

## Original Article

### To Establish the Relation of Fasting Blood Glucose Level in Patients with Gall Stones- A Clinical Study

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#### ABSTRACT:

**Background:** Gallbladder (GB) stone disease is a common disorder of the adult population in western countries. GB stone formation is multi factorial. The present study was conducted to assess the role of fasting blood glucose in cholelithiasis. **Materials & Methods:** The present study was conducted on 120 patients undergoing cholecystectomy. General information such as name, age, gender was recorded. In all patients, complete blood count and fasting blood glucose (FBG) was performed. USG was done in all patients. **Results:** out of 120 patients, males were 50 and females were 70. The difference was significant (P- 0.1). Age group < 20 years had 2 males and 5 females, 20-30 years had 10 males and 15 females, 30-40 years had 11 males and 14 females, 40-50 years had 15 males and 20 females and >50 years had 12 males and 16 females. The difference was significant (P< 0.05). The mean FBG level preoperatively was 98.4 mg/dl and post-operative FNG was 100.1 mg/dl. The difference was non-significant (P> 0.05). **Conclusion:** Author found no positive correlation in occurrence of cholelithiasis with fasting blood glucose level. Gall stone formation is predominantly seen in females as compared to males. The chances of gall stones formation increases as age increases.

**Key words:** Cholecystectomy, Fasting blood glucose, Gall stones.

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#### INTRODUCTION

Gallbladder (GB) stone disease is a common disorder affecting approximately 10-25% of the adult population in western countries. GB stone formation is multifactorial, and known risk factors are advancing age, female gender, genetics/ethnicity, obesity, rapid weight loss, diet, drugs, and activity. The association of GB stone disease with metabolic abnormalities such as diabetes, dyslipidemia, obesity, and hyperinsulinemia has supported the hypothesis that GB stone formation is a type of metabolic syndrome.<sup>1</sup>

Gallstones may be asymptomatic, even for years. These gallstones are called "silent stones" and do not require treatment. The size and number of gallstones present does not appear to influence whether people are symptomatic or asymptomatic. A characteristic symptom of gallstones is a gallstone attack, in which a person may experience colicky pain in the upper-right side of the abdomen, often accompanied by nausea and vomiting, that steadily increases for approximately 30 minutes to several hours.<sup>2</sup>

New risk factors continue to be identified. One of the most prominent risk factors in this regard is insulin resistance. Many studies have implicated diabetes as a risk factor of GD, but not all population-based epidemiological studies have come to this conclusion and the strength of this association varied markedly across studies.<sup>3</sup> The explanations of the inconsistent findings are due to limitations in design or statistical power, and also that the insulin resistance that characterized most individuals who develop non-insulin-dependent diabetes mellitus may be the primary factor involved in GD formation. A role for insulin in GD has been identified by population-based studies in univariate, but not multivariate analyses. Few reports have thus far evaluated the association between gallstones and insulin resistance in non-diabetic and non-obese subjects.<sup>4</sup> The present study was conducted to assess the role of fasting blood glucose in cholelithiasis.

**MATERIALS & METHODS**

This study was conducted at District Hospital Shivpuri, Madhya Pradesh. It comprised of 120 patients undergoing cholecystectomy. All were informed regarding the study and written consent was obtained.

General information such as name, age, gender was recorded. In all patients, complete blood count and fasting blood glucose (FBG) was performed. USG was done in all patients. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

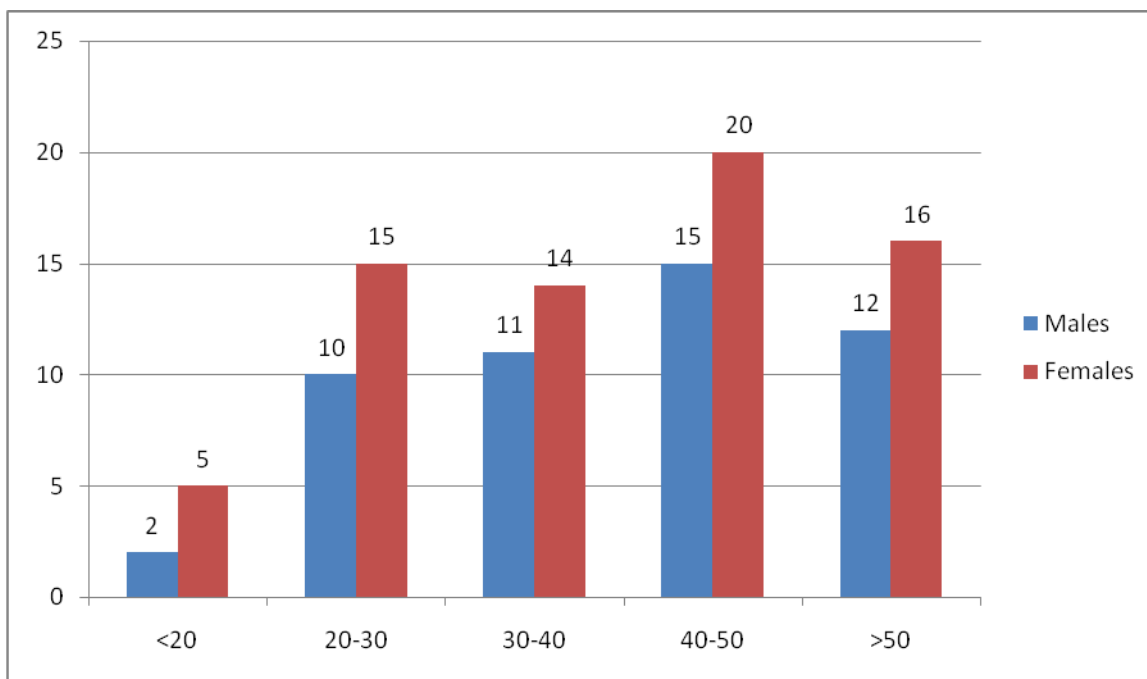
**RESULTS**

**Table I** Distribution of patients

Total- 120		
Males	Females	P value
50	70	0.1

Table I shows that out of 120 patients, males were 50 and females were 70. The difference was significant (P- 0.1).

**Graph I** Age wise distribution of patients



Graph I shows that age group < 20 years had 2 males and 5 females, 20-30 years had 10 males and 15 females, 30-40 years had 11 males and 14 females, 40-50 years had 15 males and 20 females and >50 years had 12 males and 16 females. The difference was significant (P< 0.05).

**Table II** Comparison of FBG in patients

Parameters	Pre- operative		Post- operative		P value
	Mean	S.D	Mean	S.D	
FBG	98.4	12.8	100.1	13.5	0.1

Table II shows that mean FBG level preoperatively was 98.4 mg/dl and post- operative FNG was 100.1 mg/dl. The difference was non- significant (P> 0.05).

## DISCUSSION

The association between cholesterol gallstones and metabolic syndrome or insulin resistance syndrome has been the subject of many recent reports. Although the Asian population has a particular metabolic profile that differentiates them from Western populations, there is currently only minimal data regarding the relationship among GD and insulin resistance syndrome in apparently healthy Asian men.<sup>5</sup>

Gallstone risk increases for females and for people near or above 40 years; the condition is more prevalent among both North and South Americans and among those of European descent than among other ethnicities. A lack of melatonin could significantly contribute to gallbladder stones, as melatonin inhibits cholesterol secretion from the gallbladder, enhances the conversion of cholesterol to bile, and is an antioxidant, which is able to reduce oxidative stress to the gallbladder. Researchers believe that gallstones may be caused by a combination of factors, including inherited body chemistry, body weight, gallbladder motility (movement), and low calorie diet.<sup>6</sup> The absence of such risk factors does not, however, preclude the formation of gallstones. In our study also, out of 120 patients, females (70) had higher cases as compared to males (50).

Rarely, in cases of severe inflammation, gallstones may erode through the gallbladder into adherent bowel potentially causing an obstruction termed gallstone ileus. Other complications include ascending cholangitis if there is a bacterial infection which can cause purulent inflammation in the biliary tree and liver and acute pancreatitis as blockage of the bile ducts can prevent active enzymes being secreted into the bowel, instead damaging the pancreas.<sup>7</sup>

In a study by Sang et al<sup>8</sup> the associations between the occurrence of gallbladder stones and hyperinsulinemia, and high HOMA-IR index were statistically significant in the analysis with postmenopausal women. In a multiple logistic regression analysis, low high density lipoprotein-cholesterol was an independent predictor of gallbladder stone formation in premenopausal women. However, the multiple logistic regression analysis also showed that age and HOMA-IR were significantly associated with gallbladder stone formation in postmenopausal women. In an additional analysis stratified by obesity, insulin resistance was a significant risk factor for gallbladder stone formation only in the abdominally obese premenopausal group.

We found that age group < 20 years had 2 males and 5 females, 20-30 years had 10 males and 15 females, 30-40 years had 11 males and 14 females, 40-50 years had 15 males and 20 females and >50 years had 12 males and 16 females. This is similar to Diehl et al.<sup>9</sup> We found that mean FBG level preoperatively was 98.4 mg/dl and post-operative FNG was 100.1 mg/dl. This is similar to Ruhl et al.<sup>10</sup>

Nepokroeff<sup>11</sup> in their study found that the prevalence of obesity, abdominal obesity, and metabolic syndrome in the subjects with gallstones were higher than in those without.

The prevalence of elevated HOMA (>75 percentile) in subjects with gallstones was significantly higher than in those without, and this association remained even after the obesity stratification was applied. In multiple logistic regression analyses, only age and HOMA proved to be independent predictors of gallstones. Insulin resistance was positively associated with gallstones in non-diabetic Korean men, and this occurred regardless of obesity.

## CONCLUSION

Gall stone formation is predominantly seen in females as compared to males. The chances of gall stones formation increases as age increases. Author found no positive correlation in occurrence of cholelithiasis with fasting blood glucose level.

## REFERENCES

1. Park YH, Park SJ, Jang JY, et al. Changing patterns of gallstone disease in Korea. *World J Surg* 2004; 28:206-210.
2. Yang SH, Lee SE, Jang JY, et al. Clinical and epidemiological analysis of gallstone patients focused on 25-year experience of surgically treated patients. *Korean J Gastroenterol* 2007; 50:42-50.
3. Matthews DR, Hosker JP, Rudenski AS, Naylor BA, Treacher DF, Turner RC. Homeostasis model assessment: insulin resistance and beta-cell function from fasting plasma glucose and insulin concentrations in man. *Diabetologia* 1985; 28:412-419.
4. Filly RA, Allen B, Minton MJ, Bernhoft R, Way LW. In vitro investigation of the origin of echoes with biliary sludge. *J Clin Ultrasound* 1980; 8:193-200.
5. Alberti KG, Zimmet P, Shaw J. Metabolic syndrome--a new world-wide definition: A Consensus Statement from the International Diabetes Federation. *Diabet Med* 2006; 23:469-480.
6. Lee SY, Park HS, Kim DJ, et al. Appropriate waist circumference cutoff points for central obesity in Korean adults. *Diabetes Res Clin Pract* 2007; 75:72-80.
7. Maclure KM, Hayes KC, Colditz GA, Stampfer MJ, Speizer FE, Willett WC. Weight, diet and the risk of symptomatic gallstones in middle-aged women. *N Engl J Med* 1989; 321:563-569.
8. Tsai CJ, Leitzmann MF, Willett WC, Giovannucci EL. Central adiposity, regional fat distribution, and the risk of cholecystectomy in women. *Gut* 2006; 55:708-714.
9. Diehl AK. Cholelithiasis and the insulin resistance syndrome. *Hepatology* 2000; 31:528-530.
10. Ruhl CE, Everhart JE. Association of diabetes, serum insulin, and C-peptide with gallbladder disease. *Hepatology* 2000; 31:299-303.
11. Nepokroeff CM, Lakshmanan MR, Ness GC, Dugan RE, Porter JW. Regulation of the diurnal rhythm of rat liver beta-hydroxybeta- methylglutaryl coenzyme A reductase activity by insulin, glucagon, cyclic AMP and hydrocortisone. *Arch Biochem Biophys* 1974; 160:387-396.