

CHANGING SPECTRUM OF GALLSTONE DISEASE: AN EXPERIENCE OF 23 CASES LESS THAN 10 YEARS OF AGE

Malik AM, Khan A, Sheikh U, Sheikh S, Laghari AA, Talpur KA

Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan

Background: An overall increase in the incidence of paediatric cholelithiasis forms the basis of this study, which aims to investigate the overall changing clinical pattern of cholelithiasis. **Methods:** This is a retrospective observational descriptive study including twenty three (23) patients with gallstones admitted and operated during June 2006–June 2008 in surgical department of a teaching hospital. All the patients with sonological evidence of gallstones, less than 10 years of age with history of acute or chronic abdominal symptoms are included in the study population. After admission all the subjects were investigated and finally operated by open approach (21 patients) during the same admission. The details of all the patients were recorded on a proforma and statistical analysis done on SPSS version 12. **Results:** Of the total study population, there were 19 (82.6 %) males and 4 (17.39%) females with a mean age of 7 years and a range of 4–10 years. Ultrasound revealed gallstones in all the patients with a varying proportion of the walls of gallbladder. The commonest presentation was abdominal pain in the right upper quadrant, which was vague, and of mild to moderate intensity. In 21 (91.30%) patients, no specific underlying cause was found while two patients (8.6%) had haematological disorder as underlying cause for the gallstones. **Conclusion:** This study indicates an alarming increase in the incidence of idiopathic gallstones in children less than 10 years of age with a distinct male predominance.

Keywords: Cholelithiasis, children, idiopathic gallstones, Haematological disorders.

INTRODUCTION

Gallstone disease is a common problem in elderly women and there has been a very well known association of this disease with obesity and multiparity. The disease has been found very infrequently in children.¹⁻⁴ There is a dramatic change in the overall spectrum of this disease and a global increase in the incidence in young children.⁵⁻⁸ This has been attributed to a better understanding of acute paediatric problems coupled with efficient use of Ultrasonography.⁹ In addition, a number of conditions have a proven association with the formation of gallstones in children including TPN, Haematological disorders, Sepsis, and hepato biliary disease.¹⁰⁻¹² Furthermore, an association with use of ceftriaxones is also claimed to act as a strong factor causing cholelithiasis in children.^{3,13} This study documents an alarming increase in the incidence of cholelithiasis in children.

SUBJECTS AND METHODS

It's a retrospective descriptive study conducted in a teaching hospital from June 2006 through June 2008, including 23 patients of ultrasonologically confirmed cholelithiasis, less than 10 years of age. The study population includes both males and females. All patients with ultrasonologic evidence of calculi were included and those with sludge and gravel as well as patients over ten years of age were excluded from the study. In addition to ultrasound, LFT's, complete blood picture, a peripheral smear, and plain x-ray abdomen were performed in all patients. The details of all these patients including presentation, laboratory work up, treatment

offered and outcome are recorded on a proforma and statistically analysed on SPSS-12.

RESULTS

Twenty-three patients of symptomatic cholelithiasis under 10 years of age are evaluated in this study. The sex distribution in the study population is shown in Figure-1 with an obvious male dominance. The mean age of study population is 7 years with a range of 4–10 years. The commonest presenting feature was vague upper quadrant abdominal pain with or without associated nausea and vomiting as shown in Figure-2. Fourteen (61%) patients had simple gallstone disease without any complication while acute and chronic cholecystitis was found in 3 (13%) and 4 (17%) cases respectively as shown in Table-1. All the complications were more common among the male patients compared to the female counterparts. In 21 (91%) patients no specific underlying cause or predisposing factor was found on laboratory and clinical work-up while only 2 (9%) patients were found to have sickle cell disease as the underlying cause of the gallstones. Three of the patients had a positive family history of gall stones while one patient had diabetes mellitus diagnosed at the age of 4 years. Remaining patients had insignificant history with regards to the present illness. Twenty-one (91.30%) patients were operated by open cholecystectomy while 2 (9%) patients were treated conservatively. Maximum number of patients (75%) was discharged in 3–6 days as shown in Figure-3. There were no complications due to surgery other than one case of wound infection that led to partial wound dehiscence and prolonged the hospital stay for about two weeks.

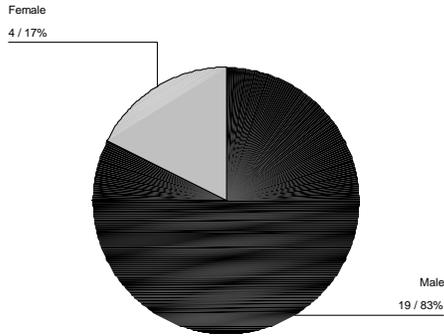


Figure-1: Sex distribution

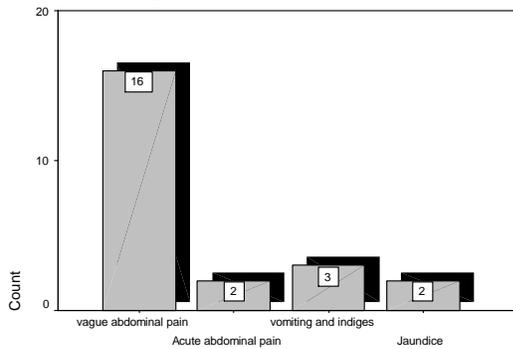


Figure-2: Various presenting features.

Table-1: Complications in males and females.

Gender	Complications			Un-complicated	Total
	Acute cholecystitis	Chronic cholecystitis	Empyema		
Male	3	4	1	11	19
Female	-	1	-	3	4
Total	3	5	1	14	23

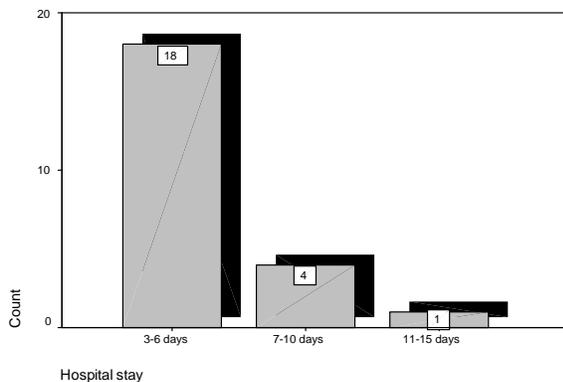


Figure-3: Total hospital stay.

DISCUSSION

Gallstones are an infrequent disease during childhood. With increasing use of Ultrasonography in children and infants, an increasing number of cases with gallstone disease in younger population are being reported. Carig A¹⁰ and associates, however claim that symptomatology and a thorough medical

history are more helpful and potent diagnostic tools compared to laboratory investigations. A number of factors may be involved in the present increase in the incidence of paediatric cholelithiasis. Sutton R *et al*¹⁴ claim that most of the time the gallstones remain undetected in paediatric population until complications develop. Our data in this series documents an increase in the incidence of gallstones in children less than 10 years of age. A similar rise in the prevalence of gallstones is reported by many other similar reports¹⁵⁻¹⁸ verifying the gravity of the problem. The male dominance in our data is consistent with the findings of other similar studies.^{15,16} An increased incidence of cholelithiasis in male population may be because of genetic predisposition as suggested by Kumar *et al*.¹⁵ Ultrasonology is an effective diagnostic tool as in adult cholelithiasis and should always be included in the workup of paediatric cholelithiasis.¹⁹ Importance of symptomatology and history of associated medical illness is equally important in the diagnosis of cholelithiasis in children.¹⁰ Vague abdominal pain is the commonest presenting feature in our series and a number of studies suggest excluding gallstones in children with vague abdominal pain.^{15,20-22} The other common features include vomiting, acute right hypochondriac pain, and jaundice. This symptomatology is reported by many similar studies with varying proportion of individual symptom.^{15,23} A number of predisposing or risk factors are reported to be associated with gallstone disease in children.^{12,21,24-28} These include TPN, Haematological disorders, Sepsis, hepato biliary disease, Obesity, Ceftriaxone therapy, Organ transplantation etc. In our series there are only two patients with sickle cell disease while one patient has diabetes mellitus. A positive family history is present in 3 patients. An increased incidence of idiopathic cholelithiasis in young children in our series is consistent with the findings of other similar studies.^{15,29} In our series, 14 (60.86%) patients of the total number had simple gallstone disease without any complication and of these, 3 (21.42%) patients were asymptomatic and remaining had classical symptomatology. Nine (39.13%) patients had complications including acute and chronic cholecystitis and empyema. The overall incidence of complicated gallstone disease in our series is much less than other reports.²⁷ Cholecystectomy is suggested to be the best treatment option in symptomatic gallstone disease in children.^{21,22} We adopted the same approach in 21 (91.30%) patients, although Wesdrop I *et al*²³ and Miltenburg DM *et al*¹⁶ stress upon selective cholecystectomy in patients who are at risk of developing complications. A number of reports have recently highlighted the role of laparoscopic cholecystectomy in children with

gallstone disease.^{30,31} We suggest that patients with symptomatic gall stone disease should be given consideration for cholecystectomy before the development of any complications. Patients with underlying haemolytic diseases be operated electively to prevent any post operative complications.

CONCLUSION

Incidence of idiopathic gallstone disease has risen to an alarming level for the past few years. A high degree of suspicion is needed in children with vague abdominal and right hypochondrial pain. Early cholecystectomy is the treatment of choice in symptomatic patients.

REFERENCES

- Palasciano G, Portincasa P, Vinciguerra V, Velardi A, Tardi S, Baldassarre G, *et al.* Gallstone prevalence and gallbladder volume in children and adolescents: An epidemiological ultrasonographic survey and relationship to body mass index. *Am J Gastroenterol.* 1989;84:1278–82.
- Sutton R, Chesley-Curtis S, Acute gallstone pancreatitis in childhood. *Ann R Coll Surg Engl.* 2001;83:406–8.
- Ozcanbor, Cagridinleyici E, Kebapci M, Aydogdu SD. Ceftriaxone-associated biliary sludge and pseudocholelithiasis during childhood. A prospective study. *Pediatr Int.* 2004;46:322–4.
- Russo EM, Lusenti A. Cholelithiasis in pediatric age: three cases. *Pediatr Med Chir.* 1999;21(1):29–31.
- Ruibal Francisco J, Aleo Lujan E, Alvarez Mingote A, Pinero Martinez E, Gomez Casares R. Childhood cholelithiasis. Analysis of 24 patients diagnosed in our department and review of 123 cases published in Spain. *An Esp Pediatr.* 2001;54(2):120–5.
- Cozcolluela Cabrejas MR, Sanz Salanova LA, Martinez-Berganza Asensio MT, Gomez Herrero H, Mellado Santos JM, Miranda Orella L *et al.* Childhood cholelithiasis in a district hospital. *An Pediatr (Barc).* 2007;66(6):611–4.
- Bailey PV, Connors RH, Tracy TF Jr, Sotelo-Avila C, Lewis JE, Weber TR. Changing spectrum of cholelithiasis and cholecystitis in infants and children. *Am J Surg.* 1989;158(6):585–8.
- Lugo-Vincente HL. Trends in management of gallbladder disorders in children. *Pediatr Surg Int.* 1997;12:348–52.
- Greenberg M, Kangaroo H, Cochran ST, Sample WF. The ultrasonographic diagnosis of cholecystitis and cholelithiasis in children. *Radiology* 1980;137:45–9.
- Friesen CA, Roberts CC. Cholelithiasis: Clinical characteristics in children. *Clin Pediatr* 1989;7:294–8.
- Kelly DA. Liver complications of pediatric parenteral nutrition-epidemiology. *Nutrition* 1998;14:153–7.
- Herek O, Sarioglu A, Kocer N, Tiryaki A, Akkemik B. Biliary pseudolithiasis in childhood: a case report. *Eur J Pediatr Surg.* 1999;9:337–8.
- Ceran C, Oztoprak I, Cankorkmaz L, Gumus c, Yildiz T, Koyloulgu G. Ceftriaxone-associated biliary pseudolithiasis in paediatric surgical patients. *Int. J. Antimicrobial Agents* 2005;25:256–9.
- Sutton R, Cheslyn-Curtis S. Acute gallstone pancreatitis in childhood. *Ann R Coll Surg Engl.* 2001;83:406–8.
- Kumar R, Nguyen K, Shun A. Gallstones and common bile duct calculi in infancy and childhood. *ANZ J Surg* 2000;70:188–91.
- Miltenburg DM, Scheffer R, Breslin T, Brandt ML. Changing indications for pediatric cholecystectomy. *Pediatrics* 2000;105(6):1250–3.
- Henschke CI, Teele RL. Cholelithiasis in children: recent observations. *J Ultrasound Med.* 1983;2(11):481–4.
- Harris P, Chateau B, Miquel JF, Zavala A, Montes P, Herrera JM *et al.* Cholelithiasis in children: a clinical and morphological study. *Rev Med Chil* 2003;131(1):37–45.
- Molander ML, Bergdahl S. Gallbladder disease, primary cholelithiasis, or gallbladder hydrops. A review of 32 children. *Pediatr Surg Intn.* 2004;7(5):328–31.
- Perez NA, Roiz Gomes MJ, Gonzalez FN, Nicolau CJ. Gallstones in children. Report of one case and review of the literature. *An Esp Pediatr.* 1976;9(6):602–11.
- Holcomb GW Jr, Holcomb GW. Cholelithiasis in infants, children, and adolescents. *Pediatr Rev.* 1990;11(9):268–74.
- Bruch SW, Ein SH, Rocchi C, Kim PC. The management of non-pigmented gallstones in children. *J Pediatr Surg* 2000;35(5):729–32.
- Wesdorp J, Bosman D, de Graaff A, Aronson D, Van der Blij F, Taminau J. Clinical presentations and predisposing factors of cholelithiasis and sludge in children. *J Pediatr Gastroenterol Nutr* 2000;31(4):411–7.
- Ganschow R. Cholelithiasis in pediatric organ transplantation. Detection and management. *Pediatr Transplantation.* 2002;6:91–96.
- Schweizer P, Lenz MP, Kirschner HJ. Pathogenesis and symptomatology of cholelithiasis in childhood. A prospective study. *Dig Surg* 2000;17(5):459–67.
- Roslyn JJ, Berquist WE, Pitt HA, Mann LL, Kangaroo H, DenBesten L, Ament ME. Increased risk of gallstones in children receiving total parenteral nutrition. *Pediatrics* 1983;71(5):784–9.
- Herzog D, Bouchard G. High rate of complicated idiopathic gallstone disease in pediatric patients of a North American tertiary care center. *World J Gastroenterol* 2008;14(10):1544–8.
- Volker K, Martin W, Dorothee T, Lydia KA, Martin HM, Hermann M, Wolfgang K. Prevalence of Gallbladder Stone Disease in Obese Children and Adolescents: Influence of the Degree of Obesity, Sex, and Pubertal Development. *J Pediatr Gastroenterol & Nutrition* 2006;42(1):66–70.
- Reif S, Solven DG, Lebenthal E. Gallstones in children: Characterization by age, etiology and outcome. *Am J Dis Children.* 1991;145:105–8.
- Yogi Y, Tsuchimochi A, Kikuchi J, Take H, Setoguchi T. A pediatric case with gallstones treated with laparoscopy. *Dig Endosc* 1998;10:244–7.
- Saleem MI, Al-Hashmi AM, Meshref SS. Mini laparoscopic cholecystectomy in children under 10 years of age with sickle cell disease. *ANZ J Surg* 2005;75:562–5.

Address for Correspondence:

Dr. Arshad M. Malik, Assistant Professor, Department of Surgery, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan. Tel: +92-333-2601939

Email: arshadhamzpak@yahoo.com