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Original Research Article

Prevalence of Gallstone Disease and its Correlation with Age among People Undergoing Abdominal Ultrasound in Gujranwala

Aqsa Nasir[1*], Taiba Zulfiqar[2], Abid Ali[3], Hamna Zafar[4]

[1,4]Medical Imaging Doctor, Department of Radiological Sciences and Medical Imaging, University of Lahore, Gujrat, Pakistan
[2]Senior lecturer, Department of Radiological Sciences and Medical Imaging, University of Lahore, Gujrat, Pakistan
[3]Associate Professor, Department of Allied Health Sciences, University of Lahore, Gujrat, Pakistan

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Abstract: ***Background:*** The present study was aimed to determine the prevalence of cholelithiasis among a general population in Gujranwala, Punjab, Pakistan. ***Methods:*** Between August 2020 and December 2020, we conducted a cross-sectional sample of patients who presented to a private hospital in Gujranwala for abdominal ultrasound. Ultrasonography was used to evaluate the gallbladder. Cholelithiasis was characterized as the appearance or absence of gallstones. The data was analyzed using descriptive statistics. ***Results:*** The male participants were 42% and female participants 58%. The married participants were 88 percent and rest of 12% were unmarried. The highest frequency of cholelithiasis is seen among the age of 28-47 years patients. Regarding Gall bladder appearance, 76 percent of the participants have normal appearance. 6% with distended and16% showed the contracted appearance whereas in 2% cases Gall bladder was surgically absent. In 90% of the cases the sludge was absent in gall bladder and only 10% were filled with sludge. Regarding Gall bladder wall thickness 86% of the participants had normal thickening and in 12% wall was thickened. Whereas 2% cases already had surgically absent GB. The Gall bladder stones were absent in 40 % participants and 60% had stones present in. ***Conclusions:*** Incidence of cholelithiasis among patients undergoing abdominal ultrasonography in Gujranwala region was higher in females as compared to males. The married participants showed higher prevalence of GB stones. Patient age, gender and marital status significantly influenced the prevalence.

Key words: Gallstones, prevalence, Gujranwala, ultrasound, cholelithiasis.

INTRODUCTION

The gallbladder is a pear-shaped organ located under the liver's visceral inferior surface. Bile stones are solidifications that may be present in any portion of the bile duct and are called cholelithiasis in the gall vessel [1]. Gallstones are the most prevalent biliary disease. Cholelithiasis is a global epidemic that continues to be a leading cause of surgical surgery, accounting for a sizable portion of health care costs [2]. Currently, cholelithiasis has a prevalence rate of 10–15 percent in western countries and 3–4 percent in Asian communities [3]. Gallstones are observed in 8% and 20% of patients over the age of 40 and 60 in Pakistan, respectively [4]. Gallstones are solid, stone-like fragments of bile. About 80% of gallstone carriers are unaware and their gallbladder condition was discovered accidentally through imaging for other signs [5].

The prevalence of cholelithiasis in China was found to be 3:11% [6], 6:7.1% in Northern India [7] and 5% in Taiwan [8]. Data from Pakistan is still inadequate though, prior study showed that 9.03 percent of surgery from the Southern Sindh region of Pakistan had a prevalence rate of 4 percent among men and 14.2 per cent among Pakistani women [9]. Age and gender affect the incidence of diseases associated with Gallstones [12]. Increased risks and incidence of cholelithiasis often relate to gender and marital status [10]. It has been argued that women are twice as likely to suffer as men, with a ratio between men and women varying from 1.7 to 4:1. The female, fatty, fertile and forty are best mnemonic to memorize risks associated with gallstones. In addition, if women use oral contraception, give birth to three or more children or have been pregnant for full term, they are more adherent to risk [11]. The purpose of this study was to determine the prevalence of cholelithiasis in private sector hospital Gujranwala, Pakistan, among people who underwent abdominal ultrasound.

***Corresponding Author:** Aqsa Nasir

MATERIAL AND METHOD

From August 2020 to December 2020, we designed a cross-sectional descriptive sample for 150 male and female patients who presented abdominal ultrasonography (USG) in the Radiology department of a private hospital in Gujranwala. Only patients were recruited with informed consent. Patients were divided into subgroups according to age, sex, and marital status after receiving consent data from each patient. Probes of 3.5-5 MHz were used, based on the patient's physique. Sonographic investigations were monitored by a radiologist expert. The data was added to a Microsoft Excel 365 and subsequently exported for review into SPSS Version 22. The median and standard deviation of continuous variables were stated. As proportions, categorical variables have been registered. The appearance of gallstones on the ultrasound was known as cholelithiasis. The prevalence of the different results of the gallbladder was indicated as 95% confidence intervals (CI).

RESULTS

In this survey male participants were 42% and female participants 58%. (Figure 01) The married participants were 88 percent and rest of 12% were unmarried. The highest frequency of cholelithiasis is seen among the age of 28-47 years patients. Regarding Gall bladder appearance, 76 percent of the participants have normal appearance. 6% with distended and16% showed the contracted appearance whereas in 2% cases Gall bladder was surgically absent. In 90% of the cases the sludge was absent in gall bladder and only 10% were filled with sludge.

Regarding Gall bladder wall thickness 86% of the participants had normal thickening and in 12% wall was thickened. Whereas 2% cases already had surgically absent GB. The Gall bladder stones were absent in 40 % participants and 60% had stones present in. (Figure 02)

In relation to Gender, GB stones were present in 15% males and 45% females. (Table 01)

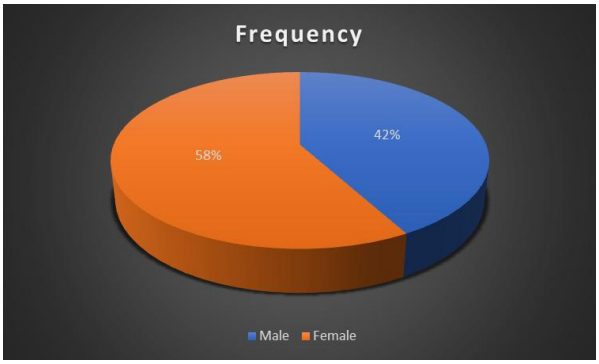

Fig-1: Simple Pie chart showing the gender distribution

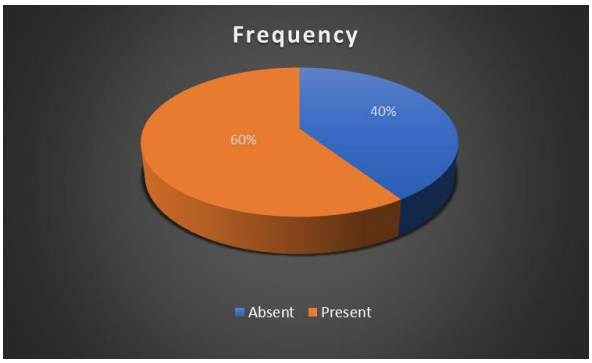

Fig-2: Pie chart presenting the frequency of GB stones.

Table-1: Cross table showing the relation among gender and GB Stones

Gender		GB stones Absent	GB stones present	Total
Male	Count	41	22	63
	% within Gender	65.10%	34.90%	100.00%
	% of Total	27.30%	14.70%	42.00%
Female	Count	20	67	87
	% within Gender	23.00%	77.00%	100.00%
	% of Total	13.30%	44.70%	58.00%
Total	Count	61	89	150
	% within Gender	40.70%	59.30%	100.00%
	% of Total	40.70%	59.30%	100.00%

DISCUSSION

Gall stone disorders are well-known to be one of the most expensive pathological illnesses on a global scale. The current research discovered a large prevalence of gall stones in a Gujranwala sample community, implying a major economic strain on the country's healthcare budget. The incidence rates are marginally higher than those recorded in a 2004 survey, which showed a 9.03 percent incidence rate [13]. Despite the increase in incidence rates, relatively few curative methods have been developed to lessen the disease's predominance [14]. The values are similar to those seen in America (10%) and Peru (10.7%), but are somewhat smaller than those seen in Bangladesh (5.4%), Germany (7.8%), Tunisia (4.1%), and New Zealand (20.8%), as Abu-Eshy et al. demonstrate [14]. Our research has shown a close correlation between the prevalence of gallstone diseases and both unmodifiable

and modifiable risk factors, such as age, gender, and marital status. The findings corroborate that of Iran's study (Alireza et al., 2016). The findings corroborate previous studies conducted in Pakistan and western countries [15, 16].

The occurrence of Gall stone diasease in females was also higher compared to males in the pre-menopause age. This finding represents the previous study in Pakistan [17] and previous studies in foreign countries [18, 19]. The difference is due to the high amount of estrogen known to be the dominant sex hormone in women. Increased amount of cholesterol improves bile cholesterol, increases its saturation and leads to cholesterol gallstones [20]. Only a few trials [13, 21] indicate that bile and marital status are linked [22]. They made this clear by arguing that marriage in young age expands the fertility span of women and increases the incidence of parity. Throughout the fertile age, the female sex hormone can play an important part in the forming of gallstones. In our situation, the statistical importance of marital status as shown by multivariate logistic regressions may also be attributed to improvements in hormone levels and increased parity values. Many researchers assume that low HDL amounts lead substantially to gallstone disease by the independent metabolism of BMI and body weight and the distinctive influence of daily physical activity on body mass [23]. The furthermore, present study also revealed that there can be greater prevalence of Gall stones with absence of sludge on ultrasonographic findings. The results comprise of the past Pakistani analyzes and international analyses [24, 25]. Gallbladder is not drained normally in the presence of fatty liver. As a result, the accumulation of bile results in gallstones. Additionally, ultra-sonographic results showed that the majority of patients have several stones, which is compatible with previous research results [26, 27].

CONCLUSION

It can be assessed how Gall stones play an important role in the development of women's ethnicity, increased age and marital status. However, further research is required to clarify the etiology of the risk factors that remain constant, such as gender and marital status. More analysis and review are needed to confirm the demographic and biochemical triggers of cholelithiasis that are currently identified. Pathogenesis and the physiology of Gall stone diseases may help to identify therapeutic alternatives rather than surgical therapy.

REFERENCES

1. Barbara L, Sama C, Labate AM, Taroni F, Rusticali AG, Festi D, et al. (1987). A population study on the prevalence of gallstone disease: the Sirmione Study. Hepatology, 7:913-7.
2. Stinton, L. M., & Shaffer, E. A. (2012). Epidemiology of gallbladder disease: cholelithiasis and cancer. Gut and liver, 6(2), 172–187. https://doi.org/10.5009/gnl.2012.6.2.172
3. Shaffer EA. (2006). Gallstone disease: Epidemiology of gallbladder stone disease. Best Pract Res Clin Gastroenterol, 20:981-96.
4. Hayat N, Duja B, Ahmed T, Rehan AG. (2013). To determine the importance of age and sex in the clinical presentation and subsequent outcome in cholelithiasis. JUMDC, 4:36-41.
5. Everhart JE, Yeh F, Lee ET, Hill MC, Fabsitz R, Howard BV, et al. (2002). Prevalence of gallbladder disease in American Indian populations: findings from the Strong Heart Study. Hepatology, 35:1507-12.
6. Zhang W, Jiang Z, Han T, Lei R. (2011). Epidemiology and risk factors of cholelithiasis. J Surg Concepts Pract. 16:408-12.
7. Unisa S, Jagannath P, Dhir V, Khandelwal C, Sarangi L, Roy TK. (2011). Population-based study to estimate the prevalence and determine risk factors of gallbladder diseases in the rural Gangetic of North India. HPB (Oxford), 13:117-25.
8. Chen CH, Huang MH, Yang JC, Nien CK, Etheredge GD, Yang CC, et al. (2006). Prevalence and risk factors of gallstone disease in an adult population of Taiwan: an epidemiological survey. J Gastroenterol Hepatol, 21:1737-43.
9. Channa NA, Khand FD, Bhanger MI, Leghari MH. (2004). Surgical incidence of Cholelithiasis in Hyderabad and adjoining areas (Pakistan). Pak J Med Sci, 20:13-7.
10. Hu, Jing-Hong MD[a]; Chen, Mei-Yen RN, PhD[b]; Yeh, Chau-Ting MD, PhD[c,d]; Chiu, Wen-Nan MD[a]; Chiang, Ming-shih MD[a]; Chang, Ming-Ling MD, PhD[c,d,*]. (2018). Effects of gender and age on prevalence of cholelithiasis in patients with chronic HCV infection, Medicine, Volume 97 - Issue 22 - p e10846. doi: 10.1097/MD.0000000000010846
11. Etminan, M., Delaney, J. A., Bressler, B., & Brophy, J. M. (2011). Oral contraceptives and the risk of gallbladder disease: a comparative safety study. CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne, 183(8), 899–904. https://doi.org/10.1503/cmaj.110161
12. Shaffer EA. (2005). Epidemiology and risk factors for gallstone disease: Has the paradigm changed in the 21st century? Curr Gastroenterol Rep 7:132-40.
13. Channa, N. A., Khand, F. D., Bhangwer, M. I., & Leghari, M. H. (2004). Surgical incidence of cholelithiasis in hyderabad and adjoining areas (Pakistan). Pak J Med Sci., 20(1), 13-17.
14. Kim, W. R., Brown, R. S., Terrault, N. A., & El-Serag, H. (2002). Burden of liver disease in United States: Summary of a work shop. Hepatology, 36, 227-242. http://dx.doi.org/10.1053/jhep.2002.34734

15. Abu-Eshy, S. A., Mahfouz, A. A., Badr, A., El Gamal, M. N., Al-Shehri, M. Y., Salati, M. I., & Rabie, M. E. (2007). Prevalence and risk factors of gallstone disease in high altitude Saudi population. East Mediterr Health J, 13(4), 794-802. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/17955761
16. Bortoff, G. A., Chen, M. Y., Ott, D. J., Wolfman, N. T., & Routh, W. D. (2000). Gallbladder stones: imaging and intervention. Radiographics, 20(3), 751-766.
17. Grodstein, F., Colditz, G. A., & Stampfer, M. J. (1994). Postmenopausal hormone use and cholecystectomy in a large prospective study. Obstetrics and gynecology, 83(1), 5-11.
18. Aslam, H. M., Saleem, S., dhi, M. M., Shaikh, H. A., Khan, J. D., & Hafiz, M., et al. (2013). Assessment of gallstone predictor: comparative analysis of ultrasonographic and biochemical parameters. International Archives of Medicine, 6(1), 1-7. http://dx.doi.org/10.1186/1755-7682-6-17.
19. Panpimanmas, S., & Manmee, C. (2009). Risk factors for gallstone disease in a Thai population. Journal of epidemiology, 19(3), 116-121.
20. Sharma, R., Sachanl, S. G., & Sharma, S. R., (2013). Preponderance of Gallstone in Female. World Journal of Pharmacy and Pharmaceutical Sciences, 2(6), 5871-5877. Retrieved from http://www.wjpps.com/wjpps_controller/abstract_id/615
21. Channa, N. A., & Khand, F. (2013). Gallstones and their risk factors: An epidemiologic investigation in Southern Sindh, Pakistan. Rawal Med J, 38, 361-5.
22. Selvaraju, R., Raman, R. G., Thiruppathi, G., & Valliappan, R. (2010). Epidemiological study of gallstone in Cuddalore District. Int J Pharm Tech Res, 2(2), 1061-1067. Retrieved from http://sphinxsai.com/s_v2_n2/PT_V.2No.2/phamtech_vol2no.2_pdf/PT=11%20_1061-1065_.pdf
23. Henao-Morán, S., Denova-Gutiérrez, E., Morán, S., Duque, X., Gallegos-Carrillo, K., Macías, N., & Salmerón J. (2014). Recreational physical activity is inversely associated with asymptomatic gallstones in adult Mexican women. Ann Hepatol, 13(4), 810-818. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/ 25332268
24. Koller, T., Kollerova, J., Hlavaty, T., Huorka, M., & Payer, J. (2012). Cholelithiasis and markers of nonalcoholic fatty liver disease in patients with metabolic risk factors. Scandinavian journal of gastroenterology, 47(2), 197-203.
25. Sohail, S., & Iqbal, Z. (2007). Sonographically determined clues to the symptomatic or silent cholelithiasis. J Coll Physicians Surg Pak, 17(11), 654-657
26. Reshetnyak, V. I. (2012). Concept of the pathogenesis and treatment of cholelithiasis. World journal of hepatology, 4(2), 18.
27. Verma, G. R., Bose, S. M., & Wig, J. D. (2001). Pericholecystic adhesions in single v multiple gallstones and their consequences for laparoscopic cholecystectomy. Journal of Laparoendoscopic & Advanced Surgical Techniques, 11(5), 275-279.

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