ORIGINAL RESEARCH PAPER

Volume-8 | Issue-4 | April-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A STUDY ON PREVALANCE OF SUBCLINICAL / CLINICAL HYPOTHYROIDISM IN PATIENTS WITH EXTRA HEPATIC BILIARY LITHIASIS

General Surgery

Sethukannan Ramasamy Senior Resident, Government Omandurar Medical College

Jegadheskumar Devaraj* Senior Resident, Government Omandurar Medical College *Corresponding Author

KEYWORDS

INTRODUCTION

Gallstones are the most common biliary pathology. Many studies were done to identify risk factor for biliary lithiasis have focused on hypersaturation of cholesterol in bile in nucleation process a critical step in the genesis of bile stone[1].

Thyroid disorder is a prevalent condition among adult population; however, it is frequently over looked. 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 that may consecutively lead to change of composition of the bile. Recent studies also demonstrated low bile flow in hypothyroid subjects.

Furthermore, the sphincter of oddi expresses thyroid hormone receptors and thyroxine has a direct pro relaxing effect on the sphincter[2-4]. The prevalence of previously undiagnosed thyroid function abnormalities has never been studied in gallstone patients before. If an increased prevalence of thyroid disorders will be found, it might have an effect on the diagnostic and therapeutic work up of patient with gallstone.

MATERIALS AND METHOD

Method of sampling was non-random, purposive. After admission short history was taken and physical examination was conducted on each patient admitted in surgery department with features suggestive of extrahepatic biliary lithiasis. Baseline investigations, as routinely required, were done, followed by imaging studies. All the necessary information regarding the study was explained to the patients. Informed written consent was taken from the patients or their guardian willing to participate in the study. Detailed history was taken from the study group to establish proper diagnosis. Thorough physical examination was done in each case. Data collection sheets were filled in by the investigator himself. 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. The operation procedure and related per 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.

RESULTS AND DISCUSSION

It has been a matter of discussion for decades whether the thyroid disorders are responsible for the gall stone disease. Several studies have shown the possible relationship between hypothyroidism and gall stone disease. These studies include the link between thyroid failure and disturbances of lipid metabolism that may consecutively lead to a change of the composition of the bile.[5]

There are several hypothesis for a possible relation between hypothyroidism and biliary tract stones, these hypothesis include:

- Sphincter of oddi express thyroid hormone receptors and thyroxine has a direct pro relaxing effect on the sphincter of oddi.[6]
- Link between thyroid failure and disturbances of lipid metabolism that may conservatively lead to a change of composition of bile.[7]
- Low bile flow to duodenum in the hypothyroid state.[8]
- Thyroxine usage in certain cases has been suspected to dissolve gall stones and common bile duct stones.[9]
- There is dysmotility of digestive tract in hypothyroidism.[10]
- Biliary secretion of cholesterol is reduced in hypothyroidism, bile may also become supersaturated with cholesterol causing sludge or gall stone disease.[11]
- In some studies, hypothyroidism has been associated with reduced bilirubin excretion due to decreased actively of UDP glucuronyl transferase.[12]

This prospective, observational and comparative study was conducted among 195 purposively selected patients with evidence of cholelithiasis or choledocholithiasis in Department of General Surgery, Government Omandurar medical college.

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.

Age of 195 patients ranged from 22-80 years. Most of the patients (107,55.80 %) were in between 30-49 years; with mean age 44.75 years and standard deviation 1.83 years. 24.1 % of the patients were males while 75.9% of the patients were females. The male to female ratio was ~ 1 : 3. So, it can be assumed that females are the predominantly involved group.

Thyroid function tests showed out of the total 195 patients (Table 1), forty five patients (23.08%) patients had evidence of hypothyroidism. Out of these 45 patients, ten patients (5.13%) had clinically evident hypothyroidism, in the form of goitre or clinical symptoms, while thirty five patients (17.95%) had subclinical hypothyroidism, evident by raised TSH values alone. Out of these forty five patients, only five patients were previously known cases of hypothyroidism, which essentially meant that ninety percent of the hypothyroidism were in the previously undiagnosed group. P - Value of the prevalence was found to be 0.012 which denotes a significant level of prevalence. Out of the ten patients with clinical hypothyroidism, nine patients were females (4.6%) and one male patient. In the subclinical hypothyroidism group, twenty seven patients (13.85%) were females and eight patients (4.1%) were males. Thirty one patients (16%, 70%) belonged to the 30 - 49 age group.

Table 1 : prevalence of hypothyroidism in patients with gall stones

	No of patients	Percentage
Clinical hypothyroidism	10	5.13
Subclinical hypothyroidism	35	17.95
Euthyroid	150	76.92
Total	195	100

Proceeding to management, 168 patients underwent primary laparoscopic cholecystectomy has the initial line of management. Out of these 168 patients, 136 patients (69.74%) had successful laparoscopic surgery while in 32 patients (16.4%) it had to be converted to open surgery. The reasons for conversion to open surgery included dense adhesions, bleeding and technical reasons. Eleven patients had open cholecystectomy as the primary modality of treatment, the most common indication being acute cholecystitis. Nine

patients (4.62%) , all of them cases of acute cholecystitis, were managed conservatively followed by interval cholecystectomy in five patients. One patient was lost in follow up while three patients were managed conservatively alone. Seven patients (3.6%), all patients with common bile duct stones, underwent ERCP with/without stenting, followed by either laparoscopic or open cholecystectomy with common bile duct exploration (table 2).

Table 2 : management profile in gallstones with hypothyroidism

	No of patients	percentage
Laparoscopic cholecystectomy	23/136	51.11
Lap converted to open	13/32	28.89
Open cholecystectomy	5/11	11.11
ERCP	2/7	4.44
Conservative	2/9	4.44
Total	45	100

Blood investigations showed features of hyperbilirubinemia in fifteen patients (7.7%), out of which seven patients belonged to the hypothyroid group while eight patients belonged to the euthyroid group. Significantly 15.56 % of hypothyroid patients had hyperbilirubinemia while only 5.33% of the euthyroid patients had hyperbilirubinemia. Hypercholestrolemia, indicated by elevated cholesterol and LDL levels, was seen in twenty patients (10.26%). 9% of patients with hypothyroidism had hypercholestrolemia while 10.7% of euthyroid patients had hypercholestrolemia, showing no significant difference between both the groups(table 3).

Table 3 : prevalence of hyperbilirubinemia and hypercholesterolemia

	Hypothyroid	Euthyroid	Total
Hyperbilirubinemia	7/45 (15.56)	8/150(5.33)	15/195(7.7)
Hypercholesterolemia	4/45(8.9)	16/150(10.67)	20/195(10.26)

A control group of 100 patients admitted for diseases other than biliary pathology were purposively selected and thyroid function tests was done. The group had twenty male and eighty female patients, evenly distributed across all age groups. Thyroid function tests showed nine patients (9%) had hypothyroidism. All the nine patients were females. Six of these nine patients belonged to the 30 - 39 age bracket. There was one patient each in the 20-29, 40-49 and 50-59 age brackets. Comparing the control group of patients with the gallstone patients group showed that while only 9% of patients in control group had hypothyroidism, more than 23% of gallstone patients had subclinical/clinical hypothyroidism. This indicates the significantly increased (p value < 0.001) prevalence of hypothyroidism among the extra hepatic biliary lithiasis patients.

Forty five patients in our study had gallstones showing a prevalence of nearly one fourth of the patients being affected. When compared to a control group, there was a highly significant level of prevalence of hypothyroidism in gallstone patients. The prevalence of hypothyroidism in common bile duct stones was even more significant with more than fifty percent of those patients having hypothyroidism. The incidence of complications was also more in the hypothyroid group.

CONCLUSION

It can be concluded from the findings of the study that hypothyroidism is a highly probable risk factor for development of hypothyroidism especially for middle aged females. Undetected and untreated hypothyroidism in such patients will result in persistence of the basic pathophysiology responsible for the initial disease process resulting in recurrence and complications. So, it can be assumed that patients at risk of forming gall stones due to hypothyroidism will benefit from early treatment. Most importantly, when treating patients with cholelithiasis or choledocholithiasis, clinicians should be aware of the possible hypothyroid background and consider examining the thyroid function, at least in female patients over 40 years of age, in which group the prevalence of clinical and subclinical hypothyroidism is the highest.

REFERENCES

1. Al-Jiffry B, Shaffer E, Sacconr G. Changes in gallbladder motility and gallstone formation following laparoscopic gastric banding for morbid obesity. Can J Gastroenterol 2003; 17:169.
2. JohannaLaukkarinen, Juhenisand and IstoNordback. The underlying mechanisam : how hypothyroidism affects the formation of common bile duct stones-A review article HPB surgery volume 2012, article ID 102825 7 pages
3. http://dx.doi.org/10.1155/2012/102825
4. Laukkarinen J, Sand J, Saaristo R, Salmi J, Turjanmaa V, Vehkalahti PNI. Is bile flow reduced in patients with hypothyroidism? Surgery 2003;133:288-93.
5. Canaris GJ, Manowitz NR, Mayor G, Ridgway EC. The Colorado thyroid disease prevalence study. Arch Intern Med. 2000;160:526-34
6. Laukkarinen J, Sand J, Aittomaki S. Mechanism of the prorelaxing effect of thyroxine on the sphincter of Oddi. Scandinavian J Gastroenterol. 2002;37(6):667-73.
7. Inkinen J, Sand J, Nordback A. Association between common bile duct stones and treated hypothyroidism. Hepato Gastroenterol. 2001;47:919-21.
8. Volzke H, Daniel M, John U. Association between thyroid function and gall stones. World J Gastroenterol. 2005;35:5530-4.
9. Laukkarinen J, Juhani S, Nordback I. Bile duct stone procedures are more frequent in patients with hypothyroidism. Scandinavian J Gastroenterol. 2010;45:70-74.
10. Laukkarinen J, Sand J, Nordback T. Hypothyroidism is common in bile duct stone patients. Med J Book Duodecim. 2010;126(19):2247-52.
11. Steenbergen W, Fevery J, De Vos R. Thyroid hormones and the hepatic handling of bilirubin. I. Effects of hypothyroidism and hyperthyroidism on the hepatic transport of bilirubin mono- and di conjugates in the Wistar rat. Hepatol. 1989;9:314-21.
12. Honore LH. A Significant association between symptomatic cholesterol stones and treated hypothyroidism in women. J Med. 1981;12:199-203.