

Gall Bladder Stone in a Tertiary Care Teaching Hospital in Mogadishu-Three Year Retrospective Study

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Abstract

Introduction: Gallstone disease, also known as gallbladder stones or GBS, is almost always asymptomatic but can result in a number of problems, including ascending cholangitis and obstructive jaundice. The frequency of gallbladder stones among patients who were sent for abdominal ultrasound at Mogadishu Somali Turkey Training and Research Hospital, Mogadishu, Somalia, during the period between January 2018 and June 2022 was assessed in this study. **Methods:** This is a record-based study that was carried out at the radiology department of Mogadishu Somali Turkey Training and Research Hospital on patients who were chosen for abdominal ultrasounds during the months of January 2018 and January 2022. The study focused on cases that occurred within those periods. Reports of abdominal ultrasounds served as the source of the collected data. **Results:** Records from 2352 patients are included in this study. They were divided into 451 (19.1%) males and 1901 (80.8%) females. Patients with GBS were present in 76.4 percent of cases. 73.2 percent of patients had big stones larger than 5 mm, while 53.4 percent of patients had several stones. GBS 1474 (77.5%) was substantially more common in females than in males (71.6%: 323/451) (P 0.008). The presence of small stones (less than 5 mm) was also shown to be significantly different between males and females (P = 0.015). Furthermore, compared with men, females

had a considerably higher frequency of big GBS (5 mm) (P 0.015). **Conclusion:** In this study, it was discovered that females were significantly more likely than males to have GBS. Small stones were found much more frequently in the males. When compared to men, females had a considerably higher frequency of large GBS.

Keywords

Gall Stone, Abdominal Ultrasound, Gall Bladder, Cholangitis, Gall Bladder Stone (GBS)

1. Introduction

A concentration of crystals deposits inside the gallbladder from bile components results in gallbladder stone formation [1]. Gallbladder stones are a common disease that is far more expensive than other digestive diseases [2]. Every year, about 700,000 cholecystectomies are performed in the United States, costing over 6.5 billion dollars. Gallbladder stones affect approximately 10% - 15% of white individuals in wealthy nations.

This high frequency-result is less common among black Americans, African citizens, Sub-Saharan Africans, and East Asians. Gallstones containing cholesterol predominate in developed nations, with black pigment stones accounting for around 15% of all stones. Gallbladder stones occur as brown-pigmented stones in the biliary system in East Asians, and are frequently accompanied by infections, parasites, or intra-hepatic duct stones [3]. In cholesterol and mixed stones, a female to male ratio of 6.4 to 1 has been recorded. With pigment stones, there is no female preponderance [4] [5]. Cholesterol, black pigment, mixed, and to a lesser extent, brown pigment stones are the most common forms of gallbladder stones [6]. Types and composition: Pure cholesterol stone (10%): are usually single (cholesterol solitaire), yellow, more than 2.5 cm in diameter and contain nearly 100% of their weight cholesterol [7]. Mixed stones (80%) are made up of 20% - 80% or 30% - 70% cholesterol. Calcium bilirubinate, calcium phosphate, and calcium palmitate are other forms of gallbladder stones [6]. Black pigment gallbladder stones and brown pigment gallbladder stones are among the pigmented stones [8]. Female gender, older people, obesity, pregnancy, consumption of contraceptive pills, hormone therapy, rapid loss of weight, Crohn's disease, high blood triglycerides, and the patient has Metabolic syndrome are all risk factors for cholesterol gallstones [9]. Symptoms and signs: Gallbladder stones are usually accompanied by no symptoms. The most common symptom of gallbladder stones is biliary colic. Cholecystitis, cholangitis, pancreatitis, jaundice, gangrene, sepsis, fistula, paralytic ileus, and malignancy are the most prevalent consequences. Gallbladder sludge is frequently linked to the symptoms and consequences of gallbladder stones; however, sludge does not usually cause issues on its own [9]. Abdominal ultrasonography is the most ac-

curate test for diagnosing gallbladder stones. Upper gastrointestinal ultrasonographic endoscopy, Magnetic Resonance Chol-angiographic Pancreatography (MRCP), chole-scintigraphy-Scan, Endoscopic Retrograde Chol-angiographic Pancreatography (ERCP), blood tests for the liver and pancreas, drainage from the duodenum and examination, oral chole-cysto-gram (OCG), and intravenous-cholangiogram are some of the other diagnostic procedures (IVC). Gallbladder stones are mostly managed by keeping the patient under surveillance and not treating them. Cholecystectomy, or entire removal of the gallbladder and associated stones, is a popular surgical operation for its treatment. Sphincterotomy is sometimes done to remove stones from the gallbladder. To dissolve stones, some oral medications can be utilized. Shock-wave lithotripsy (ESWL) is another treatment option. Gallbladder stone symptoms normally vanish following cholecystectomy, but if symptoms persist after cholecystectomy, some stones may have remained in the biliary channels, or there may be another issue within the biliary ducts.

The possibility of Oddi sphincter dysfunction could not be ruled out. Much research is looking into the possibility of a genetic component in gallbladder stone production [9]. In Ethiopia, a study was conducted at the Gondar University Hospital (between September 2004 and January 2006). Gallbladder stones were found to be 5.2 percent of the time [10]. In India, a significant amount of material on biliary lithiasis was published in 2003. According to ultrasound studies, the overall prevalence of biliary system stones was 11.56 percent, with a female to male ratio of 4:1 in patients under the age of fifty. A study focused on the risk factors and prevalence of gallbladder stones in Asir region of Saudi Arabia, which is a high-altitude region. According to their findings, gallbladder stones account for around 11.7 percent of all gallbladder stones in the Asir area [11]. The aim of this study is to find the prevalence of gallbladder stones among patients who had abdominal ultrasound in Mogadishu Somali Turkey Training and Research Hospital, from January 2018 to January 2022 in Mogadishu, Somalia.

2. Materials and Methods

2.1. Study Design, Subjects and Methods of Collecting Data

The study was retrospective study, which was From January 2018 to January 2022, in a tertiary care hospital in Mogadishu city. It was recorded all patients, both inpatient and outpatient, who present with abdominal pain, were referred to the Radiology Department for abdominal ultrasonography. Using a pre-designed standard tool, data such as age, gender, presence or absence of GBS, size of GBS, and number of GBS identified were collected from each patient's copy of abdominal ultrasound report.

2.2. Data Analysis

IBM SPSS Statistics for Windows 10.0 was used to examine the data (IBM Corp., Armonk, NY, USA). Tables and Figures are used to present the data. A chi-square

test was used to examine the relationship between categorical variables and GBS. T-Test determines differences in P values.

2.3. Ethical Clearance

The Mogadishu Somali Turkey Training and Research Hospital in Mogadishu, Somalia, approved the protocol. The Hospital committee informed the researcher that no informed consent was required because the data was obtained through the Hospital Information System. The data, on the other hand, was obtained anonymously and kept private.

3. Results

Records from 2352 referred patients were included in the current study, of whom 1901 (or 80.8 percent) were female and 451 (19.1%) were male. The mean age of patient was 49.8 (15.5%) (**Table 1**). Patients with GBS were present in 76.4% of cases. 53.4% of patients had multiple stones, and 73.2 percent of patients had large stones larger than 5 mm (**Figure 1**). The P value was 0.008, and the frequency of GBS was significantly higher in women (77.5%; 1474/1901) than in men (71.6%; 323/451). Males were more likely to harbour small stones less than 5 mm in size (the P value was 0.015). However, females were shown to have a considerably higher frequency of large GBS (5 mm) than males (**Table 2**).

The most common complications associated with gall stone were chronic cholecystitis, and the other findings which were seen include cholelithiasis without complications, septated (2 patients) and hydropic gallbladder (1 patient) (**Table 3**).

Table 1. Characteristics of patients underwent abdominal ultrasound in Mogadishu Somali Turkey Training and Research Hospital (MSTTRH), Mogadishu, Somalia, 2022 (n = 2352).

Variable	N (%)
Age of patients	Mean (SD) = 49.8 (±15.5)
Age groups (Years)	
20 - 30	500 (21.2)
31 - 41	629 (26.7)
42 - 52	456 (19.3)
53 - 63	359 (15.2)
≥64	408 (17.3)
Gender	
Male	451 (19.1)
Female	1901 (80.8)
Patient type	
In-Patient	532 (22.6)
Out-Patient	1820 (77.4)

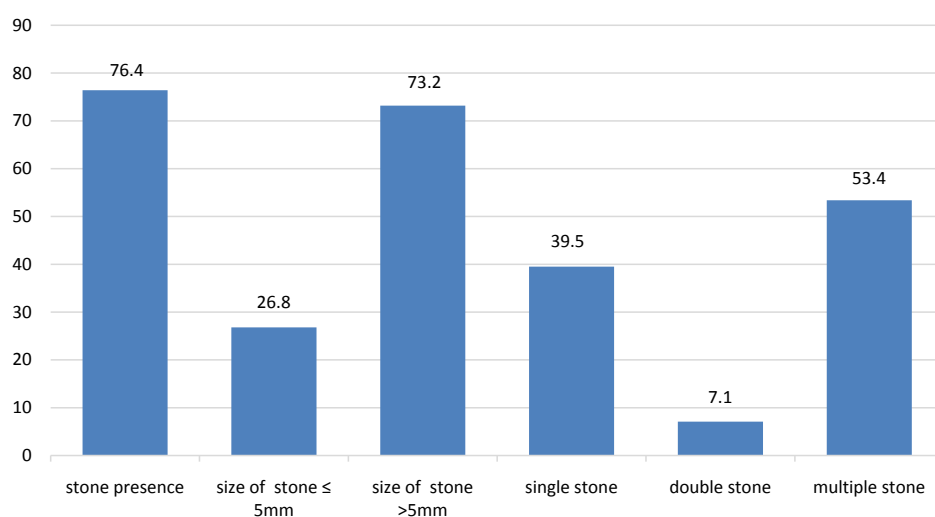
Table 2. Distribution of GBS according to gender and age among patients underwent abdominal ultrasound in MSTTRH, Somlia, 2022.

Variable	N (%)	Presence of GBS		Size of GBS			
		n (%)	p-value	<5 mm		>5 mm	
				n (%)	p-value	n (%)	p-value
Gender							
Male	451 (19.1)	323 (71.6)	0.008	95 (21.0)	0.015	228 (50.5)	0.015
Female	1901 (80.8)	1474 (77.5)		386 (20.3)		1088 (57.2)	
Age Group							
20 - 30	500 (21.2)	358 (19.9)	<0.001	111 (23.1)	<0.001	247 (18.8)	<0.001
31 - 41	629 (26.7)	458 (25.5)		128 (26.6)		330 (25.1)	
42 - 52	456 (19.3)	337 (18.7)		63 (13.1)		274 (20.8)	
53 - 63	359 (15.2)	267 (14.9)		55 (11.4)		212 (16.1)	
≥64	408 (17.3)	377 (21.0)		124 (25.8)		212 (16.1)	

Abbreviations: N; number of patients examined, n; number of patients with GBS, GBS; gallbladder stone.

Table 3. Other findings of abdominal ultrasound associated with gall bladder stone. MSTTRH, Somlia, 2022.

Complications	Number of Patients	Percentage (%)
Cholelithiasis With no complication	1724	96
acute cholecystitis	5	0.2
chronic cholecystitis	52	2.9
perforated gallbladder	2	0.15
polyp	11	0.6
septated GB	2	0.15
hydropic	1	0.0
Total	1979	100

**Figure 1.** Frequency of GBS among patients underwent Abdominal Ultrasound in Mogadishu Somali Turkey Training and research Hospital.

4. Discussion

In this study, the prevalence of GBS at tertiary care teaching hospital in Mogadishu was (76.4%), 71.6% were males and 77.5% were females.

In comparing the prevalence of the GBS in Somalia to Yemen is much more (71.6% in Somalia, 5.5% in Yemen with male to female ratio was male (3.2) and female (8.0) [2]. The mean of age of all patients in this study was 49.8 and standard deviation was (± 15.5 but in Yemen's study the mean of age was 37 and standard deviation was 17.2 [2]. The prevalence of GBS according to gender in our study among females was (77.5%), and among males was (71.6%), and in comparing with previous studies, the study done in Yemen the prevalence of GBS among females was (8%) and among males was (3.2%) [2] and in the study done in Ethiopia the prevalence of GBS among female was (5.4%) and among male was (3.1%) [3], and in the study done in India the prevalence of GBS among female was (9.3%) and among male was (2.3%) [12]. This reveals that females are more affected by GBS than males in all studies because gender could be an important risk factor in formation the GBS.

The number of GBS in our study appears more as multiple (53.4%) similar to the Yemen study in which the multiple GBS represents 64.4% [2]. There is similarity of the results between both studies in which mixed stones are the common type of GBS. But Asir's study showed that single stones are more common (63.3%) [11]. The prevalence of gallbladder stones was 11.7% [11], much lower than the prevalence in this study which is 76.4%. The difference between Asir's study and this study regarding the number and prevalence may be due to difference in food habits between two countries in Somalia red meat forming the main dish in the three meals while in Saudi Arabia the main dish is mostly vegetables and white meat.

The common size of GBS in this study was Large ≥ 5 mm (43.6%), while in Indian study was small 2 - 4 mm (37%) [12]. In our study the large size of stones is more frequencies in all age intervals. Female genders are more affected by large size stone.

Limitation of the Study: The size and number of gall bladder stones were studied. We are unable to provide any light on the type of gallstone.

Chemical/spectrophotometric analysis of postoperative specimens would have been ideal which is beyond our scope. In Somalia, gallstone disease is a significant cause of morbidity. To evaluate the prevalence of gallstones in a population, ultrasonography is a helpful tool. Compared to the male population, our female population has a considerably higher risk of having gallstone disease at a younger age.

5. Conclusion

The prevalence of GBS was (76.4%). Females had significantly more affected than males. The most common size of GBS in our study was large. The most common number of GBS in our study was multiple. The most common patient type of

GBS was out-patient type and the most common complications associated with gall stones were chronic cholecystitis. As the study is based in a hospital setting, the true prevalence in the general population could be lower than 76.4%. Hence, a community based interdisciplinary and multi centered study is recommended.

Declarations

Ethics Approval and Consent to Participate

This research project was conducted in accordance with the Declaration of the Hospital and was approved by Mogadishu Somali Turkish Training and Research Hospital. (No 9197). Informed consent for research participation was obtained from patients.

Availability of Data and Materials

The data is available from the corresponding author and can be accessed if requested.

Authors' Contributions

A.A.M: brought the idea of the study, performed data collection, prepared the manuscript, and final revision.

N.M.S.O: performed data collection.

N.A.M & F.N.A: performed data collection.

L.M.M & A.A.A: performed data collection.

J.A.O: participated in the data Analysis. All authors read and approved the manuscript before submitting.

Conflicts of Interest

We declare that we have any no competing of interest.

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