Cholelithiasis – Incidence and Risk Factor Comparison in Hospitalised Patients

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Abstract

Background:- Gallbladder stone disease (GSD) is a prevailing health problem. The incidence and risk factors are differently occurring at various regions.

Objective:- To find out the incidence and risk factors in terms of gender, age, diabetes mellitus, and tropogeographical status of this region.

Study setting and design:- It was a randomised study in the department of surgery, J.N. Institute of Medical Science, Imphal, Manipur.

Duration of study:- December 2015 to December 2016

Material and methods:- All the patients admitted in surgical ward for elective cholecystectomy and newly diagnosed cases in the ward were the subject of study. All the 2066 patients admitted in surgical wards were taken as general study sample size. Total number of GSD was 807.

Investigation:-

1. Routine examination of blood.

2. USG for all patients

3. MRCP and ERCP for the patients suspected to have associated with common bile duct problems

Result:- Out of the 2066 patients admitted in female surgical wards, GSD constituted 802, having the incidence rate of 39%. Female preponderance is more than male and occurs most frequently in the age group of 30-40 years (26.3%). Seven cases of diabetes mellitus were detected in male where as it was nine in female accounting to total number of sixteen . Number of GSD patients in male and female were 249 and 558 respectively to have a total number of 807 out of 2066 surgical in patients. Eight and ninety years old cases of GSD were diagnosed in male age group as an occurrence in the extreme.

No convincing customary food habit related information can be collected

Conclusion:- Gall stone disease (GSD) remains a substantial health problem since years everywhere in the world. Detection and documentation of cases are on the rise as a result of modern technique GSD is multifunctional. There are many reports of risk factors such as tropogeographical, age, sex, obesity and diabetic mellitus.

Here in this study gender equality is treated at par the general consensus (female preponderance is more). Diabetes remains a matter of further evaluation as its association with GSD is unclear due to a minimal number of related cases.

Association of social dietary components is also not clear and is an agenda for further evaluation

Keywords:- *Prevalence of gall stone disease. Cholelithiasis and geographical variation. Gall stone and diabetes. Social food and gall stone*

I. INTRODUCTION

Gall stone disease is a prevailing health problem taking place everywhere.

Due to the emergence of modern technology of diagnosis, the numbers of cases are coming up. There are variables in terms of age, gender, obesity, diabetes mellitus, tropogeographical status. World wide prevalence of gall stone in females based ultra sonographic surveys varies. [8]

Prevalence is incordinately high in American-Indians and their admixtures and also Northern Europeans, and American whites. Due to tropogeographical status there are difference in incidence as a factor of customary food habit and metal pollution of drinking waters

In some developed countries cholecystectomy is considered as day care surgery, so it offered unusual opportunities for further epidemiologic and clinical studies.

Aim and objective:-

The aim of the study was to evaluate the risk factors of GSD in terms of age, gender, diabetes mellitus, tropogeographical area and social food habit. It was also aimed at the documented hospital based information regarding the variables in the risk factors

Method and material:-

It was a randomised study conducted at J.N. Institute of Medical Science Imphal Manipur in the department of Surgery.

Duration of study:-

December 2015 to December 2016

All the patients admitted for cholecystcetomy and the newly diagnosed cases in the surgical ward were the subject of study.

All the patients (2066) admitted in surgical wards were taken as general study sample size. Out of which 1246 cases and 820 were female and male. The numbers of GSD patients were 558 and 249 in the case of female and male respectively.

Investigation:-

1. Routine examination of blood

2. USG- For all admitted patients with abdominal complaints (Undiagnosed cases)

3. MRCP and ERCP for the patients likely to have CBD problem

Personal history:-

it was noted from the clinical history. Emphasis was given to the personal habit and the customary food

habit. Past history of illness and particulars of treatment of were recorded and put into account for evaluation of risk factor.

Result:-

Out of the total hospital patient population of 2066, the cases of GSD recorded was 807 (39%). Number of female patients was 1246, while the cases of GSD were found to be 558. Total number of GSD patients in the case of male was 249 out of 820 total indoor patients in male surgical wards.

Prevalence rate occurred in the ratio of (female: male= 2.2:1)

Out of 1246 cases admitted in female ward, 558 GSD were detected (44.7%) where as in the case of male it was 249 out of 820 (30.3%)

Total number of patients for general study sample was 2066, thereby showing a total of 807 GSD Case (39%). Highest prevalence group (30 to 40 years) in both male and female were the same.

In both the cases the incidence rate kept on raising till the age group of 30 to 40 years and declined as the age grows up. []

Table: 1 Indoor Patient Data

Sl. Number	Indoor Patients Category	No. Of patients Total	Number of GSD Patient	Prevalence rate	Other comment
1.	Female Surgical wards	1246	558	44.7%	Female and male ratio = 2.2:1
2.	Male Surgical wards	820	249	30.3%	
3.	Overall patients in surgical indoor wards	2066	807	39%	

Table: 2 Age Wise Frequency Distribution Chart for GSD

Age Group	Male	Female	Comment
1-10	1	3	Prevalence rate in male 30.6% Prevalence rate in female 69.1% Relative prevalence in age group 31-40 years:- 1. Female 26.3% 2. Male 39.3% Minimum age detected 1. Female -7 years 2. Male - 8 years Maximum age detected 1. Male – 90 years 2. Female – 85 years Diabetic status :- 1. Female – 9 2. Male - 7
11-20	9	45	
21-30	36	122	
31-40	78	147	
41-50	55	98	
51-60	43	92	
61-70	16	35	
71-80	8	11	
81-90	3	5	
Total - 807	249	558	

Regarding the tropogeographical status this region belongs to a low socio economic conditions and customary food habit is mainly carbohydrate and vegetable products.

Drinking water pollutions are not established due to the lack of demand and system

Discussion:-

Due to the emergence of modern diagnostic methods and research, the documentation of GSD is on the rise.

At present GSD is regarded as the major health problem everywhere in the world

There is variables in respect of age, sex, tropogeographical status obesity, diabetes mellitus.

The prevalence of GSD in this study was 39%. The prevalence rate was higher in female in compare to male (F:M= 2.2:1)

The overall prevalence of GSD was 48.6% which greatly exceeded that based in clinical diagnosis alone. No association was demonstrated between GSD and obesity, serum cholesterol level, and diabetes or parity. Pima females 15 to 20 years of age were shown to be at high risk of gallbladder disease [8]

Proportion of cholecystectomy was higher 46.7% in females compare to males [2]

Worldwide prevalence of gall stone in female base ultrasonographic surveys varies. Prevalence is inordinately high in American- Indian and their

admixtures and also Northern Europeans, and American whites.[8]

North American Indians have the highest reported rate of cholelithiasis, affecting 64.1% women and 29.5% of men [8]

The report of this study was 69.1% prevalence rate in female and 30.6% in male.

Commonest prevalence found in both the sex was 30-40 years group.

Hospital based reports in northern India showed a higher incidence,

In Varanashi it was 13.44% a symptomatic GSD and 11.4% cholelithiasis. In Chandigarh the prevalence of gall stones were (3.3% a symptomatic, 64.9% symptomatic). In New Delhi it was 29.4% [7]

There is report of increased risk in male with diabetes, chik pea consumption, and unsafe drinking water containing heavy metals [9]

The number of diabetes mellitus noted in this study was 16. That, this association with GSD is not significant to establish as a risk factor.

There is no proof that diabetic patients have more gall stone.

Gall stones do not cause diabetes mellitus. Those with diabetes are generally older than others requiring cholescystectomy. Bile acid and lipids composition are increased in diabetic patients. [5]

In diabetes mellitus gall bladder functional is deficile of uncertain aetiologic factors, creating large flaccid, poorly emptying organ. [3]

Gall bladder bile was significantly more saturated with cholesterol during insulin treatment. Bile lipid composition was more favourable to cholesterol precipitation and gall stone formation. [4]

In men, there was a statistically non significant association with diabetes but no association of gall bladder disease with insulin or C-peptide. Amongst women higher fasting serum insulin level increased the risk of gall bladder disease but did not account for the increase risk in persons with diabetes .[6]

Proportion of diabetics and controls with GSD who underwent cholecystectomy was equivalent. GSD is multi factorial and in NIDDM females only diabetes was an independent risk factor. [10]

Regarding the food habit, the commonest customary food is carbohydrate, vegetable products and dietary elements in relation to GSD is not know till date

Conclusion:-

Gall stone disease remains a substantial health problem since years.

Detection and documentation of cases are on the rise as a result of modern techniques and research. The cause of GSD is multi factorial. As far as this region is concerned female preponderance occurs in the age group of 30-40 years. The prevalence rate is 2.2 times in female. The association of diabetes as risk factor of gall stone disease is poorly understood and it may be regarded as insignificant

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REFERENCES

[1] Bradford G Stone, et al.Impairment of gall bladder emptying in diabetes mellitus.Gastroanterology July 1988 vol. 95 (1) :170-176

[2] Chalman, B.A., Wison, I.R, et al.Prevalence of gall bladder disease in diabetes mellitus Digest Dis Sci (1996) 41:2222-8

[3] Diel A K , Sugarek N J Clinical evaluation for gall stone disease : Usefulness of symptoms and signs in diagnosis . Am J Med 1990 ;89 : 29-33

[4] Hisam A Barakat , John W Carpenter et al. Influence of obesity, Impaired glucose tolerance and NIDDM on LDL structure and composition :possible link between hyper insulinemia and atherosclerosis. Diabetes 1990 Dec ; 39 (12) : 1527-1533

[5] IKart R W. Gall stone, cholecystitis and diabetes. Surg Gynecol Obstet 1990 Dec, 171 (6) :528-32

[6] Lynn J . Bennion , M.D. at al. Effect of Diabetes mellitus on cholesterol metabolism in man N. Engl J Med 1977 ; 296 ... 1365-1371

[7] M. P. Sharma Gall stone in north India J Clin Gastroenterol 1990 Oct ; 12(5) : 547 – 9

[8] Richard E . Sampliner , M.D, Gall bladder disease in Pima Indians – Demonstration of High prevalence and early onset by cholecystography N.Engl J Med 1970 ; 283:1358 1364

[9] Sayeed Unisa, et al.Population based study to estimate prevalence and determine risk factors of gall bladder disease in rural Gangetic basin of north India HPB (Oxford) 2011 Feb , 13 (2).. 117 -125

[10] Tanno N , Koizumi M et al.Relationship between cholelithiasis and diabetes mellitus.. Discussion of age, obesity, hyper lipidemia and neuropathy Tohoku J Exp Med . 1988 Jan;154(1) .. 11-20