

Silent Gallstone in Children: An Epidemiological Study from Shiraz, Southern Iran

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Abstract

Background: Frequent use of ultrasonography in recent years had led to the incidental diagnosis of gallstones in children. There is no information regarding gallstones especially asymptomatic cases in Iranian children. The objective of this study was to review the cases of gallstone diagnosed at our center. **Method:** All outpatient cases with sonographic diagnosis of gallstone from May 2002 through May 2012, whom had referred to the gastrointestinal clinics of Shiraz University of Medical sciences, were followed. **Results:** A total of 105 cases (65 male and 40 female subjects), mean age of 5.5 ± 3 years (range 5 months to 13 years) with diagnosis of gallstone were followed for a mean of 2.3 ± 2 years. Only one subject had symptoms in favour of biliary disease, all other patients were assumed as having silent gallstone (99%). Also here in this research 85% of our cases had no specific predisposing factor for gallstone. **Conclusion:** Here we have reported a far more percent of silent gallstones in our children from Southern Iran, compared to previous literature.

Key words

Asymptomatic; Children; Gallstone

Introduction

Cholelithiasis is a relatively uncommon disease in children. However in recent years the frequent use of ultrasonography for various abdominal complaints has led

to the incidental diagnosis of gallstone in apparently asymptomatic children.^{1,2} Risk factors such as haemolytic disease, hepatobiliary disease, obesity, total parenteral nutrition, and sepsis, can predispose an individual to gallstones.² There are no information regarding gallstones especially asymptomatic cases in Iranian children. The objective of this study was to report the cases of gallstone diagnosed at our centre.

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Method and Material

From May 2002 through May 2012 all outpatient cases with sonographic diagnosis of gallstone that had been referred to the Gastrointestinal Clinics of the Shiraz University of Medical Sciences; the referral centre for pediatric gastrointestinal problems in Southern Iran, were followed. Gallstones were defined as intraluminal, echogenic, mobile foci that were gravity-dependent and created a clean acoustic shadow in the gallbladder. At the first visit the patient's demographic information (including the patient's age, sex, place of living), their weight and

height for calculation of body mass index (BMI), medical history, predisposing factors (e.g. haemolytic disease, total parenteral nutrition, drug consumption, inflammatory bowel disease, short bowel syndrome, Down syndrome), any positive family history of gallstone in first degree relatives, symptoms such as abdominal pain or jaundice if present, and imaging findings were recorded in a data gathering sheet. The patients were visited routinely in 6 month intervals with annual sonography. Also facts regarding the course of the patient's illness considering the development of any complications and the possible treatments received were traced in each follow up visit. Finally statistical analyzes was carried out by using the Statistical Package for the Social Sciences (SPSS) version 16.0.

Results

A total of 105 cases (65 male and 40 female subjects), mean age of 5.5 ± 3 years (range 5 months to 13 years) with diagnosis of gallstone were followed for a mean of 2.3 ± 2 years (Table 1). All cases except one were asymptomatic at the time of diagnosis with an incidental finding of gallstone through abdominal sonography carried out due to other reasons; the one symptomatic case was referred due to a vague abdominal pain. None of the patients had BMI >95 . Only 3 cases were born premature (<37 week of gestation). Most subjects ($n=75$) were exclusively breast fed for 6 months. Ninety three cases resided in urban area and 12 cases lived in rural regions. Sonographic findings had mostly revealed between one to three stones in the gallbladder (77%), in 4 subjects only biliary sludge was reported and in 20 patients more than 3 stones were seen. There was no statistical significance regarding the image findings and the patient's symptoms ($p=0.37$). Considering the possible predisposing factors for gallstones in children, none of our patients had any history or laboratory data in favour of haemolytic diseases such as RH or ABO incompatibility, hereditary spherocytosis, sickle cell anaemia, or thalassaemia major. Only 3 of our subjects had G6PD deficiency and 2 were diagnosed as thalassaemia minor. In review of potential causes of cholestasis as a risk factor in our cases, there was no history of biliary obstruction or specific drug intake. Only one subject was diagnosed as sepsis at one month of age and 11 subjects had received phototherapy for treatment of neonatal hyperbilirubinaemia. None of our cases had diseases such as inflammatory bowel disease, short bowel syndrome, or

malignancies. We had only one case of Down syndrome in our patients. Six subjects had a positive family history of gallstone in their first degree relatives (Table 2). Our cases were followed for a mean of 2.3 ± 2 years, with visiting intervals of at most 6 months and annual follow up sonography. None of the patients received any treatment for their gallstones. Spontaneous resolutions of gallstones were seen in 8 subjects (7.6%).

The gallstones had remained without any change in all the other subjects. Complications were not observed in our cases in the course of follow up, except for 1 patient who developed cholecystitis for whom cholecystectomy was performed.

Discussion

Gallstones can be seen in children of all ages, even neonates.³ However in contrast to the adult population epidemiologic studies about cholelithiasis in children are inadequate.⁴ In fact there is no previous information regarding gallstones in children from our geographic region in Southern Iran.

The most common presentation of gallstones in adults is the biliary colic defined as cramping pain in the middle to right upper quadrant of the abdomen. However young patients mostly present with nonspecific symptoms such as irritability.⁵ Meanwhile it is said that nearly two thirds

Table 1 Demographic characteristic of the 105 study cases

	Number/percent
Male	65/61.9
Female	40/38
Exclusive breast feeding	75/71.4
Prematurity	3/2.85
Mean age	5.5 ± 3

Table 2 Potential risk factors for gallstone the study population

Risk factor	Number/percent
G6PD deficiency	3/2.85
Minor thalassaemia	2/1.9
Phototherapy for neonatal hyperbilirubinaemia	11/10.47
Sepsis	1/0.95
Down syndrome	1/0.95
Positive family history of gallstone	6/5.7

of adult subjects with gallstones are asymptomatic.⁶ In this study, of the 105 reviewed cases only one subject had symptoms in favour of biliary disease, all other patients were assumed as having silent gallstone (99%). In a similar epidemiologic study carried on by Bogue et al in Canadian children revealed only 50.5% of their cases asymptomatic at the time of diagnosis.² Also a systematic review of literature by Poddar in 2010 have reported that about 20% of children with cholelithiasis can be asymptomatic.⁴

Considering the predisposing factors associated with gallstones in children, haemolytic diseases, total parenteral nutrition, systemic infections, ileal diseases, and congenital biliary diseases have been implicated as the most frequent in many studies.²⁻⁴ However in our present study, only one patient had a positive history of neonatal sepsis otherwise no other patient had any of the mentioned associated findings. The direct relation between cholelithiasis and phototherapy has been assessed in various researches;⁴ in the present study eleven patients had a positive history of phototherapy in their neonatal period.

In some counties worldwide, the increased frequency of gallbladder diseases have been shown among patients with Down syndrome,⁷⁻¹⁰ among our 105 cases we also had one case of Down syndrome.

In different literatures the causes of gallstones have been reported as idiopathic in about 20% to 65% cases.^{3,11} Here in this research 85% of our cases had no specific predisposing factor for gallstone.

Data regarding the approach to treatment in children with gallstone are controversial. While some recommend cholecystectomy for treatment of gallstones in asymptomatic children,¹² others do not suggest the routine performance of cholecystectomy except for those individuals with high risk of complications (e.g. patients with a base of haemolytic disease).^{4,11} In fact these literature propose that clinically silent gallstones in children are associated with low rates of complications and therefore conservative management is recommended.² In our study cholecystectomy was performed in only one subject following cholecystitis, all other patients were followed without treatment and in fact spontaneous resolution of gallstones were seen in only 8 of our 105 cases.

Conclusion

Considering the fact that the gastrointestinal clinics affiliated to the Shiraz University of Medical Sciences are

considered as the referral centre for pediatric gastrointestinal problems in Southern Iran, therefore here in this study we have reported a far more percent of silent gallstones in our children from Southern Iran, compared to previous literature. Regarding the fact that most of our cases had no known predisposing factor for their cholelithiasis, further investigation on this issue is recommended in our geographic region.

Declaration of Interest

All authors state that there are no conflict of interest in this paper, and that also, this research has not been financially supported by any institution or organisation.

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