

Prevalence and Risk Factors of Asymptomatic Gallstone Disease in North-East Part of Bangladesh

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ABSTRACT

Background: The study was designed to assess the prevalence of asymptomatic gallstone disease in North-East part of Bangladesh.

Materials and methods: Randomly selected asymptomatic persons, unknown to have gallstone disease, from both rural and urban areas were enrolled. They were subjected to abdominal ultrasonography and findings were recorded in a data sheet.

Results: Total 1,019 persons (316 males and 703 females) were examined. Age of them varied from 18 to 80 years with mean age of 37.22 years. Out of them, 61 (6%) persons were found to have gallstone. Among them, 14 were males and 47 were females. Both male and females of age below 40 years were more affected. Gallstone disease was found more commonly among housewives and middle class people. Among 61 patients with gallstone, seven were underweight (11.47%), 32 (52.45%) had normal weight and 22 (36.06%) were overweight, obese or extremely obese. But, this difference was not statistically significant ($p = 0.894$).

Conclusion: Prevalence of asymptomatic gallstone disease was found in 6% apparently healthy subjects of North-East part of Bangladesh. It was more prevalent among housewives and middle class group of population. It is also common among the people of age group below 40 years.

Keywords: Asymptomatic gallstone, Prevalence of gallstone disease, North-East Bangladesh.

How to cite this article: Saha M, Nahar K, Hosen MMA, Khan MH, Saha SK, Shil BC, Rahman MH. Prevalence and Risk Factors of Asymptomatic Gallstone Disease in North-East Part of Bangladesh. *Euroasian J Hepato-Gastroenterol* 2015;5(1):1-3.

Source of support: Nil

Conflict of interest: None

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Received Date: 22-05-2014

Accepted Date: 06-07-2014

INTRODUCTION

The prevalence of gallstone disease (GSD) shows geographical variations. It occurs commonly in western countries.^{1,2} Most are asymptomatic, but still, GSD contributes substantially to healthcare cost and its complications are sometimes life-threatening.^{1,3} Epidemiological studies show that 80% subjects with GSD are asymptomatic.¹⁻⁴ The prevalence of GSD is 15% in Sweden,⁵ 14.5% in Mexico;⁶ while, in Italy, it is 5.9%.⁷ In Asian countries, Taiwan has the highest prevalence of GSD at 20%.⁸ Whereas the prevalence of GSD in Japan and Thailand are 3.2 and 3.5% respectively.^{9,10} In India, the prevalence rate is 0.00 to 8.1% in men and 2 to 29% in women.¹¹ Asymptomatic GSD is being increasingly

detected nowadays as result of the widespread use of ultrasonogram.¹² Real-time ultrasonogram is a simple, noninvasive and relatively less costly method for diagnosis of GSD with sensitivity up to 95.5%.¹³ In Southern coastal region of Bangladesh, one study was done among rural people showing overall prevalence of gallstone disease at 5.4% (7.7% in women and 3.4% in men).¹⁴ This study was done to see the prevalence of asymptomatic GSD in the North-East part of Bangladesh.

MATERIALS AND METHODS

This study was done between January 2012 and December 2012 in the Centre of Nuclear Medicine and Ultrasound, Sylhet, Bangladesh. Randomly selected apparently

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healthy people of age 18 years and above from Sylhet city and adjacent villages were included in this study. Any person known to have gallstone disease or previously investigated for gallstone disease was excluded. Epidemiological data and physical findings were recorded in a data sheet. Then, sonological examination was done by two senior sonologists of the center separately using Machine Sonoline G60 S (Company Siemens, Erlangen, Nuremberg, Germany). In case of doubt, the person was examined by senior most sonologist of the center. Around five persons were examined at each working day. Criteria for diagnosis of GSD were as follows:

- One or more echogenic structures in gall bladder lumen with posterior acoustic shadow.
- One or more echogenic structures without posterior acoustic shadow but changing position during changes of posture.
- A strongly echogenic structure in the region of gall-bladder with distal acoustic shadow in case of limited or nonvisualization of lumen.

STATISTICAL ANALYSIS

Statistical analysis was done by using SPSS version 12 and χ^2 test was done to see significance. p-value <0.05 was taken as significant.

RESULTS

Total 1,019 persons were enrolled in this study. Among them, 316 (31%) were males and 703 (69%) were females. Age of them varied from 18 to 80 years (mean 37.22 years). Out of them, 402 participants (123 males and 279 females) were from rural areas and 617 (195 males and 424 females) were from urban area. Out of 1,019 participants, gallstone was found in 61 (6%) subjects. Among them, 14 were males and 47 were females (p = 0.16). Within male participants, prevalence was higher below the age of 40 years. In females, prevalence of gallstone disease was found higher below the age 40 years and more marked below 30 years. Total 27 persons had single stone and rest 34 had multiple stones (Table 1).

Gallstone was found more among housewives (42; 68.85%) followed by service holders (9; 14.75%). In this study, middle class socioeconomic group was found to be more affected (30; 49.1%) followed by poorer people (26; 42%) (p = 0.3886). Among the persons having gallstone disease, only three (4.9%) were smokers and 13 (21.31%) used to take betel nut and tobacco leaves.

Among all 61 persons having GSD, seven were underweight, 32 were normal weight, 17 were overweight and five were obese and extremely obese (p = 0.894). The prevalence of GSD in relation to age group and body

mass index (BMI) has been shown in Tables 2 and 3 respectively.

DISCUSSION

Prevalence of asymptomatic GSD in North-East part of Bangladesh in this study was found to be 6% among adults. It is similar to another report from southern coastal region of this country which was 5.4%.¹⁴ It is higher than the prevalence in Japan⁹ and Thailand,¹⁰ but similar to that of Italy⁷ and Germany.¹⁵ But, this is lower than that of Taiwan,⁸ Sweden⁵ and Mexico.⁶

Table 1: Relation of gallstone disease with demographic variables

| | Total | GB stone | Percentage |
|--------------------------|-------|----------|------------|
| Male | 316 | 14 | 4.43 |
| Female | 703 | 47 | 6.68 |
| | 1019 | 61 | 5.98 |
| <i>Education</i> | | | |
| Primary and below | 528 | 35 | 6.62 |
| Up to HSC | 374 | 20 | 5.34 |
| Above | 117 | 6 | 5.12 |
| <i>Occupation</i> | | | |
| Housewife | 602 | 62 | 10.29 |
| Student | 37 | 3 | 8.108 |
| Service | 216 | 9 | 4.166 |
| Business and farming | 79 | 3 | 3.797 |
| Day labor and others | 60 | 4 | 6.66 |
| <i>Glucose tolerance</i> | | | |
| Diabetic | 63 | 3 | 4.76 |
| Nondiabetic | 956 | 58 | 6.066 |
| <i>Economic class</i> | | | |
| Poor | 505 | 26 | 5.148 |
| Middle class | 435 | 30 | 6.896 |
| Rich | 79 | 5 | 6.32 |
| <i>Personal habit</i> | | | |
| Smoker | 103 | 3 | 2.91 |
| Nonsmoker | 916 | 58 | 6.33 |
| Betel nut chewer | 166 | 13 | 7.83 |
| Nonbetel nut chewer | 853 | 48 | 5.627 |

Table 2: Prevalence of gallstone disease in different age groups

| Age groups | Population | GB stone | Male | Female |
|-------------|------------|----------|------|--------|
| ≤30 years | 392 | 23 | 4 | 19 |
| 31-40 years | 313 | 17 | 4 | 13 |
| 41-50 years | 188 | 10 | 1 | 9 |
| >50 years | 126 | 11 | 5 | 6 |

Table 3: Relation of gallstone disease with BMI

| BMI | Total population | Gallstone | Percentage |
|---------------|------------------|-----------|------------|
| Underweight | 93 | 7 | 7.52 |
| Normal weight | 585 | 32 | 5.47 |
| Overweight | 278 | 17 | 6.11 |
| Obese | 61 | 5 | 8.19 |
| Extreme obese | 1 | 0 | 0 |



These differences maybe due to differences in ethnicity, geographical environment and food habit and lifestyle. Prevalence of gallstone disease is found higher among women than men in this study. It is consistent with other reports.^{1,5-7,16,17}

In this study, prevalence was higher among the people of below 40 years which is not consistent with other reports^{11,18,19} where increasing age was found one of the common risk factor for GSD. The number of participants of higher age group was less in the present communication. Obesity has not been found to be a significant risk factor which is also inconsistent with other reports from our country¹⁴ and Europe.^{11,19} However, subjects the number of overweight and obese participants were also small. But, other non-European reports^{9,11,19} did not support the association of obesity in the formation of gallstone. This may be due to nature of stone, lifestyle of population and environmental factors. Black stones are related with hemolytic diseases and brown stones are related with stasis and infection in biliary system. Obesity plays role at least in part in formation of cholesterol stones which is infrequent in Asians and common in Europeans.¹⁵

This study revealed that middle class and poorer people are more affected by gallstones which are consistent with reports from Britain.²⁰ But, this differs from the other study in Bangladesh.¹⁴ It maybe explained as the number of participants of higher socioeconomic group was small in this study.

Prevalence of GSD is found to be significantly higher among housewives, which is consistent with reports from southern part of our country,¹⁴ and Italy.²⁰ But, Swedish reports do not support it.²¹ Smoking habit, habit of betel nut and tobacco leaves chewing, diabetes mellitus and hypertension showed no significant influence on the prevalence of gallstone disease in this study.

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