liver and mixed stones in entire biliary tract and ultimately grow and settle down in gallbladder. Chemical analysis of these gallstones has revealed that cholesterol stones contained cholesterol, a principle constituent and mixed stones have calcium bilirubinate as principle constituent and mixed stones consists of salts of cholesterol and bilirubin as major constituent. The other substances found in gallstones are calcium salts of phosphate, carbonate, fatty acid, phospholipids and some trace elements like sodium, potassium, copper, magnesium, manganese and iron. All these substances are normally found in the sera and bile of some patients. However the correlation of these components between calculi sera and bile has received attention. Pigment stones or mixed stones are more common in south India compared to North [3,4,5].

Methodology

All adult patients diagnosed as Cholelithiasis admitted in hospital during the study period formed the study subjects

Inclusion Criteria

1. Symptomatic Cholelithiasis

2. Acute and chronic calculus Cholecystitis
3. Empyema of gallbladder with Cholelithiasis
4. Mucocele of gallbladder with Cholelithiasis

Exclusion Criteria

1. Choledocholithiasis
2. Asymptomatic Cholelithiasis.
3. Biliary Pancreatitis
4. Post vagotomy (truncal) / post gastrectomy / Post Bariatric Surgeries with Cholelithiasis
5. Patients with inflammatory bowel disease or periampullary carcinomas presenting with Cholelithiasis.
6. Cholelithiasis of infective origin.

Results

Study population had mean age of 49 years. Majority of patients were in 51-60 years age group. Age group of 31-40 and more than 60 years group had equal incidence, while other age groups form small subset.

Out of 50 patients, 68% patients constitute females and 32% patients were males.

Table 1: Age distribution of patients studied

Age in Years	Number of Patients	%
11-20	1	2.0
21-30	5	10.0
31-40	11	22.0
41-50	9	18.0
51-60	13	26.0
>60	11	22.0
Total	50	100.0

Table 2: Gender distribution of patients studied

Gender	Number of Patients	%
Male	16	32.0
Female	34	68.0
Total	50	100.0

Table 3: Distribution of stone according to age

Age in years	Total number of patients		Cholesterol stone		Mixed stone		Pigment stone	
	No	%	No	%	No	%	No	%
11-20	1	2.0	-	-	1	100.0	-	-
21-30	5	10.0	-	-	4	80.0	1	20.0
31-40	11	22.0	2	18.2	9	81.8	-	-
41-50	9	18.0	1	11.1	8	88.9	-	-
51-60	13	26.0	-	-	12	92.3	1	7.7
>60	11	22.0	-	-	11	100.0	-	-
Total	50	100.0	3	6.0	45	90.0	2	4.0
Inference	The distribution of type of stone is statistically not associated with age with p=0.321 (3x6 Fisher Exact test)							

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Inference Gender distribution is not statistically associated with type of gall stone with $p=0.790$ (2x3 Fisher Exact test)

Table 4: Distribution of stone according to gender

Gender	Total number of patients		Cholesterol stone		Mixed stone		Pigment stone	
	No	%	No	%	No	%	No	%
Male	16	32.0	1	6.3	14	87.5	1	6.3
Female	34	68.0	2	5.9	31	91.2	1	2.9
Total	50	100.0	3	6.0	45	90.0	2	4.0
Inference	Gender distribution is not statistically associated with type of gall stone with $p=0.790$ (2x3 Fisher Exact test)							

Discussion

In the past a lot of study have been conducted to relate between gallstone disease with age, gender, lifestyle, socioeconomic status, BMI and diet. This study has age ranging from 17 to 81 years with mean age b 49 years being $20(\pm 15.21)$. Most of patients with gallstone disease (68%) belong to 5th decade of life. Studies of Herman et al [6], Hanif [7] Ganey et al [8], Moreaux et al [9] and Jayanthi. V [10] series conclude that the highest incidence of gallstone disease were in the 5th decade of life. But Studies of P. Chandran [11] and Gallstone disease in rural Bangladesh Community [12] showed a peak incidence of gallstone disease in 4th and 5th decade of life.

Never the less, most of the studies still conclude gallstone disease being high in 5th decade of life. The epidemiology of gallstone disease in Rome [13] Battacharya set al [14].

Mixed type of gallstones being the most common ,it is still the highest in incidence in the peak age group suffering from gallstone disease. The next in the list being cholesterol stones and pigment stone follow them. Though the cholesterol stones were seen more commonly in 3rd decade age group, mixed type of stone were still most common gallstone irrespective any age group.

In studies of Battacharya's [13] 71.4% were female, 28.6% were male, A.P Tamhanker [15] and Major Alok Sharma et al [16] showed a high incidence in female gender. So does our study too had gallstone disease being more common in females gender, 68%. Whereas male gender suffers less with gallstone disease (32%).

The present study to correlate the type of gallstone with gender factor, Mixed gallstone being more common irrespective of gender. The incidence of type of gall stones to the gender does not show any correlation with respect to the number of male and female patients suffering from gallstone disease.

Conclusion

1. The distribution of type of stone was not statistically associated with age with $p=0.321$.
2. Gender distribution is not statistically associated with Type of gall stones.

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