

ORIGINAL ARTICLE**PREVALENCE OF GALL STONES IN PATIENTS WITH TYPE II DIABETES MELLITUS: 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 evaluate the presence of gall stones in type II diabetic patients. **Material & Methods:** A total of 220 diabetic patients were included. All the patients were subjected to clinical examination, ultrasonography, lipid profiles and BMI. **Results:** Gall bladder stones were seen in 15 males (17%) and 33 females (30%). The difference was statistical significant. 67% males and 67% females having gall bladder stones were overweight. While 4 males and 7 females had normal BMI. 1 male and 4 females were obese. Maximum females (34%) and males (16%) had raised triglycerides followed by raised LDL in 19% females and 9% males and raised total cholesterol in 10% females and 2% males. The difference was significant. **Conclusion:** Author concluded that presence of gall stones in type II diabetic patients is common and its occurrence is mostly seen in females, overweight and patients with increased triglycerides.

Key words: gall stones, type II diabetes mellitus, ultrasonography

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INTRODUCTION

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 World Health Organization (WHO) reports how that 32 million people had diabetes in the year 2002.¹ Diabetes mellitus is characterized by metabolic abnormalities and by long term complications involving eyes, kidneys nerves and blood vessels.²

Moreover, this medical condition required a chronic monitoring and treatment throughout patient life, the treatment will involve several aspects like self-care measures, lifestyle changes (dietary modification) and in some cases medications (metformin and/or insulin). 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.³

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. 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.⁴

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. 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 ilealresection.⁵ The present study

aimed to find the presence of gall stones in type II diabetic patients.

MATERIALS & METHODS

This was a 6- month study conducted in department on general medicine. A total of 220 diabetic patients were included. Following inclusion and exclusion criteria was used.

Inclusion criteria: Diabetic patients above 35 years of age. Exclusion criteria: Patients with history of alcohol consumption, patients with past history of gall stone or gall bladder surgery, History of taking drug i.e. oral contraceptive pills, clofibrate and other fibrate, somatostatin analogues etc affecting liver.

All patients were interviewed and underwent thorough physical examination. All patients were evaluated on the basis of clinical, haematological and ultrasono graphically.

All patients were subjected to the following investigation

- Routine hemogram, Glycosylated hemoglobin. (HbA1c), Fasting and post prandial blood sugar, Lipid profile(total cholesterol, triglycerides, LDL, HDL, VLDL),Blood urea and serum creatinine, Urine routine and microscopic examination, Serum bilirubin, SGOT, SGPT, Ultrasonography.
- Lipid values were classified according to NCEP ATP III Guidelines:-Total Cholesterol > 200 mg%, Triglyceride > 150 mg%, LDL >100 mg%, HDL < 40 mg%.

Body mass index (BMI) was calculated according to Quetelet’s formula and subjects were accordingly categorized.

Type	BMI
Underweight	<18.5
Heavyweight	18.5-24.9
Overweight	25-29.9
Obese class I	30-34.9
Obese class II	35-39.9
Obese class III	>40

Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I shows that out of 220 diabetic patients, 110 were males and 110 were females. Gall bladder stones were seen in 15 males (17%) and 33 females (30%). The difference was statistical significant. Table II shows that 67% males and 67% females having gall bladder stones were overweight. While 4 males and 7 females had normal BMI. 1 male and 4 females were obese. The difference was significant. Table III shows that maximum females (34%) and males (16%) had raised triglycerides followed by raised LDL in 19% females and 9% males and raised total cholesterol in 10% females and 2% males. The difference was significant.

TABLE I: Distribution of gall stones in diabetic patients

	TOTAL - 220		P VALUE
	MALE	FEMALE	
DIABETIC	110	110	0.02
GALL STONES	15	33	
%	17%	30%	

TABLE II: Body Mass Index (BMI) of gallstone patients

BMI	MALE		FEMALE		P VALUE
	NO.	%	NO.	%	
NORMAL	4	27%	7	21%	0.01
OVERWEIGHT	10	67%	22	67%	
OBESE	1	6%	4	12%	
TOTAL	15	100%	33	100%	

TABLE III: Distribution of lipid profile in gall stone patients

LIPID PROFILE	MALE		FEMALE		P VALUE
	NO.	%	NO.	%	
↑TOTAL CHOLESTEROL	1	2%	5	10%	0.05
↑TRIGLYCERIDE	8	16%	16	34%	
↑LDL	4	9%	9	19%	
↓HDL	2	4%	3	6%	

DISCUSSION

Diabetes mellitus is a growing healthcare problem worldwide and is characterised by metabolic abnormalities and complications involving kidneys, nerves, blood vessels and the gastrointestinal tract.⁶ Most severe impairment of gall bladder emptying was demonstrated in diabetics with autonomic neuropathy. 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 inter digestive 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.⁷ Furthermore, the risk of cholesterol stone formation and diabetes are due to a likely gallbladder hypomotility, mainly due to an underlying autonomic neuropathy-diabetic gastroparesis.⁸ In our study, out of 220 diabetic patients, 15 males and 33 females showed gall stones.

In Argentina, the overall prevalence is 20.5%, 23.8% of women and 15.5% of men and it is related, with both genders, to age and BMI.⁹

In our study gall stones were seen more commonly in females. Our results are in agreement with the study conducted by Anmar H et al.¹⁰

In present study, 67% males and 67% females having gall bladder stones were overweight. While 4 males and 7 females had normal BMI. 1 male and 4 females were obese. Tao-Hsin Tung et al¹¹ 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.

In our study, maximum females (34%) and males (16%) had raised triglycerides followed by raised LDL in 19% females and 9% males and raised total cholesterol in 10% females and 2% males. Bhika Ram et al¹² studied the relation Gall stone disease and diabetic, found that dyslipidemia was present in 81% of study group.

CONCLUSION

Author concluded that presence of gall stones in type II diabetic patients is common and its occurrence is mostly seen in females, overweight and patients with increased triglycerides. Further studies are required to substantiate the results.

REFERENCES

1. Jorgensen T. Epidemiology and gallstones Ugeskr Laeger. 2005; 167:2610-3.
2. Pazzi P, Scagliarini R, Gamberini S, Pezzoli A. Review article: gall-bladder motor function in diabetes mellitus. Aliment Pharmacol Ther. 2000; 2:62-65.
3. Liu CM, Tung TH, Liu JH, Lee WL, Chou P. A community-based epidemiologic study on gallstone disease among type 2 diabetics in Kinmen, Taiwan. Dig Dis. 2004; 22:87-91.
4. Ruhl CE, Everhart JE. Association of diabetes, serum insulin, and C-peptide with gallbladder disease. Hepatology. 2000; 31:299-303
5. Goyal K et al: asymptomatic gall stone diseases in patients of Type 2 Diabetes Mellitus APICON 2011;52.
6. Saxena R, Sharma S, Dubey DC. Gallbladder Disorder in Type 2 Diabetes Mellitus Cases. J Hum Ecol 2005;18:169-71.
7. Dres LA, Graciela GC. Prevalence of biliary lithiasis in diabetes mellitus. Review of Medicine Uruguay 1999; 15:49-56
8. Chapman BA, Chapman TM, Frampton CM et al. Gallbladder volume: comparison of diabetics and controls. Digestive Disease and Sciences 1998; 43:344-348.
9. Gaur C, Mathur A, Agarwal A et al. Diabetic autonomic neuropathy causing gallbladder dysfunction. J Assoc Physicians India 2000; 48:603-605.
10. Anmar H et al: Association between gallstone and diabetics type 2 Iraqi patients Iraqi J Pharm Sci. 2011;38-43.
11. Tao-Hsin Tung et al. A population-based follow-up study on gallstone disease among type 2 diabetics in Kinmen, Taiwan. World J Gastroenterol. 2006; 12: 4536-4540.
12. Bhika ram et al: frequency of Gall stones in patients with Diabetes Mellitus (A hospital based multidisciplinary study). Medical channel. 2012;230-232.

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