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RELEVANCE OF 5F, WITH GALLSTONES: A STUDY ON 110 CASES

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ABSTRACT

Gallstone (Cholelithiasis) is a most common disease of female, in Unani medicine it is known as Hisat-e-Mararah/ Hisat-e-Kabid. It is a disease of extra hepatic biliary system, which constitutes hepatic ducts, common hepatic duct, cystic duct, gall bladder and common bile duct. There is no definite etiopathogenesis of this disease. But it has an established relation with 5 F (fatty, fertile, flatulent, female of fifty). This hypothesis is not proved scientifically. Present paper is an attempt to evaluate the hypothesis of this 5F. For this purpose we conducted clinical study at out patient department of A.K. Tibbiya College Hospital A.M.U., Aligarh. A total of 110 patients were registered and admitted in the in-door patient department. Clinical and socio-economic data were recorded. Out of 110, 101 patients were female, from different selections of the society. In the outcome of study we found that there was no relation of the etiopathogenesis of cholelithiasis with 5F. Only one F is found that majority of sufferers are female. We concluded that gall-stone is a disease of multifactorial etiopathogenesis. It is evident that trend is being changed, maybe due to environmental effect.

KEYWORDS: Hisat-e-Mararah, Gallstone, Cholelithiasis.

INTRODUCTION

Gallstone (Cholelithiasis) is a most common disease of female, in Unani medicine it is known as Hisat-e-Mararah/ Hisat-e-Kabid. It is a disease of extra hepatic biliary system, which constitutes hepatic ducts, common hepatic duct, cystic duct, gall bladder and common bile duct. It starts from the hilum of the liver and extends up to ampulla of Vater in the second part of duodenum. Functionally extra hepatic biliary system is concerned with drainage and storage of bile and excretion of it into gastrointestinal tract.

Biochemically, bile is a solution containing bile acids. Cholesterol binds itself loosely with phospholipids and lecithin to form clumps or micelles. These globular form of micelles and cholesterol are held in solution by appropriate concentration of bile acids. Any disparity between bile acids and cholesterol concentration prevents suspensibility of cholesterol.

Anatomically, gall bladder is the most susceptible part of extra hepatic biliary system for disease[1,2] and the most common disease of this organ is inflammation and this inflammation is usually associated with stones and sometimes it is precipitating cause of inflammation, thus a calculus as well as calculus inflammation is supposed to be bacterial. As far as formation of stones and associated changes in the gall bladder are concerned, they are almost fixed and well established.

The main cause of stone formation is disparity between concentration of cholesterol and bile acids. When cholesterol exceeds that of normal, micelles start to precipitate, and this precipitation of micelles of cholesterol is called as nucleation. Further addition of cholesterol around the nucleus enlarges the size of the stone. Contrary to this, if bile salts exceed in their concentration, they tend to form crystals and when these crystals precipitate, they form pigment stones.

The causative factors of stone formation may be grouped under the following major heads i.e.

(I) excess of cholesterol in bile
(II) too much bilirubin in bile
(III) inflammation of gall bladder mucosa, which disturbs absorptive properties of gall bladder
(IV) absorption of water
(V) excessive absorption of bile salts from bile

The causative factors of gall stone formation described by the ancient physicians are mentioned under different headings.

As per description of Rabban Tabri (861) and Majoosi (1010), the main and 1st cause of gall stone formation is

sudda (obstruction) in gall bladder.[10,11] Zakariya Razi (923) mentioned that jaundice is sometime due to hepatic and some time due to obstruction, and the cause of obstruction is sticky fluid which is formed by fatty diet.[16] Ibn-e-Sina (1037) told that the causes of gall stone formation are dame ghaliz, Zoaf quate dafeya, shiddate jazba, congenital narrowing of biliary system, khilte ghaliz wa lazuj ghaliz ashiya, mitti chuna etc.[12]

Ibn-e-Hubal(1213) mentioned the same cause as by Ibn-e-Sina with addition of two special diets, 1. Hareesa (the meal prepared by meat and crushed wheat), 2. Aseeda (the meal prepared by ghee and flour).[17] Nafis bin Awaz (1669) used the term "Hisat-ul-Kabid" in place of sudda kabid and told that causes of stone formation in liver are the same as the stone formation in kidney and urinary bladder.[18] As per Allama Akbar Arzani (1721) the cause of hepatic stone is sticky raw fluid.[13]

Allama Kabiruddin (1976) described the detail of stone formation in liver e.g. Precipitation of bile, precipitation of bile salts in certain condition, altered ratio of bile salt and bile acids, some time bacteria in the gall bladder act as nucleus for stone formation.[9]

The overall etiological factors, whatever they may be, would cause any stone forming changes in bile. Some histological factors are related to the gall bladder itself. Some are metabolic, still others are concerned with sex age and region.[4, 5] Till now various etiological factors have been described to have indefinite association with cholelithiasis i.e. multiparity, obesity, female sex, luxurious lifestyle, excessive fat intake, deranged fat metabolism, low-grade cholecystitis, use of oral contraceptive drugs, fourth decade of life, intestinal disease especially absorption related hemolytic conditions, gall bladder disease, bile circulatory disturbances, biliary stasis due to obstruction in flow of bile due to any cause, parenteral alimentation, excess of calcium concentration in bile, bacterial infection.[6, 8, 9]

Though super saturated bile seems to be the main culprit for stone formation, but sometimes bacterial infection is the cause of starting the process of stone formation especially on the walls of gall bladder. All these factors are somehow related to the gall bladder, but the real precipitating cause out of these is yet to be discovered. Only the factors having definite association are established. Actually the stone is a result of interplay between nucleation (mucous stasis) and anti-nucleation. Apolipo-protein A1 plays a crucial role for nucleation and antinucleation[7] in the pathogenesis of stone formation, because it has been found that there are individuals with supersaturated bile but stone free. Nucleating factors initiates stone formation, this group includes mucin, its secretion increases in inflammatory conditions under the influence of prostaglandin. Moreover, mucin in combination with bilirubin forms sludge which serves as stone initiator. Contrary to this anti-nucleating factor, probably lipoprotein A-1 prevents crystallization of cholesterol. Its respective gene determines the nature of anti-nucleating factor, and this proves the genetic predisposition for lithogenesity.[13] Amongst other nucleating factors are excess of Ca^{++} salts in bile and bacterial infection when bile is infected primarily.

All the above mentioned risk factors are somehow associated with gall-stone but definite correlation is yet to be discovered. The present work is an effort to establish association between risk factors and to observe the prevalence of gall-stone in social groups. Emphasis has been given to 5F (fatty, fertile, flatulent, female of fifty). Present study is limited to 110 cases, which were operated at A.K. Tibbia College Hospital after ultrasonographic diagnosis of cholecystitis or cholelithiasis.

MATERIALS AND METHODS

The present study includes 110 patients attending (Jarahat) Surgery OPD at A.K. Tibbia College Hospital, A.M.U., Aligarh with pain in upper abdomen, flatulence, dyspepsia, retrosternal burning and other related complaints of an average duration of 9 months. The period of study extends from August 1997 to July 1998. The patients were provisionally diagnosed as cases of cholilithiasis and cholecystitis.

These patients were usually of low and average socio-economic group. The diagnostic criteria were based on ultrasonography. On admission, the patients were interrogated for their dietary habits, nature of fat taken in the diet, any history of oral contraceptive pills, typhoid, worm infestation, fever with chills in the past, and parity. Then the patients underwent routine biochemical investigations such as liver function test, serum cholesterol, blood sugar, and blood urea. After the investigations and confirmation of the diagnosis, the patients were prepared for operation in a routine way. The patients were then operated and abdomen opened with appropriate incision including Kocher's, right subcostal transverse and right upper paramedian.

The gall bladder was removed and kept in a sterile container and opened, stones were identified for their type and crushed for core culture. The gall bladder was sent for histopathological examination and results were tabulated.

OBSERVATIONS AND RESULTS

The study included 110 patients of cholelithiasis unassociated with any acute condition related to hepatobiliary system. The aim of study was to sort out the factors which are somehow related with stone formation in the gall bladder. At present, various factors are considered to be responsible for the stone formation. The important factors among them are female sex, obesity, multiparity, 4th decade of life, hemolytic disorders, biliary tract infection, dietary factors, and metabolic genetic factors. In addition to biliary stasis,

some of the clinicians have mentioned about iron deficient diet as one of the important factors for gall-stone formation, and emphasis is given to 5F (fatty, fertile, flatulent, female of fifty).

Because of changing trend in the incidence of gall-stones, the present study was carried out to assess the correlation of the gall-stone disease with 5F. Observations and results are tabulated as follows.

In the present study out of 110 patients of cholelithiasis, 18 patients (1 male and 17 females) were of the age group of 15-25 years, while 32 patients (3 males and 29 females) were of the age group of 25-35 years. The maximum number of patients i.e. 34 (3 males and 31 females) were of the age group of 35-45 years. 21 patients (2 males and 19 females) were in the age group of 45-55 years and 4 were in 55-65 years, there was only one patient above 65 years.

Thus it is very much clear from the Fig. 1 and Table 1, that there is slight preponderance of the incidence of gall-stone in the 4th decade in both sex, and the percentage of incidence of stone in 4th decade is 31%. But a female is more prone to gall-stone diseases (91.8%) as shown in Fig. 2 and Table 2.

The correlation between gall-stone disease and multiparity is a proved fact.[14] in the present study, the incidence of gall-stones has been found to have a decreasing trend after 6 conceptions, as shown (Fig. 3 and Table 3). The maximum number of patients (45.45%) was those who conceived 3 to 6 times. The incidence decreased to 39.39% in those, who conceived 6 to 9 times. There was a drastic decrease in the incidence of gall-stone in patients who conceived 9 to 12 times (7.08%) and 2.02% in those who conceived 12-15 times.

Till date obesity is considered as an important factor for cholelithiasis[15] and many workers have proved definite association between the two. But in present study we observed a change in this pattern. This study revealed that the association between obesity and gall-stone disease, is not significant, since maximum number of cases were of average built (40-60 kg), the percentage in this group being 40% and second to this is thin built with body weight below 40 kg, the percentage being 34.54%, the incidence was least (25.4%) in obese patients with weight above 60 kg. (Fig. 4 and Table 4). It is true that the females outnumbered the males in each group. Hence, as per our observation, the gall-stone disease is limited to overweight individuals only.

DISCUSSION

Gall-stone disease is the most common biliary pathology and according to the nature of composition, the gall-stones are classified into cholesterol, mixed and pigment stones.

The etiology of the gall-stone formation is multi-factorial, the common factors implicated are metabolic, infective and bile stasis. In the present study we studied in detail the theory of 5F (fat, fertile, flatulent, female of fifty), as an etio-pathological factor.

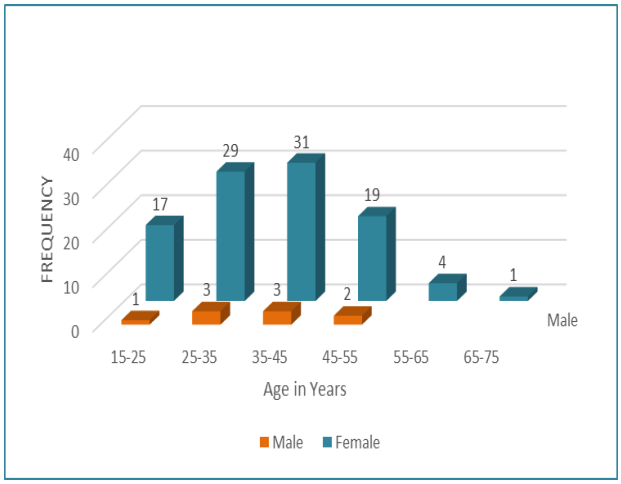

Fig. 1: Histogram showing incidence of gall-stones sexwise in different age group (110 patients).

Table 1: Incidence of gall-stones in different age group.

Age Group	No. of Patients	Male	Female
15-12	18	1	17
25-35	32	3	29
35-45	34	3	31
45-55	21	2	19
55-65	4	-	4
65-75	1	-	1
Total	110	9	101

Age and Sex (F_1 and F_2)

Though the classical sufferer of this disease is a fatty, fertile, flatulent female of fifty, but as per observations in the present study, the commonest age group of patients was between 35-55 years. The maximum number of cases i.e. 34 out of 110 cases (30.9%) was in this age group, which included 3 males and 31 females. The next common age group affected was between 25-35 years, which comprised 32 cases. Thus it is clear that there is slight preponderance of the incidence of gall-stone in younger age group in both the sexes. Chijiwa *et al.*, have examined the relation of cholesterol nucleation time of gall bladder bile to the age and sex of the patients and found no correlation between nucleation time and age. It was not faster in females of middle or old age, hence cannot therefore be accounted for higher frequency of cholesterol gall-stones in females of fourth or fifth decade. The decreasing incidence after 45 years of age in females can be explained by the fact that due to cessation of menstruation (menopause) after 45 years, the chances of anemia are decreased and the body requirement of nutrients is also reduced and hence there is improvement in the malnutrition status of the patients after 45 years

thereby anemia and malnutrition as predisposing factors do not play role in causation of gall-stone, and it is observed that the percentage of female sufferer is more than male and that is 91.8%.

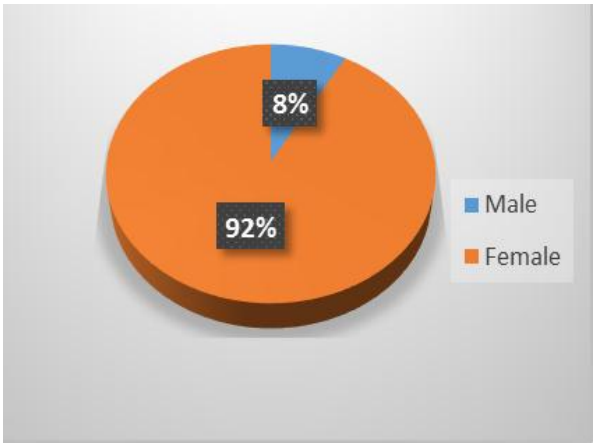

Fig. 2: Incidence of gall-stones in either sex.

Table 2: Incidence of gall-stone in either sex.

Male	Female
9	101

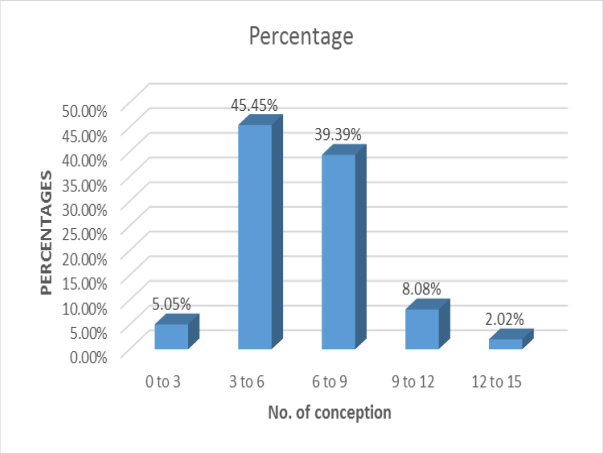

Fig. 3: Relation between incidence of gall-stones and number of conceptions.

Table 3: Relation between incidence of gall-stones and number of conceptions.

Conception	Number of Patients	Percentage
0-3	5	5.05%
3-6	45	45.45%
6-9	39	39.39%
9-12	8	8.08%
12-15	2	2.02%
Total	99	100%

Fat (F_3)

A negative trend is noted in the incidence of gall-stones in obesity as only 25.4% of the patients under study were above 60 Kg body weight while 40% were between 40 to 60 Kg and 34.54% were below 40 Kg. The females outnumbered the males in each group.

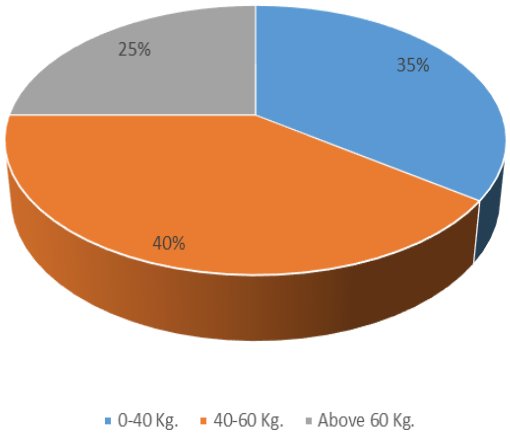

Fig. 4: Divided pie graph showing incidence of gall-stones in individuals of different body weight (110 patients).

Table 4: Incidence of Gall-Stones In Individuals of Different Body Weight In Either Sex.

Weight in kg	Number of Patients	Percentage	Male Percentage	Female Percentage
0-40	38	34.54	2.72	31.81
40-60	44	40.00	3.63	36.36
Above 60	28	25.45	1.81	23.63
Total	110	100	8.16	91.80

Fertility (F_4)

In the present study it was observed that the incidence of gall-stone decreased with increasing number of parity (Figure and Table 3), the maximum number of patients (45.4%) were those who conceived 3 to 6 times and the incidence decreased gradually as the number of conceptions increased. The sustained increase in estrogen level causes increase in the biliary cholesterol, as well as reduction in the bile salts thereby changing the ratio of the two. At the same time it also increases the stasis of the bile in the gall bladder but the decreasing trend after six conceptions is significant and invites us to think that sustained increase in estrogen level is not the sole determinant for gall-stone formation. It was concluded that etiopathogenesis of gall-stone has no definite relation with old age fat, fertile, flatulent, female of fifty.

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