Ultrasound Prevalence of Gallbladder Disease in Hail, Saudi Arabia

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Abstract: Objective: Cholestasis is one of the most common gastrointestinal disorders requiring hospitalization. While different factors influence gallstone formation, these factors are not the same in different cultures or geographical locations. We determined the prevalence of gallbladder disease as assessed by ultrasonography and its complications in Hail City, Saudi Arabia. Methods: Patients who underwent emergency or elective abdominal ultrasonography at King Khalid Hospital, the largest tertiary hospital in the Hail region of Saudi Arabia, between January 2013 and December 2013 were retrospectively analyzed. Results: Of the 4552 patients analyzed, 494 (10.9%) had gallstones. Of these 494, 173 (35%) were male, 321 (65%) were female and 337 (68.2%) were aged >35 years. Three hundred twenty-six patients (66%) had multiple stones, whereas 168 patients (34%) had a single stone. Marked and mild wall thickening were found in 180 patients (36.4%) and 155 patients (31.4%), respectively. Common bile duct dilatation was present in 36 patients (7.3%), fatty liver in 106 patients (21.5%), hepatomegaly in 36 patients (7.3%), cirrhosis in 20 patients (4%) and ascites in 21 patients (4.3%). Of the 494 patients, 335 (67.8%) were symptomatic. Saudi females had the highest prevalence of gallbladder disease (60.1%) followed by Saudi males (31.6%), non-Saudi females (4.9%), and non-Saudi males (3.8%). Conclusion: The prevalence of gallbladder disease was higher in Hail City compared with other cities in Saudi Arabia.

Keywords: Ultrasound Prevalence Gallbladder Disease Hail Saudi Arabia

1. Introduction

Gallstone disease represents a significant burden for health care systems worldwide. Gallstones are more common in women than in men (24% vs. 12%). Symptomatic disease occurs in 10–20% of patients. Gallstones can occur anywhere within the biliary tree. Causes of gallstone formation include active bile saturation, cholesterol precipitation, crystal formation, impaired gallbladder function, and diminished intrahepatic circulation of bile acid. Gallstones are of three types: cholesterol stones, mixed stones, and pigment stones. Mixed stones are the most common (80%) followed by cholesterol stones (15%) and pigment stones (5%).

Ultrasound is the most sensitive and specific diagnostic test in suspected gallstone or biliary disease, such as biliary lithiasis. Diagnostic ultrasound is also advantageous in terms of its noninvasiveness and cost-effectiveness. Although the diagnostic sensitivity of ultrasound is operator dependent, generally this method is highly specific and sensitive (>95%). On ultrasound, the stone-filled gallbladder demonstrates a wall-echo-shadow sign. The prevalence of gallstone disease varies according to geographical location. The average prevalence of gallstone disease in Western countries is estimated to be more than 10%. More than 15% of the North American population suffers from gallstone disease. In Asian countries, the prevalence of gallstone disease is approximately 10%, whereas the rate in African countries is less than 5%. On the other hand, the average prevalence in Middle Eastern countries ranges from 4–12%. The increase in prevalence may be due to lifestyle and dietary (high-energy diet consumption) modification over the last few years. Epidemiological investigation of gallstone disease is important for prevention and improvement of diagnostic and therapeutic strategies.

The objective of this study was to evaluate the prevalence of gallstone disease in Hail, Saudi Arabia.
patients, 494 patients had gallstones (10.9%). Of the 494 patients with gallstones, 173 (35%) were males, 321 (65%) were females, and 337 (68.2%) were aged >35 years. Three hundred twenty-six patients (66%) had multiple stones, whereas 168 patients (34%) had a single stone. Most patients (335, 67.8%) had wall thickening. CBD dilatation was present in 36 patients (7.3%). Fatty liver, hepatomegaly, liver cirrhosis, and ascites were present in 100 (21.5%), 36 (7.3%), 20 (4%), and 21 (4.3%) patients, respectively.

We further analyzed the prevalence of gallbladder disease according to gender and nationality. Saudi females had the highest incidence of gallbladder disease (297/494, 60.1%) followed by Saudi males (156/494, 31.6%), non-Saudi females were 24 patients (4.9%), and non-Saudi males were 17 patients (3.8%). Of the Saudi patients, 106 male patients (31.4%) and 200 female patients (59.3%) had wall thickening. CBD dilatation was present in 8 male patients (35.1%) and 100 female patients (59.5%) had a single stone. CBD dilatation was present in 8 male patients (22.2%) and 23 female patients (63.9%), wall thickening in 101 male patients (30.1%) and 200 female patients (59.7%), fatty liver in 29 male patients (27.4%) and in 60 female patients (56.6%), ascites in 9 male patients (42.9%) and 11 female patients (52.4%), hepatomegaly in 5 male patients (13.9%) and 25 female patients (69.4%), and cirrhosis in 10 male patients (50%) and 10 female patients (50%).

We analyzed the number of gallbladder calculi at the time of presentation. Gallstone type (cholesterol/mixed/pigment stones) was not determined and was a limitation of our study. Although chemical and spectrophotometric analysis of postoperative specimens would have been ideal, this was beyond the scope of our study.

In conclusion, gallstone disease is a major cause of morbidity in Saudi Arabia. Real-time ultrasonography is a useful tool to assess gallstone disease burden in individual communities. The female population of Saudi Arabia was found to have a higher risk of developing gallstone disease at an earlier age compared to the male population.

References


Figure 1: Prevalence of gallbladder disease in Hail city

4. Discussion

Gallstones are a major cause of hospital admission, morbidity and mortality, particularly in developing countries. Gallstones account for more than 95% of biliary tract disorders. This study evaluated the prevalence of gallbladder disease among Saudi and non-Saudi patients in the Hail region of Saudi Arabia, with the aim of furthering our understanding of the epidemiology of gallstone disease in this region. Furthermore, we analyzed stone number, wall thickness and complications according to gender and nationality. The worldwide prevalence of gallstone disease as assessed by ultrasonography is reported to be between 5.9–21.9%. This variability in gallstone prevalence may be related to differences in diet and lifestyle. Gallstones can occur at any age; however, the incidence increases with age and is most prevalent in the 4th and 5th decades of life. Studies have shown that gallstones are more common among females than males. Most of these studies have been performed at hospitals in Western countries.