

Incidental gallstones on sonography: a retrospective study

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Abstract

Background: Protocol for routine abdominal ultrasonography often begins with and usually incorporates the right upper quadrant scan. The liver and the gallbladder are well visualized in this body region and any gallstones can be seen more so with the routine preparation of overnight fasting.

Methods: A retrospective review of the records of all the patients who underwent abdominal ultrasonography investigation at the Radiology department of our teaching hospital over a seventeen month period (August 2011 and December 2012) was done with attention to those with sonographic diagnosis of gallstones.

Results: A total of 3747 records of the patients that had

abdominal sonographic scan comprising 1658 males and 2089 females were studied. Overall, 44 patients (1.2%; 20 males and 24 females) were found with gallstones on ultrasonography. 28 (0.75%) individuals made up of 13 males and 15 females had incidental gallstones.

Conclusion: Gallstones as incidental findings in patients who are referred for sonography for otherwise non-biliary disease are seldom seen.

Keywords: Incidental gallstones, Abdominal, Ultrasonography

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Introduction

Incidental gallstones otherwise called asymptomatic or 'silent' gallstones refers to the condition where gallstones are detected in the absence of related symptoms such as biliary colic or gallstone-related complications including cholecystitis, pancreatitis, and obstructive jaundice. Gallstones (cholelithiasis) occur worldwide, and are found commonest among North American Indians and Hispanics but less common in Asian and African populations.¹ Gallstones occur when there is an imbalance in the chemical constituents of bile that result in precipitation of one or more of the components. They vary in size and shape from as small as a grain of sand to conglomerates as large as a golf ball.²

Widespread availability and use of ultrasound scan as a primary diagnostic imaging modality in cases of severe or vague abdominal symptoms provides a quick guide to decision making. This has led to the increasing detection of clinically unsuspected gallstones. Ultrasonography has a sensitivity of 90-95% and a specificity of 88-96% in detecting stones 2mm in diameter.³

Gallstones are becoming increasingly common; being seen in all age groups, with the incidence increasing with age.⁴ About a quarter of women over

60 years will develop gallstones.⁵ In most cases they are asymptomatic with a benign natural course, and a low average risk of progression from asymptomatic to symptomatic disease.^{6,7} This study seeks to determine the prevalence of detectable asymptomatic (incidental) gallstones in a population of patients that had sonographic scan of the abdomen in a retrospective review.

Materials and Methods

A retrospective review of the records of 3747 patients who underwent abdominal ultrasonography investigation at the Radiology department of the Jos University Teaching Hospital between August 2011 and December 2012 was carried out. All investigations were carried out with either a GE LOGIQ 5 Expert multipurpose ultrasound scanner or ALOKA Prosound SSD-3500 scanner both fitted with 3.0-5.0MHz real time sector transducers. The records included among other data, the age, sex, provisional diagnosis and the findings on ultrasonography. The findings were scrutinized for those with gallbladder stones with or without other sonographic diagnoses and these were extracted from the pool for further analysis with their age, sex, and provisional diagnosis. To be considered as 'incidental', sonographically detected gallstones must not be associated with sickle cell disease in crisis, hepatobiliary disease, epigastric and/ or right upper quadrant pain and acute pancreatitis.

Data was entered into a statistical software package (SPSS 20.0) and, where appropriate, standard deviation (SD) was calculated and statistical significance of the means was estimated using the Student t test. Chi-

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square was used to determine the statistical significance of the difference in proportions. Statistical significance was set at $p < 0.05$.

Results

A total of 3747 records of the patients that had abdominal sonographic scan comprising 1658 (44.2%) males and 2089 (55.8%) females were studied. Overall, 44 patients (1.2%; 20 males and 24 females) were found with gallstones on ultrasonography. Twenty eight of the 3747 (0.75%) individuals made up of 13/28 (46.4%) males and 15/28 (53.6%) females were found with incidental gallstones ($p = 0.043$). The mean age of the patients with cholelithiasis from any cause was 49.00 ± 16.40 years while the mean age of all the patients that were found with incidental gallstones was 54.68 ± 15.77 years ($p = 0.02$). The males with incidental gallstones were older than the corresponding females (61.08 ± 14.25 and 49.13 ± 15.33 years respectively, $p = 0.043$). Thirty patients (68.2%) above the age of 40 were found with gallstones while 14 (31.2%) were below 40 years of age.

Discussion

In our review of the 3757 cases of abdominal sonography, we discovered an overall prevalence of 1.2% of the study but incidental gallstones had a prevalence of about 0.75%. We also found that females had more incidental gallstones compared to men. Our study reveals that incidental gallstones are seldom seen. It further confirms that gallstone disease is more associated with the female sex.^{4,8}

Our findings compare with previous reports. In an ultrasound based study on the prevalence of gallstone disease involving 1896 British subjects comprising 1058 females and 838 males, gallstones were found in 48 females and 44 males.⁹ Also Khurro et al¹⁰ investigated 1104 subjects with ultrasonography and detected gallstones in 49 of them, 3 of whom had previous biliary symptoms. However, Cuchiarro et al¹¹ reviewed the clinical profiles of 139 patients with gallstones found coincidentally on abdominal ultrasonography for various indications and observed that 14/139 (10%) had symptoms attributable to cholelithiasis at the time of gallstone detection.

There is enough evidence that most incidentally discovered, clinically silent gallstones rarely have clinical significance and that affected patients will live and die with their gallstones having never caused any pain or other medical problems.¹² It is still poorly understood what determines whether gallstones are asymptomatic or silent. but research finding suggesting that a gallbladder harbouring stones has an enhanced sensitivity to cholecystokinin may point to factors within the gallbladder itself.¹³

There were some limitations to our study that must be taken into consideration. Ultrasonography is highly

operator dependent even in a tertiary health institution with trained hands like ours. The subjects from the Emergency Rooms with acute abdomen did not undergo routine preparation before ultrasonography. We did not include sludge in the gallbladder as positive for gallstones. It is a known precursor of gallstones and which sometimes causes biliary pain, cholecystitis or acute pancreatitis.¹⁴ Some of the patients in our study population may have had cholecystectomy for cholelithiasis and these without gallbladder may have been inadvertently included as those with absence of gallstones. Finally, we also excluded from the study population, females who were referred strictly for pelvic studies only.

In conclusion, the incidence of gallstone disease is on the increase worldwide. They are infrequently seen as 'incidental' findings in patients who are referred for abdominal ultrasonographic examination for other symptoms and signs not related to biliary disease. Further studies on the subject should be a planned prospective study which should include a follow-up period on the clinical outcome for local data.

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