



THE PREVALENCE AND CORRELATION BETWEEN HYPOTHYROIDISM AND GALL STONE DISEASE IN TERTIARY CARE HOSPITAL

General Medicine

Dr Ankit kumar Tiwari*

Resident Doctor, Dept of Internal Medicine, Kothari medical and research institute , Bikaner, Rajasthan*Corresponding Author

Dr Tejsing Patil

Resident Doctor, Dept of Gen. Surgery, Kothari medical and research institute , Bikaner, Rajasthan

Dr Anil Sobti

Head of Dept, Dept of Internal Medicine, Kothari medical and research institute, Bikaner, Rajasthan

ABSTRACT

Introduction: For decades, there has been a discussion, whether thyroid disorders could cause gallstone disease. Particularly, there are several explanations for a possible relation between hypothyroidism and gallstone disease. These explanations include the known link between thyroid failure and disturbances of lipid metabolism. **Methodology:** This was Prospective and observational study conducted at Tertiary medical centre, Bikaner during August 2019 to March 2020. Method of sampling was nonrandom, purposive. After admission short history was taken and physical examination was conducted on each patient admitted with features suggestive of gall stone. **Results:** In our study out of total 80 patients of gall stone, 22(27.5%) had hypothyroid whereas 58(72.5%) were euthyroid. p value <0.05 and it is statistically significant. In our study out of 22 hypothyroid cases 16 were female and 6 were male. Most of the patients (12.5%) were in the age group 60-70 yrs , in which 3.75% were male and 8.75% were female. **Limitation:** As this study has been carried out over a limited period of time with a limited number of patients and there was lack of financial and infrastructural support, it could not have been large enough to be of reasonable precision.

KEYWORDS

Hypothyroidism, Cholelithiasis ,Euthyroid , Lipid

INTRODUCTION

Gall stones are one of the most common problems affecting the digestive tract requiring hospitalization. The disease frequently occurs in young, otherwise healthy people with a prevalence of 11-36 % on autopsy report.¹

It has been shown that disturbances in lipid metabolism that occur during hypothyroidism, particularly cholesterol pathway, changes the rate of bile excretion and lead to the formation of gall stones. Recently, the pro-relaxing effect of serum total thyroxin (T4) on human sphincter of Oddi (SO) has been proven.²

For decades, there has been a discussion, whether thyroid disorders could cause gallstone disease. Particularly, there are several explanations for a possible relation between hypothyroidism and gallstone disease. These explanations include the known link between thyroid failure and disturbances of lipid metabolism.³

The pathogenesis of gallstones is a complex process involving factors affecting bile content and bile flow. A crucial factor in the formation of bile duct stones is biliary stasis, which can be caused by sphincter of Oddi stenosis, sphincter of Oddi dyskinesia or bile duct strictures. The effects of thyroid hormone on Sphincter of Oddi contractility have been studied only in animal models and its significance in the human physiology has not been fully established. In this study we have investigated the role of hypothyroidism as an etiological factor for development of choledocholithiasis. Other parameters that directly or indirectly affect formation of choledocholithiasis have also been recorded and analyzed.

AIMS AND OBJECTIVES

The aim of this study was:

1. To find the prevalence of hypothyroidisms in patients of gall stone disease.
2. To find any association between cholelithiasis and thyroid profile of patients.

Methodology

This was Prospective and observational study conducted at Tertiary care hospital, Bikaner during August 2019 to March 2020. Method of sampling was nonrandom, purposive. After admission short history was taken and physical examination was conducted on each patient admitted in Medicine department with features suggestive

of extrahepatic biliary lithiasis. We had selected 80 patients for this study. Baseline investigations, as routinely required, were done, followed by imaging studies. Patients were then explained about their disease process and the possible line of management. All the necessary information regarding the study was explained to the patients or their valid guardian. Informed written consent was taken from the patients or their guardian willing to participate in the study. Detailed history was taken to establish proper diagnosis. Thorough physical examination was done in each case. Data collection sheets were filled in by the investigator himself.

Morning blood samples were taken after 12 hours of fasting to measure serum total thyroxin (T4), serum thyroid stimulating hormone (TSH), fasting blood sugar (FBS), triglyceride (TG), total cholesterol, low density lipoprotein (LDL) and high density lipoprotein (HDL) levels. Serum T4 and TSH were measured by an immunofluorometric method. The normal range for serum T4 was 6-12 Mu/l; for TSH, it was 0.25-5 Mu/ml. The colorimetry method (Biosystem, Spain) was used for the remainder of laboratory analyses. All of the preoperative factors related to the patient were noted down in the data sheet. After proper evaluation and preparation, patients who required surgical management were taken up for surgery. Strict aseptic precautions were followed during the operation. Meticulous techniques were practiced as far as possible. The operation procedure and related pre operative factors were observed directly and recorded in the data collection sheet instantly. After completing the collection of data it was compiled in a systematic way.

Inclusion Criteria:

1. Patients in age group of 18-70 yrs and
2. Patients with USG proven cholelithiasis

RESULTS

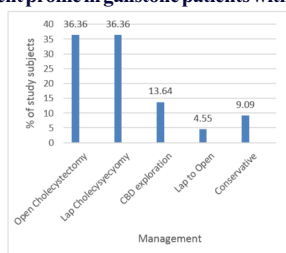
In our study Age of these selected patients ranged from 20- 70 yrs, with mean age being 47.14 yrs. 32% were male patients and 68% were female patients. The male to female ratio is 1: 2. Females were the predominant group. On analysing the co- morbid factors HT was the predominant co- morbid factor followed by Diabetes. HT was found to be a co- morbid factor in 16 patients (20%). DM was found to be a co- morbid factor in 11 (16%). 6 patients had both DM and HT.

In our study out of total 80 patients of gall stone, 22(27.5%) had hypothyroid whereas 58(72.5%) were euthyroid. p value <0.05 and it is statistically significant.

Fig 1: Ultrasound image of gall stone**Table 1: Age and sex distribution of patients with hypothyroidism and gallstones**

AGE/ SEX/ YRS	MALE	FEMALE
20-29	0	3(3.75%)
30-39	0	2(2.5%)
40-49	1(1.25%)	1(1.25%)
50-59	2(2.5%)	3(3.75%)
60-70	3(3.75%)	7(8.75%)
TOTAL	6(7.5%)	16(20.0%)

In our study out of 22 hypothyroid cases 16 were female and 6 were male. Most of the patients(12.5%) were in the age group 60-70 yrs , in which 3.75% were male and 8.75% were female. In age group 20-39 yrs all 6.25% subjects with hypothyroidism were female. In the age group 50-59 yrs 3.75% cases were female whereas 2.5% were male.

Fig 2: Management profile in gallstone patients with hypothyroidism

DISCUSSION

This prospective study was conducted 80 selected patients with evidence of cholelithiasis in Department of General Medicine, Tertiary care hospital, Bikaner. The study was carried out with a view to determine the prevalence of hypothyroidism in patients with extra hepatic biliary lithiasis in view of determining its importance as a causative factor and to include thyroid function tests as part of routine workup in gallstone patients.

In our study 27.5% study subjects of gall stone had hypothyroidism. A recent study by Ahmed MM et al.⁵ concluded that there was a incidence of hypothyroidism in 16% of patients with choledocholithiasis in contrast to 8% in cholelithiasis group with subclinical hypothyroidism. Furthermore, a study by Laukkarinen et al.⁶ found a prevalence of subclinical hypothyroidism 10.2%.Being a hospital based study, the positive cases are expected more, but it gives an idea about the high incidence rates in the society as well.

In this study, the higher proportion of hypothyroidism in women with cholelithiasis compared to men was mainly due to the earlier symptomatology of gallstone disease in women as well as the higher incidence of thyroid disease in women in general. The majority of the patients having hypothyroidism were in the age group 60-70 years, 70% females and 30% males. Laukkarinen J et al⁶ in their study found similar results and concluded that with increasing age there was increased prevalence of hypothyroidism with maximum number of patients in the age group of around 60 years predominantly females. The findings are consistent with our study. Bashir H et al⁷ had similar results in their study and observed prevalence of hypothyroidism more in females 81.8% as compared to males 18.2%.

8 patients underwent open cholecystectomy and 8 underwent laparoscopic cholecystectomy. In 3 patients CBD exploration was done. Post operative and intraoperative periods were uneventful in all these patients.

CONCLUSION

A prevalence of 27.5% of hypothyroidism in the cholelithiasis patients with female predominance was observed in our study, thereby indicating that patients diagnosed as cholelithiasis should be screened for concomitant thyroid disorder and it should be a part of their baseline investigation during workup. The thyroid profile should become an indicator of possible gallstone disease and vice versa patients with gallstone disease should be screened for a possible deranged thyroid profile.

LIMITATIONS OF THE STUDY

As this study has been carried out over a limited period of time with a limited number of patients and there was lack of financial and infrastructural support, it could not have been large enough to be of reasonable precision. The follow up period was not long enough to comment about recurrence in patients with hypothyroidism and the response of the patients to thyroid medications.

Conflict of Interest : NA

Financial Support : NA

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