

## Case Report

# Cholelithiasis-diagnostic approach: are clinical presentations in children different?

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**Received:** 03 January 2022

**Accepted:** 04 April 2022

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### ABSTRACT

Cholecystitis has been considered an uncommon entity in children, but it's incidence is reportedly increasing which may be attributed to widespread use of diagnostic imaging (ultrasonography). A healthy 11-year-old female Indian child presented to the emergency department with a chief complaint of abdominal pain. The pain was at the epigastric region and accompanied with vomiting. As per the complete examination and findings, a diagnosis of constipation colic was made. A month later, the patient presented with the same chief complaint, but general physical examination revealed tenderness at the right hypochondrium, and Murphy's sign was positive. Upon performing an abdominal ultrasound, multiple small gallstones were noted in an otherwise normal gallbladder. No biliary obstruction was seen. A diagnosis of acute cholecystitis was made. Patient was then admitted and treated with a course of antibiotics. The incidence of cholelithiasis in children has not been sufficiently studied. The incidence of cholecystitis in India was found to be 0.3% with the incidence in age group 0-10 being less than 0.1%. In contrast to adult cholecystitis, it has been found that there is female predominance of cholecystitis in children. In children, 20% to 50% gallstones are radiopaque. Unknown causes are still prevalent in stone formation. Hence, the purpose of this paper was to increase awareness about the diagnosis of cholelithiasis in children. The probability of cholecystitis in children should not be ignored. Cholelithiasis should always be considered as a differential diagnosis when children present with complaints of abdominal pain.

**Keywords:** Children, Cholelithiasis, Cholecystitis, Gallstones

### INTRODUCTION

Children with cholelithiasis, may be either symptomatic or asymptomatic. Cholelithiasis is detected incidentally or via diagnostic evaluations due to the presentation of symptoms. In contrast to adulthood, cholelithiasis has been considered an uncommon entity in children, but its incidence is reportedly increasing which may be attributed to widespread use of diagnostic imaging (ultrasonography).<sup>1</sup> Gallstones found in adults are primarily cholesterol stones or mixed stones but in children pigment stones are formed because of hemolytic

diseases like sickle cell anemia, thalassemia and hereditary spherocytosis are more common. In India, cholelithiasis is 7 times more common in northern, than in Southern India.

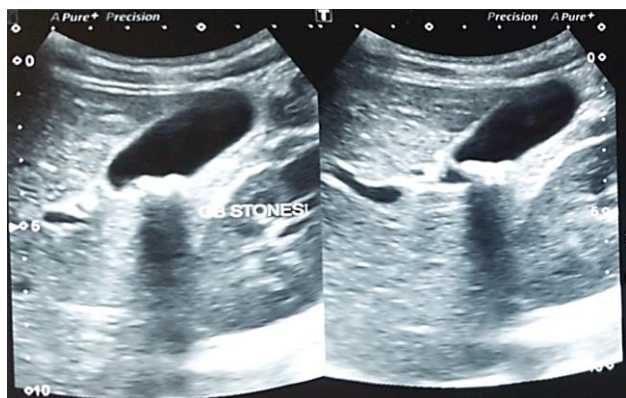
Also, it has been reported that gall stones in northern India are predominantly cholesterol or mixed stones while that in southern India are pigment stones.<sup>2,3</sup> In Turkey, showed 50% of cases has no risk factor for stone formation.<sup>8</sup> The purpose of this paper was to increase awareness about the diagnosis of cholelithiasis in children.

## CASE REPORT

A healthy 11-year-old Indian female child presented to the emergency department. The chief complaint was abdominal pain for 3 days. The pain was located at epigastric region and non-radiating in nature, accompanied with vomiting (food content), fever and passing hard stool, daily. There was no other associated history like icteric sclerae, pruritus or bleeding tendencies. Patient was febrile and vital signs were within normal limits. General physical examination was unremarkable, however, digital rectal examination revealed impacted stools.



**Figure 1: Abdominal X-ray- radiopaque calculus at right hypochondrium region.**



**Figure 2: Ultrasound hepatobiliary system- gallstones seen within gallbladder.**

Routine laboratory examination was within normal limits, except for the finding of microscopic hematuria. Full blood counts were unremarkable. Abdominal X-ray showed a fecal loaded picture. In conjunction with the complete examination and findings, a diagnosis of constipation colic was made, after consulting the expertise of obstetrics and gynecology and surgical team.

The child was then discharged home with medications and a follow up appointment at the surgical outpatient department in 2 weeks and was advised, should her symptoms worsen, to come immediately to the emergency department.

A month later, the patient was seen in the surgical clinic, where the chief complaint had no resolution and it was associated with diarrhea. The patient was afebrile and general physical examination revealed tenderness at the right hypochondrium region and Murphy's sign was positive. Repeated abdominal X-ray showed a well-defined radiopaque calculus at the right hypochondrium region (Figure 1). Ultrasound showed that the gallbladder is well-distended, with few gallstones seen within an otherwise normal gallbladder wall (Figure 2). No biliary obstruction seen. As per the complete examination and findings, a diagnosis of acute cholecystitis was made. Patient was admitted and treated with a course of antibiotics.

## DISCUSSION

The probability of cholelithiasis in children should not be ignored. Incidence of cholecystitis in children had not been sufficiently studied. Cholecystitis should always be considered as a differential diagnosis when young patients presented with complaints of abdominal pain. Hence, the purpose of this paper was to increase awareness about the diagnosis and management of cholelithiasis in children. As per a study conducted by Ganesh et al the incidence of cholecystitis in India was found to be 0.3% with the incidence in age group 0-10 being less than 0.1%.<sup>5</sup> In a series of 45 pediatric cholecystectomies from university hospital of Split, Croatia, cases were predominantly female. The median age was 11 years in the period 1998-2007, with an increase to 15.5 years old in the period 2008-2017.<sup>7</sup> The age median of children has increased, while female sex had consistently prevailed.<sup>7,8</sup> In contrast to adult cholecystitis, it had been found that there was female preponderance of cholecystitis in children.<sup>8</sup> Some earlier studies, it had been documented that female children were more at risk for developing gall stones making this case even rarer. Since the patient did not have any bleeding tendencies or family history of cholecystitis of infancy, the exact pathogenesis cannot be outlined.<sup>9</sup> According to Poddar et al the etiologies of cholelithiasis in the Indian pediatric population were hemolytic (20-30%), idiopathic (30-40%) and other causes like total parenteral nutrition, congenital biliary disease, ileal disease (40-50%).<sup>3</sup> Unknown causes were still prevalent in stone formation. Majority of these patients presented with typical biliary symptoms (50%).<sup>3</sup> In Turkey, Serdaroglu et al had conducted a study with 70 patients, where 80.4% of the 51 symptomatic cases had typical symptoms like abdominal pain and vomiting.<sup>8</sup> Diarrhea with atypical symptoms or constipation and fever. In a series of 18 pediatric laparoscopic cholecystectomies from South India, 75.2% cases were idiopathic.<sup>6</sup>

The increased use of ultrasound for every case of pain in the abdomen also had helped in establishing a diagnosis gallstone as well as biliary sludge.<sup>10</sup> The sensitivity and specificity of ultrasonography exceeded 95% for cholelithiasis. In children 20% to 50% gallstones were radiopaque.<sup>11</sup> An abdominal X-ray and/or early ultrasound confirmation was recommended for all children who present to the emergency department with a vague abdominal pain.

## CONCLUSION

The probability of cholelithiasis in children should not be ignored. Cholecystitis should always be considered as a differential diagnosis when children present with complaints of abdominal pain. Hence, in tertiary care centers equipped with facilities like X-Ray machines and ultrasound machines, a radiological investigation is warranted for early diagnosis and management of such pediatrics problems.

## ACKNOWLEDGEMENTS

We would like to thank the Director General of Health Malaysia for his permission to publish this article (NMRR-20-887-54489).

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Rajoo TS, Naidu J, Naidu S, Ramli JM, Khairy AM. Cholelithiasis-diagnostic approach: are clinical presentations in children different? *Int Surg J* 2022;9:1071-3.