

# ORIGINAL RESEARCH

## Occurrence of Gall Stones in Type II Diabetes Mellitus Patients: A Clinical Study

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### ABSTRACT:

**Background:** A close relation has been found between gall stones and type II diabetes mellitus. The present study was done to determine the presence of gall stones in type II diabetic patients. **Material & methods:** A total of 150 diabetic patients were included. All the patients were subjected to clinical examination, ultrasonography, lipid profiles and BMI. **Results:** Out of 90 males, gall bladder stones were seen in 10 males and out of 60 females, gall bladder stones were seen in 5 females. The difference was significant ( $P < 0.05$ ). 10 females and 5 males had raised triglycerides followed by raised LDL in 4 females and 3 males and raised total cholesterol in 2 females and 1 male. The difference was significant ( $P < 0.05$ ). **Conclusion:** The presence of gall stones in type II diabetic patients is common and its occurrence is mostly seen in females.

**Key words:** diabetes mellitus, gall stones, ultrasonography.

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### INTRODUCTION

Gallstone disease (GSD) is one of the most common and costly digestive diseases worldwide, and it is more prevalent in Europe and America than in Asia and Africa. Approximately 6-44% of the general population has gall stones most of which are asymptomatic. More recent study disclose that only 10-80% of asymptomatic patients ever develop symptoms. Recently study from South India have highlighted pigment and mixed variety of gall stone to be common. In contrast to cholesterol stones reported from north east and western part of India. A number of factors, including old age, female gender, genetics, diet, obesity, diabetes, and the use of oral contraceptives or hormone therapy, have been associated with increased risk of GSD.<sup>1</sup>

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects

in insulin secretion, insulin action, or both. Diabetes mellitus is one of the most common endocrine disorders. Nowhere is the diabetes epidemic more pronounced than in India as the Diabetes mellitus is characterized by metabolic abnormalities and by long term complications involving eyes, kidneys nerves and blood vessels.<sup>2</sup>

It has been observed during the past 50 years, the rate of incidence of this type of diabetes has markedly increased in parallel with obesity. This medical problem i.e., high blood sugar when remain for long time this will mainly cause heart disease, strokes, diabetic retinopathy all these will lead to renal failure.<sup>3</sup> Although the association between diabetes mellitus (DM) and gallstones is controversial, many studies revealed that diabetic patients are two to three times more risky for gallstones than non-diabetics. The

present study was done to determine presence of gall stones in type II diabetic patients.

**MATERIALS & METHODS**

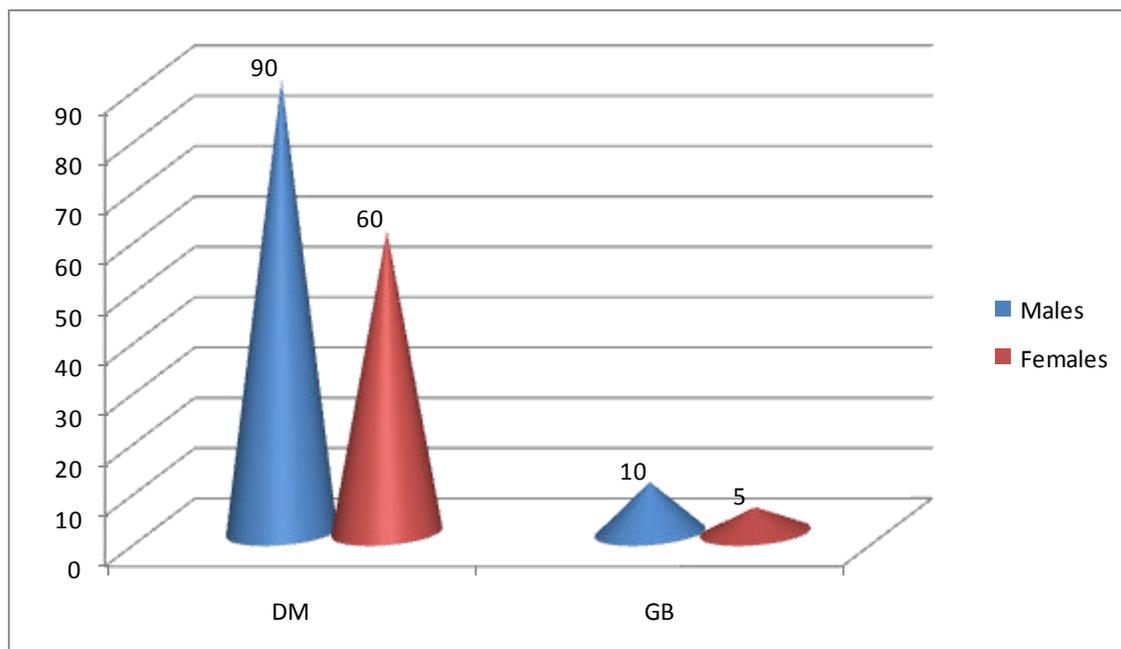
This study was conducted in department on general medicine. It comprised of 150 diabetic patients above 30 years of age of both genders (males- 90, females-60). All patients were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study. All patients underwent

thorough physical examination. All patients were evaluated on the basis of clinical, hematological and ultrasonographically (USG).

Routine hemogram, Glycosylated hemoglobin (HbA1c), Lipid profile (total cholesterol, triglycerides, LDL, HDL, VLDL) and ultrasonography (USG) was done in all. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Graph I Distribution of gall stones in diabetic patients**



Out of 90 males, gall bladder stones were seen in 10 males and out of 60 females, gall bladder stones were seen in 5 females. The difference was significant (P< 0.05).

**Table I Distribution of lipid profile in gall stone patients**

Lipid profile	Male	Female	P value
↑Total cholesterol	1	2	0.05
↑Triglyceride	5	10	
↑LDL	3	4	
↓HDL	2	1	

10 females and 5 males had raised triglycerides followed by raised LDL in 4 females and 3 males and raised total cholesterol in 2 females and 1 male. The difference was significant (P< 0.05).

## DISCUSSION

This has been attributed to cholecystomegaly and impaired gall bladder contraction, mainly due to autonomic neuropathy seen in diabetics. Though gall bladder stasis is the most necessary pre-requisite for gallstone formation, other risk factors include sex, genetic factors, obesity, parity, diet, drugs, hyperlipidaemia, and ileal resection. Diabetes mellitus is a growing health care problem worldwide and is characterized by metabolic abnormalities and complications involving kidneys, nerves, blood vessels and the gastrointestinal tract. Most severe impairment of gallbladder emptying was demonstrated in diabetics with autonomic neuropathy.<sup>4</sup>

Although the increased risk of cholelithiasis is well documented among diabetic patients, pathogenic mechanisms are not yet so clear. A study indicated that patients with type 2 diabetes presented a supersaturation of interdigestive bile with low concentration of bile acids, whereas patients with type 1 diabetes mellitus and normal control showed no such changes. It is also well documented that there is a relationship between the state of hyperinsulinism, more often in patients with type 2 diabetes mellitus, with the increase of gallstones.<sup>5</sup> Furthermore, the risk of cholesterol stone formation and diabetes are due to a likely gallbladder hypo motility, mainly due to an underlying autonomic neuropathy—diabetic gastroparesis.

Parwal et al<sup>6</sup> found that prevalence rate of asymptomatic gallstone was 26% in diabetic patients. 65.38% were females other hand only 34.16% male patients have gall stone. Among the female patients with asymptomatic gall stone 52% was multiparous and 30.76% was primiparous. It shows that there is a very significant positive correlation of BMI with the incidence of gall stone in diabetic population (P value 0.01). Among patient with dyslipidemia and gall stone 73.07% have hypertriglyceridemia followed by raised LDL (42.30%) and raised total cholesterol (34.61%) but on statically analysis it is found that serum triglyceride and serum cholesterol level shows positive correlation with incidence gall stones.

Chapman et al<sup>7</sup> studied the prevalence of gall bladder stone in Type 2 Diabetes Mellitus and found that in female patient Diabetes and gall stones, as the parity increases the prevalence of gall stone also increases and the result was found to be significant. It was observed in our study that 10 females and 5 males had raised triglycerides followed by raised LDL in 4

females and 3 males and raised total cholesterol in 2 females and 1 male.

Tao-Hsin Tung et al<sup>8</sup> also studied the correlation of BMI of Diabetes and gall stone diseases and they found that BMI was significantly correlated with gall stone diseases and Diabetes. Saxena R et al<sup>9</sup> studied the prevalence of gall bladder stones type 2 diabetes mellitus patients in their correlation they found that 29% of Type 2 Diabetes Mellitus patients have ultrasonographic evidence gall stone as compare to 3.7% of healthy subject.

## CONCLUSION

The presence of gall stones in type II diabetic patients is common and its occurrence is mostly seen in females.

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