Changing trends in the epidemiology and presentation of gall stone disease in Bundelkhand region of Northern India

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Abstract

Background: Gallstone disease is fairly prevalent and expensive ailment, demanding approximately 700,000 cholecystectomies annually. Its complications expenses are over $6.5 billion in the United States. In developed countries, at least 10% of white population harbor cholesterol gallstones; women have twice the risk, and increasing age increases the prevalence in both sexes.

Objectives: To evaluate the epidemiology and demographics of gall stone disease in Bundelkhand region and comparative analysis of changing trends with respect to its presenting population.

Methods: This comparative study was conducted in a tertiary care centre teaching hospital between September 2012 to September 2014.

150 consecutive patients who fit into the inclusion criteria were included in the study. Random allocation of patients presenting with symptoms suggestive of gall bladder disease with confirmatory USG study was done and patients are allocated into 2 arms

ARM 1- CC with CL (Chronic cholecystitis with cholelithiasis)

ARM 2-Others-Mucocele, Empyema GB, Acute cholecystitis with cholelithiasis(AC with CL), Xanthogranlumatous cholecystitis.

The details of all are recorded in a proforma (Annexure). Statistical analysis was carried out and all the observations and results were evaluated to arrive at a conclusion.

Results: Majority of presenting patients were in age group 30-40 years(33%). Youngest patient included in the study is 14yrs, oldest being 85yrs. 25% of the operated patients were males and 75% females and there was no significant difference among the two groups.

Interpretation & Conclusion: Age group presenting with cholelithiasis to our centre is significantly younger(30-40yrs) than age group documented in other studies(40-50yrs). As documented by other studies majority of patients present with chronic cholecystitis with cholelithiasis(90%). Other presenting pathologies are mucocele of gall bladder(5%), empyema(2%), acute cholecystitis with cholelithiasis(2%), xantogranulomatous choleystitis(1%). Majority of Females and Males are from age group of 30-40 Yrs in "CC with CL" arm and from 40-50 yrs in "others" study Groups.

Keywords: Gall stone disease, Chronic cholecystitis with cholelithiasis, Mucocele of gall bladder, Empyema gall bladder.

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Introduction

Gallstones threaten epidemic proportions in the North and South American Indian populations, along with increased risk for gallbladder cancer. Contrarily, incidence in sub-Saharan Africa and Asia is quite low. Among adults, the prevalence is approximately 10-20% in West[1] and 4.3% in India.[2] Majority of patients(approximately 80%) with gallstones are asymptomatic.[3] Severe symptoms at presentation are prevalent in 1-2% annually among subjects with asymptomatic gallstones[4]. Biliary colic is the most pathogonomic symptom of gallstone disease. Gastro-intestinal complaints such as fat intolerance, acid regurgitation, heartburn, post prandial bloating, which are also prevalent in the general population, often present along with patient with gallstone disease.[5,6,7,8] In a majority of patients these complaints are subject to gallbladder disease and are therefore, treated by cholecystectomy.[9]

Material and Methods

Study Design: This comparative study was conducted in a tertiary care centre teaching hospital, M.L.B. Medical College, Jhansi between September 2013 to September 2014.

Methodology: 150 consecutive patients who fit into the inclusion criteria were included in the study.

Patients Selection:

The inclusion criteria were:

1. Age of patient between 10 and 85 years

2. Diagnosis of chronic/acute cholecystitis, symptomatic cholelithiasis, recurrent mild biliary pancreatitis, Gall Bladder (GB) polyp, GB Sludge, empyema, mucocele

The exclusion criteria were:

1. Severe co-morbid conditions (uncontrolled diabetes, hypertension, severe direct hyper bilirubinemia)
2. ASA Grade-4

Randomization: Random allocation of patients presenting with symptoms suggestive of gall bladder disease with confirmatory USG study was done. and patients are allocated into 2 arms:

ARM 1- CC with CL (Chronic cholecystitis with cholelithiasis)

ARM 2-Others-Mucocele, Empyema GB, Acute cholecystitis with cholelithiasis (AC with CL), Xanthogranlumatous cholecystitis.

Data collection: Patient data were kept in computer data files and also a hand written proforma has been filled by residents of department.

The details of basic patient profile, presenting complaints and pathology were recorded in a proforma. (Annexure)

Statistical analysis: The statistical analysis was done using SPSS (Statistical Package for Social Sciences) Version 20.0 statistical Analysis Software. The values were represented in Number (%) and Mean±Standard deviation.

- Two-tailed t-Test is used for analysis of demographic data and perioperative data.
- **Level of significance:** "p" is level of significance

p > 0.05 Not significant, p <0.05 Significant, p <0.01 Highly significant, p <0.001 Very highly significant

Observations and Results

Trial Design: 164 patients were considered for inclusion in the study. Of these 14 patients were excluded due to multiple reasons.

Majority of presenting patients were in age group 30-40 years. There was no significant difference in the mean age of patients allocated in two arms. (Table 1 & 2)

Table 1: Age wise distribution of cases in study groups

Age(yrs)	Total
10-19	1
20-29	22
30-39	53
40-49	33
50-59	16
60-69	19
70-79	4
80-89	2
Total	150

Table 2: Comparison of age in study groups

Parameter	Chronic cholecystitis with cholelithiasis	others	P Value
	Mean±SD	Mean ± SD	
Age(yrs)	38.4±8.53	37.6±10.34	>0.05 (NS)

25% of the operated patients were males and 75% females and there was no significant difference among the two groups (Table 3 and Fig. 1).

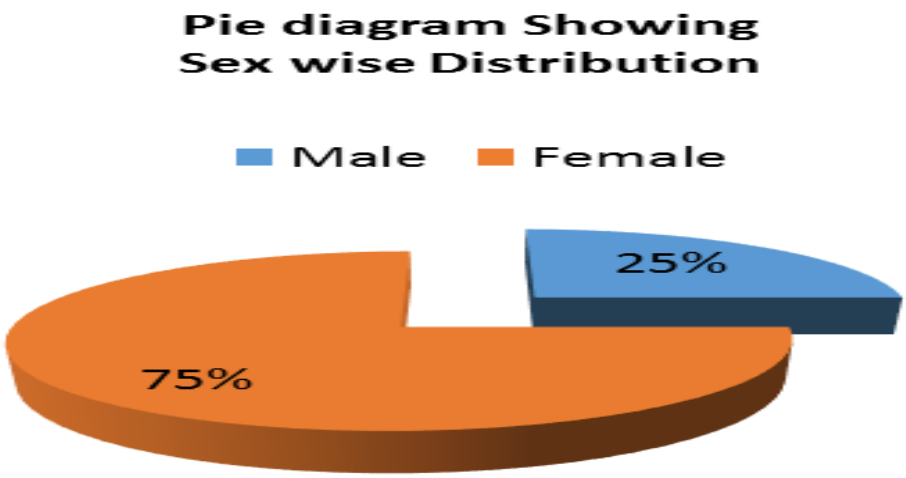

Fig. 1:

Table 3: Sex wise distribution of cases in study groups

Sex	Chronic cholecystitis with cholelithiasis	others	Total	P value
Male	35	1	36	P=NS
Female	100	14	114	
Total	135	15	150	

Majority of Females and Males are from age group of 30-40 Yrs in CC with CL arm and from 40-50 yrs in "others" study Groups.

Table 4: Age – Sex wise Age wise distribution of cases in study groups

Age	Chronic cholecystitis with cholelithiasis		others		Total
	Female	Male	Female	Male	
10-19	1	0	0	0	1
20-29	18	4	0	0	22
30-39	38	13	2	0	53
39-49	22	5	5	1	33
50-59	9	3	4	0	16
60-69	10	8	1	0	19
70-79	1	2	1	0	4
80-89	1	0	1	0	2

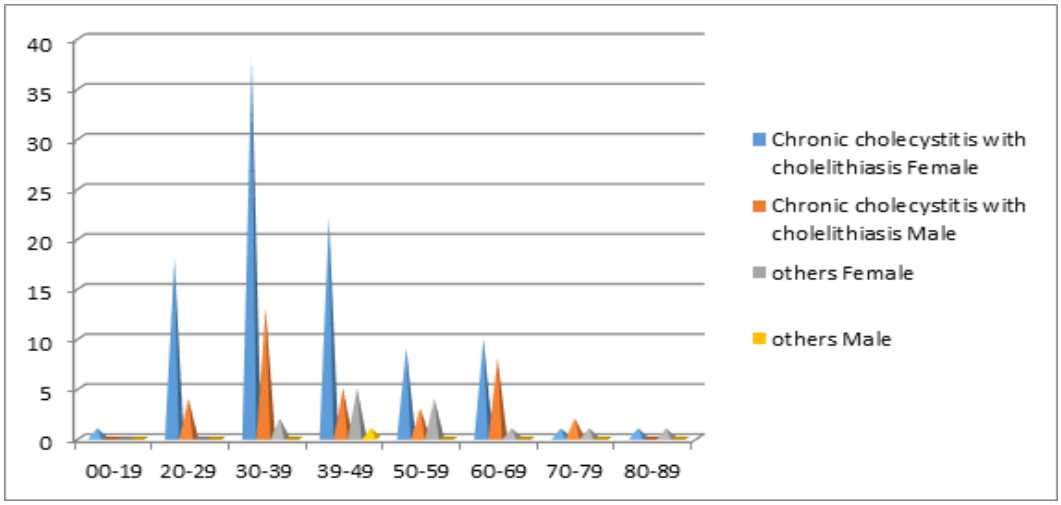

Fig. 2: Cone diagram showing age-sex distribution among study groups

Table 5: presenting pathology as depicted by USG

USG finding	Total(n=150)	%	P value
CC with CL	135	90	NS
Mucocle	7	5	NS
Empyema	3	2	NS
AC with CL	3	2	NS
Xanthogranulomatous	2	1	NS

Discussion

Out of 150 patients included in the study 36 were males and 114 were females. In the CC with CL group distribution was 35 males and 100 females. In "others" group 1 male and 14 females are enrolled. Majority patients were in 30-40 age group. The mean age of patients in CC with CL group was 38.4± 8.53 years and in "Others" group was 37.6±10.34 years.

Table 6: Comparison of age and sex distribution with other studies

	Age(yrs)	Sex(%)	
		Male	**Female**
Our study	38.1(mean)	25	75
Hodgeett,et al(2009)[10]	50(median)	20.6	79.3
Ersin,et al(2009)[11]	44.9(mean)	10	90
RaoPP,et al(2008)[12]	23-67(range)	20	80
Lee,et al(2009)[13]	47.5±12.2(mean)	35.1	64.8
Kravetz,et al(2009)[14]	43.59(mean)	20	80

Like most other studies showing female preponderance (Table 6) our study also shows female preponderance.

Summary and Conclusions

In our study the following conclusions were made Patients presenting to M.L.B Medical College with gall stone diseases belong to significantly younger group. This may be attributed to changing trends in dietary habits and stone belt effect of gangetic plains in the vicinity of bundelkhand region. Also, majority of patient present with chronic cholecystitis with cholelithiasis, showing the trend in the region for late presentation to the tertiary care centre with advanced stages of the disease. Majority of patient presenting in the "others" group belong to the older age group (40-50Yrs) as compared to "CC with CL" group(30-40Yrs). Indicating that increasing age is a risk factor for advanced stages like empyema, mucocele, xanthogranulomatous cholecystitis.

The sample size in our study is small to make solid conclusion. Widespread application must await results obtained from level 1 evidence from prospective trials.

References

1. Diehl AK. Epidemiology and natural history of gallstone disease. Gastroenterol Clin North Am 1991;20:1-19.
2. Tandon RK. Prevalence and type of biliary stones in India. World J Gastroenterol 2000;6 Suppl 3:4-5.
3. Berger MY, vander Velden JJ, Lijmer JG, deKort H, Prins A, Bohnen AM. Abdominal symptoms: Do they predict gallstones? A systematic review. Scand J Gastroenterol2000;35:70-6.
4. Attili AF, De Santis A, Capri R, Repice AM, Maselli S. The natural history of gallstones: The GREPCO experience. The GREPCO Group. Hepatology 1995;21:655-60.
5. Barbara L, Sama C, Morselli Labate AM, Taroni F, Rusticali AG, Festi D, *et al*0. A population study on the prevalence of gallstone disease: The Sirmione study. Hepatology1987;7:913-7.
6. Prevalence of gallstone disease in an Italian adult female population. Rome Group for the Epidemiology and Prevention of Cholelithiasis (GREPCO). Am J Epidemiol 1984;119:796-805.
7. Berger MY, olde Hartman TC. Food intolerance not related to gallstones. J Clin Gastroenterol 2000;30:101-2.
8. Kraag N, Thijs C, Knipschild P. Dyspepsia-how noisy are gallstones? A meta-analysis of epidemiologic studies of biliary pain, dyspeptic symptoms, and food intolerance. Scand J Gastroenterol 1995;30:411-21.
9. Johnson AG. Gallstones and flatulent dyspepsia: Cause or coincidence? Postgrad Med J 1971;47:767-72.
10. Steven E Hodgett and Jonathan M Hernandez and Connor A. Morton and Sharona B. Ross and Michael Albrink and Alexender S. Rosemurgy. Laparoendoscopic single site (LESS) Cholecystectomy. J Gastrointest Surg 2009;13:188-192.
11. Sinan Ersin, Ozgur Firat, Murat Sozbilen. Single Incision Laparoscopic Cholecystectomy: Is it more than a challenge? Surg Endosc 2010;24:68.
12. Prashant P. Rao, Sonde M. Bhagwat, Abhay Rane, Pradeep P. Rao. The feasibility of single port Laparoscopic Cholecystectomy; A pilot study of twenty cases. Journal of International Hepatopancreatobiliary Association.2008;10(5):336-340.
13. Sang Kuon Lee MD PhD, Young Kyouns You, MD PhD, Jung Hyun Park MD, Kyung Keun Lee MD, Dong Goo Kim MD PhD. Single port Transumbilical laparoscopic Cholecystectomy: A preliminary study in 37 patients with Gall Bladder disease. Journal Laparoscopic and advanced Surgical Technique 2009;19(4):495-499.
14. Amanda J. Kravetz MD, Douglas Idai Do, Maren Barron MD PhD MBA, Michael A. Kia D O. The learning curve with single port cholecystectomy.2009;3:332-336.