



GALL STONES; FREQUENCIES OF GALL STONES IN THE PATIENTS ATTENDING SURGICAL OPD AT ISRA HOSPITAL HYDERABAD.

Dr. Alina Saqib¹, Dr. Saeed Sattar Shaikh², Dr. Jawad Mumtaz Sodhar³

1. MBBS, M.Phil
Assistant Professor
Department of Anatomy,
Indus Medical College,
Tando Muhammad Khan Sindh
2. MBBS, M.Phil.
Assistant Professor
Department of Pathology
Isra University & Hospital,
Hyderabad Sindh
3. MBBS, (M.Phil)
Lecturer
Department of Pharmacology
Isra University, Hyderabad Sindh

Correspondence Address:
Dr. Saeed Sattar Shaikh
MBBS, M.Phil (Path)
Assistant Professor
Department of Pathology
Isra University & Hospital,
Hyderabad, Sindh, Pakistan.
amazingdoctor33@hotmail.com

Article received on:
26/09/2013
Accepted for Publication:
19/11/2013
Received after proof reading:
21/04/2014

ABSTRACT... Objectives: Recognition of various gall stones in the patients attending surgical OPD by biochemical analysis of gall stones. **Study design:** Cross sectional study. **Place & duration of study:** ISRA Hospital, Hyderabad and Institute of Biochemistry Sindh University Jamshoro. Duration of study was 18 months. **Methods:** Cases were patients with gall stones who were diagnosed on ultrasonography. Gall stone analysis was done from Institute of Biochemistry Sindh University Jamshoro. A total of sixty nine subjects were included in the study. **Results:** In the present study the mean Age was 35.81 + 8.12 years. Frequencies in different age groups are 15-24 (11.60%), 25-34 (24.64%), 35-44 (53.63%), 45-54 (8.69%), 55-64 (01.45%). Age distribution is shown in Graph III-1. In the present study 49(71.0%) were females and 20(29%) were males with the female to male ration of 2.45:1. gender distribution is shown in Graph III-2. In the present frequencies of different types of gall stones was, cholesterol stones 38(55.07%), pigmented stones 20(28.99%) and mixed type of stones 11(15.94%). Frequencies of different types of gall stones is shown in Graph III-3. **Conclusions:** In our study the frequency of cholesterol gall stone is more as compared to pigmented and mixed gall stones. A total of 55.07% of cholesterol gallstones were found in our study with the female predominance.

Key words: Gallstones, calcium, cholecystectomy

Article Citation: Saqib A, Shaikh SS, Sodhar JM. Gall stones; frequencies of the patients attending surgical OPD at Isra Hospital Hyderabad. Professional Med J 2014;21(2): 386-390.

INTRODUCTION

Gallstones are a common clinical finding in the Western populations. The prevalence rates in adult European is 10–15%, while in African and Asian populations prevalence is 3–5 %¹. In the United States, the prevalence rates range from 5% to 27%². In American Indians, gallstone disease is found in 30% of male and 64% of female (Everhart et al, 2002). The prevalence of Gallstones is raising day by day in Pakistani population^{3,4}. The important biochemical components of gallstones are cholesterol, bile pigment and calcium⁵. Cholesterol and pigmented gall stones are more prevalent as compared to mixed stones^{6,7}. Some elements also play a considerable role in the pathogenesis of gallstones. In an Indian stone formers, it was observed that 14 minor or trace elements including Sulfur, Chloride, Potassium,

Vanadium, Chromium, Manganese, Iron, Nickel, Copper, Zinc, Bromide and Lead were identified in the gallstones⁸.

There are three types of gallstones⁹.

- (i) Pure cholesterol stones which are constitutes around 90% cholesterol,
- (ii) Pigment stones, they can be either brown or black and constitutes around 90% bilirubin
- (iii) Mixed composition stones, which are constitute of varying amounts of cholesterol, bilirubin and other substances such as calcium carbonate, calcium phosphate and calcium palmitate¹⁰.

The major constituents of black pigment stones are insoluble bilirubin pigment polymer mixed with

calcium phosphate and carbonate¹⁰. Whenever calcium and un-conjugated bilirubin exceeds then precipitation of calcium bilirubinate occurs. The major factors causing black pigment stones are hemolytic anemias, ineffective erythropoiesis, and increased production of bilirubin (caused by hereditary spherocytosis, thalassaemia, sickle cell disease, liver cirrhosis, malaria, and ineffective erythropoiesis)¹¹. Increasing age is an important risk factor for gall stone formation as 20% of adults over 40 years of age and 30% of those over age 70 developed biliary calculi. Female gender is another risk factor for cholelithiasis as during the reproductive years, the female-to-male ratio is about 4:1¹². Obesity, diabetes mellitus, estrogen, pregnancy, hemolytic diseases, and cirrhosis are the common risk factors predisposing to gallstone formation¹². Mucus, calcium and lipids forms the gallstones¹³. Gallbladder mucin is one of the key factors in gallstone formation. However, there is little information about the diversity of mucin secretion according to the stone composition¹⁴. A major causative agent for stasis is gallbladder dyskinesia which in turn may be a consequence of gallbladder wall pathology¹⁵. However, it was observed that gallbladder tension increased, rather than decreased during the early stage of gallstone formation¹⁶. Present study is aimed to see the various types of gall stones.

Objective of the Study

Recognition of various gall stones in the patients attending surgical OPD by biochemical analysis of gall stones.

MATERIALS AND METHODS

The study is a cross sectional study, in which cases were patients with gall stones attending surgical OPD at Isra Hospital Hyderabad who were diagnosed on ultrasonography. Gall stone analysis was done from Institute of Biochemistry Sindh University Jamshoro. A total of sixty nine subjects were included in the study from January 2012 to June 2013. Study was conducted in the ISRA Hospital, Hyderabad and Institute of Biochemistry Sindh University Jamshoro.

Sampling technique

Cases were selected through non-random sampling.

Inclusion criteria

- Male and Female both > 15 and < 64 years.
- Those who gave consent to participate.
- Patients undergoing surgery for Cholelithiasis at surgical department of Isra University Hospital.

Exclusion criteria

- Non consenting patents.
- Age < 15 and > 65 years.
- Patients with a calculus gall bladder disease.

Parameters

- Biochemical analysis of gall stones

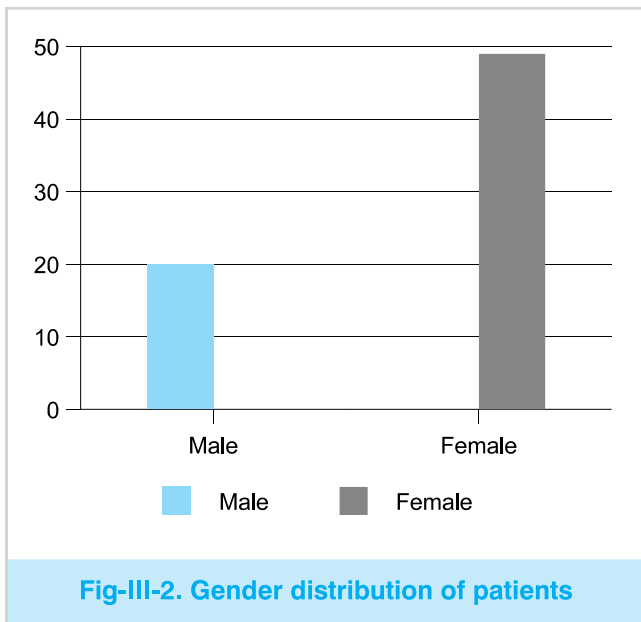
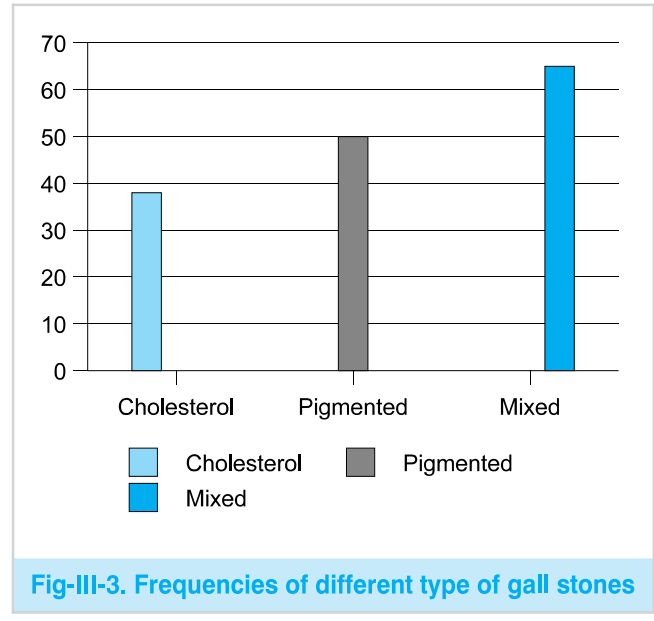
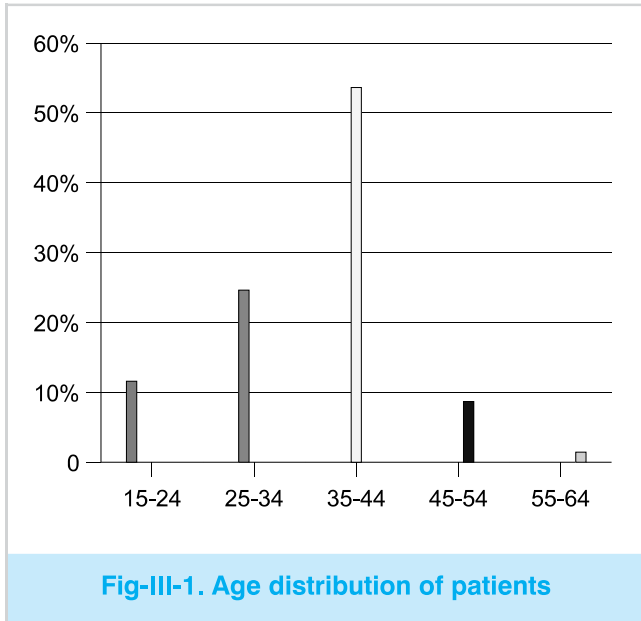
Data Collection Procedure

After ethical approval taken from hospital ethical committee, all the patients presenting to surgical ward for resection of gall bladder (cholecystectomy) for Cholelithiasis and fulfilling the inclusion criteria were included in the study. Data was collected from all the patients in surgical ward undergoing cholecystectomy for Cholelithiasis & was recorded on a pre designed proforma. Stones removed from gall bladder were submitted to the Instituted of Biochemistry Sindh University Jamshoro for chemical analysis.

RESULTS

In our research study the mean Age was 35.81 + 8.12 years. Frequencies in different age groups are 15-24 (11.60%), 25-34 (24.64%), 35-44 (53.63%), 45-54 (8.69%), 55-64 (01.45%). Age distribution is shown in Fig-III-1.

In our research study 49(71.0%) were females and 20(29%) were males with the female to male ration of 2.45:1. gender distribution is shown in Fig-III-2.



In our research study frequencies of different types of gall stones were, cholesterol stones 38(55.07%), pigmented stones 20(28.99%) and mixed type of stones 11(15.94%). Frequencies of different types of gall stones is shown in Fig-III-3.

DISCUSSION

Cholelithiasis is the major cause of morbidity all over the world. In well developed countries the prevalence of cholelithiasis is about 24% but its prevalence is low in underdeveloped countries⁵.

Our research study in Hyderabad has concluded that cholesterol gall stones are more common than pigmented and mixed gall stones. These results are consistent with the study of Salam et al and Mokhtar^{17,18}.

German and scandinavian research on gall stones also have reported that cholesterol gall stones are predominant as compared to pigmented and mixed gall stones^{19,20}.

These results are also consistent with the result of Tassaduqe et al who have conducted research study on gall stones in Multan²¹. These results are also consistent with the findings of Channa et al who has reported that 68% of gall stones are of cholesterol type²¹.

High cholesterol in bile as compared to bile acids and bile salts leads to nucleation of cholesterol which results in the development of gall stones. This also happens due to over production of bile in liver. This mechanism works in the development of cholesterol gall stones only²².

Our research study also concluded that gall stones are more prevalent in female gender as compare to male gender with ratio of 1.6:1. This finding is consistent with the results reported by Central Department of Statistics in Saudi Arabia.

This finding is also consistent with results of Channa et al who reported that gall stones affect 71% of female²¹.

Schirmerhas also reported that cholelithiasis is more common in females than males, with female to male ratio is about 4:1, while the incidence becomes equal in both gender in older age¹². This may be because of the basic hormonal differences between males and females, together with the differences that might exist due to co-expression of sex hormone receptors in the gallbladder of both sexes²³.

CONCLUSIONS

This study showed that the frequencies of cholesterol gall stones are more common as compared to pigmented and mixed gall stones. Cholesterol gall stones are accounting 55.07% of total gall stones. And from our study we can conclude that females are more prone to develop gall stones as compared to males.

Copyright© 19 Nov, 2013.

REFERENCES

- KRATZER, W., MASON, R.A. and KACHELE, V. **Prevalence of gallstones in sonographic surveys worldwide.** Journal of Clinical Ultrasound. 1999;27: 1-7.
- EVERHART, J.E., YEH, F., LEE, E.T., HILL, M.C., FABSITZ, R., HOWARD, B.V., et al. **Prevalence of gallbladder disease in American Indian populations: findings from the Strong Heart Study.** Hepatology. 2002; 35: 1507-12.
- CHANNA, N.A., KHAND, F.D., BHANGER, M.I. and LEGHARI, M.H. **Surgical incidence of cholelithiasis in Hyderabad and adjoining areas (Pakistan).** Pakistan Journal of Medical Science. 2004; 20(1): 13-7.
- KHAND, F.D. **Cholelithiasis in Southern Sindh (Pakistan): Incidence and composition of gallstones.** Specialist. 1997;13: 263-70.
- SHAREEF, K.M., OMAR, L.S. and GAROTA, S.A. **Correlation between the chemical components of gall stones and sera of stone formers.** Gomal Journal of Medical Sciences. 2009; Vol. 7, No. 1, pp. 2-6.
- VIVEK, K., VINITA, S., AWADHESH, K., SURYA, N., PRADEEP, K. and JAGDISH, P. **Quantitative analysis of gallstones using laser-induced breakdown spectroscopy.** Applied Optics 2008; 47: 37-8.
- SAHUQUILLO, A., RUBIO, R., RIBO, J., ROS, E. A., and VELA, M. **Application of focused-microwave wet digestion for the determination of trace metals in human gallstones by ICP/AES.** Pakistan Journal of Analytical Chemistry 2003; 4: 5-7.
- BECKINGHAM, I.J. **Gallstone disease.** British Medical Journal 2001;322: 91-4.
- RAUTRAY, TAPASH, R., VENKATATHRI, P. and SIMANCHALO, A. **Analysis of Indian cholesterol gallstones by particle induced X-ray emission and thermogravimetry-derivative.** European Journal of Gastroenterology & Hepatology 2006;18: 999-1003.
- IL'CHENKO, A.A. **On the problem of classification of cholelithiasis.** Experimental and Clinical Gastroenterology.2004; 8-12.
- GRUNHAGE, F. and LAMMERT, F. **Pathogenesis of gallstones: a genetic perspective.** Best Practical Research Clinical Gastroenterology. 2006; 20:997-1015.
- SCHIRMER, B.D., WINTERS, K.L. A and EDLICH, R.F. **Cholelithiasis and cholecystitis.** Journal of Long-Term Effects of Medical Implants. 2005;15 (3): 329-38.
- JACYNA MR: **Interactions between gallbladder bile and mucosa; Relevance to gallstone formation.** Gut 1990, 31:568-570.
- KIM HJ, KIM JS, KIM KO, PARK KH, YIM HJ, KIM JY, et al. **[Expression of MUC3, MUC5AC, MUC6 and epidermal growth factor receptor in gallbladder epithelium according to gallstone composition]** Korean J Gastroentero. 2003; 42:330-336.
- VELANOVICH VF. **Biliary dyskinesia and biliary crystals: a prospective study.** Am Surg 1997; 63:69-73.
- LANGE K, GOTTSCHALK M. **Gallbladder contractility in early stages of lithogenesis in the lithogenic fed guinea pig.** Z. Gastroenterol 1995; 33:333-339.
- SALAM, A., NAZIR, G., BAKHASH, S., RAMAZAN, M. and NUSRATULLAH. **Biochemical comparative study of gall stones in Riyadh Saudi Arabia.** Gomal J Med Sci 2002, 1: 1-4.
- MOKHTAR, A.M.A. **Cholelithiasis in the western**

- region of Saudi Arabia.** Est African Medical J.1990; 67(4):286–290.
19. SCHAFMAYER, C., HARTLEB, J., TEPEL, J., ALBERS, S., FREITAG, S., VOLZKE, H., et al. **Predictors of gallstone composition in 1025 symptomatic gallstones from Northern Germany.** BMC Gastroenterology. 2006;6:36.
20. ANGWAFO, F.F., TAKONGMO, S. and GRIFFITH, D. **Determination of chemical composition of gall bladder stones: Basis for treatment strategies in patients from Yaounde, Cameroon.** World J Gastroenterol 2004;10(2):303–305.
21. CHANNA, N.A., KHAND, F.D. and KHAND, T.U. **Analysis of human gallstones by Fourier Transform Infrared (FTIR).** Pak J Med Sci, 2007; vol 3, no. 4, pp-546-550.
22. CHANNA, N.A. (2008) Issue Year : 2008, Issue Number: 2, Issue Month: June GALLSTONE DISEASE: A REVIEW
23. JARRAR, B.M. and AL-ROWAILI, M.A. **Chemical Composition of Gallstones from Al-Jouf Province of Saudi Arabia.** Malaysian J Med Sci 2011; 18(2): 47-52.



A friend is someone
who knows all about you
and still loves you

Elbert Hubbard

