Original Research Article

DOI: http://dx.doi.org/10.18203/2349-2902.isj20181027

Surgical management for mesenteric cysts in pediatric patients: a single center experience

Ahmed M. Gafar*, Mohamed Y. Batikhe

Department of Surgery, Sohag University, Sohag, Egypt

Received: 01 March 2018 Accepted: 07 March 2018

*Correspondence: Dr. Ahmed M. Gafar,

E-mail: agafar3@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Mesenteric cysts are exceptional abdominal lesions of childhood. Presentation may vary with broad spectrum of symptoms from asymptomatic mass and nonspecific complaints to an acute abdomen. Objectives of this study were to present a series of patients with mesenteric cysts and to analyze our experience with emphasis on the presentation, management, and outcome.

Methods: This observational study included thirteen children were diagnosed and treated for mesenteric cysts. All cases subjected to clinical evaluation, laboratory investigations and radiological studies. The diagnosis was confirmed on laparotomy. Ethics committee approval was obtained. The main data which extracted and analyzed included demographic data, operative finding, postoperative complications and duration of hospital stay. Data were analyzed using SPSS for Windows software and P value of ≤ 0.05 was considered significant.

Results: There were 13 patients with mesenteric cyst, 5 girls and 8 boys. The ages ranged from neonate to 8 years. Abdominal mass and pain was the main presenting symptoms. Prenatal diagnosis established in two cases. Laparotomy performed in all cases. Small bowel mesentery is the commonest site. Two patients required urgent surgery. Surgical procedures included cyst excision with or without intestinal resection. Chylolymphatic cyst was documented in 4 cases. Post-operative complications reported in 2 cases.

Conclusions: Mesenteric cysts are unusual in children with variable clinical presentation. Complete excision was feasible in nearly all cases, bringing a favorable outcome. The possibility of this disease entity should be considered as the cause of acute abdomen.

Keywords: Chylolymphatic, Cyst, Mesenteric

INTRODUCTION

In pediatric population mesenteric cysts represent a rare reason of benign intra-abdominal lesion.¹ The occurrence rate of this lesion in the pediatric age group has been reported as 1 in 20,000 admissions. It can occur anywhere in the mesentery of gastrointestinal tract with the majority reported in the small-bowel mesentery.² Characteristically, its presentation varies widely with broad spectrum of symptoms from asymptomatic mass and nonspecific complaints to an acute abdomen.³

Regarding surgical treatment complete excision of cyst with or without bowel resection and reanastomosis is the practice of choice in many literatures. However; partial excision with marsupalisation of residual cyst cavity is an option if complete excision, even with bowel resection is not achievable in rare cases. Also, laparoscopic approach for excision of the cysts is becoming a progressively growing fashionable option.²

Objective of the present study was to highlight and analyze our experience regarding pediatric patients

presented with mesenteric cysts with emphasis on the presentation, management, and surgical outcome; in the hope that information will reinforce the diagnostic and treatment strategy.

METHODS

This prospective observational study included paediatric patients diagnosed and treated surgically at our institutions and histologically proven to be true mesenteric cysts during the period from August 2013 to August 2016. Patients who are operated outside our center, clinically unfit, redo cases or missed from follow up were excluded. The study was approved by the local institutional research ethics committee. All cases subjected to the same management protocol including clinical evaluation, laboratory investigations, radiological studies and laparotomy. Surgery was the treatment of choice in all cases and surgical procedure included complete cyst excision with resection and re-anastomosis of the involved gut or complete cyst excision when feasible.

Demographic data, clinical presentation, management strategies, operative finding and outcomes all were reported and presented in number and percentage with statistical analysis using SPSS for Windows software; if needed; and P value of ≤ 0.05 was considered significant.

RESULTS

Thirteen children treated at our institutions and histologically proven to be true mesenteric cysts during the period from August 2013 to August 2016 were considered for inclusion in this series.

Table 1: Patients' characteristics and baseline data.

Data		Number	Percentage
Sex	Male	8	61.5%
	Female	5	38.5%
Age at operation	Neonate	3	23.1%
	Infant	4	30.8%
	Child	6	46.1%
Clinical finding	Abdominal	8	61.5%
	mass		
	Distension	6	46.1%
	Pain	4	30.8%
	Incidentally	1	7.8%
Imaging	Ultrasound	13	100%
	CT*	9	69%
Prenatal diagnosis		2	15.4%
Presentation	Acute	2	15.4%
	Chronic	11	84.6%
Surgery	Urgent	2	15.4%
	Elective	11	84.6%
Total		13	

^{*} Computed tomography

There were 8 (61.5%) boys and 5 (38.5%) girls with male to female ratio 1.6:1. The ages ranged from neonate to 8 years. Surgery was performed during the neonatal period in 3 (23.1%) patients and during infancy in four (30.8%) cases. The mean age at time of surgery was 30 months.

Clinically abdominal mass/distension was the chief presenting symptoms 8 (61.5%) cases; abdominal pain was the next common which reported in 4 (30.8%) patients. Two patients (15.4%) had acute presentation as acute bowel obstruction.

Prenatal diagnosis via foetal ultrasonography (US) established only in two (15.4%) cases. Preoperative abdominal US; carried out routinely to all patients; was diagnostic for cystic lesions in relation to the gut. Nine (69%) patients were evaluated using abdominal computed tomography (CT) and revealed confirmatory findings that clinched the diagnosis. Patients' characteristics and other baseline data. (Table 1)

Surgery was the treatment of choice in all cases and laparotomy revealed cyst related to mesentery with variable sizes and character (Figure 1).



Figure 1: Mesenteric cyst.

Surgical intervention was elective in 11 (84.6%) patients; while urgent surgical intervention required in 2 (15.4%) cases whose were presented as acute abdomen and both had volvulus around the cyst (Figure 2).



Figure 2: Volvulus around the cyst.

Small bowel mesentery 11 (84.6%) patients was the commonest site of origin; mean size of cysts was 13 cm (range from 7 to 19 cm) in largest diameter; all patients had single cyst; it was unilocular in 7 (53.8%) patient and serous fluid in 7(53.8%) cysts was the commonest type. Cyst characteristics regarding site, size, number, loculation and nature of contents (Table 2). Surgical procedure included complete cyst excision with resection and re-anastomosis of the involved gut in 11 (84.6%) patients; while, cyst excision performed only in 2 (15.4%) patients.

Table 2: Cyst characteristics.

Cyst character		Number	%
Number	Single	13	100%
	> one	-	-
Site	Jeujenal	7	53.8%
	Ileal	4	30.8%
	Mesocolon	2	15.4%
Size	<10 cm	3	23.1%
	10-15 cm	6	46.1%
	>15 cm	4	30.8%
Loculation	Unilocular	7	53.8%
	Multilocular	6	46.1%
Fluid contents	Serous	7	53.8%
	Chylous	4	30.8%
	Serosanguinous	2	15.4%
Treatment	Excision with R-A*	11	84.6%
	Cyst excision	2	15.4%
Total		13	

^{*}Intestinal resection and re-anastomosis



Figure 3: Chylolymphatic mesenteric cyst.

A rare variant of a mesenteric cyst which called chylolymphatic cyst was documented in 4 (30.8%) cases. Diagnosis was confirmed to be chylolymphatic cysts by characteristic histopathological finding which included multiloculated cyst lined with a thin endothelium, filled with chylous and lymphatic fluid (Figure 3).

Post-operative complications reported in 2 (15.4%) cases, wound infection documented in one cases and one patient

developed adhesive ileus 2 months postoperatively. Both cases were successfully managed conservatively. No reported recurrences throughout the follow-up era which ranged from 2 to 4 months.

DISCUSSION

Any cyst has an identifiable lining of endothelium or mesothelial cell and located in the mesentery can be defined as a mesenteric cyst.⁴ The exact etiology is still not clear. However, benign proliferation of non-communicating mesenteric ectopic lymphatics considered one of the conventional theories.⁴⁻⁶

Due to share embryogenesis; mesenteric, retroperitoneal and omental cysts may be labelled together by many authors. ^{2,7,8} Mesenteric cysts represent a rare cause of abdominal masses in children with reported incidence 1 in 20,000 admissions with male sex predominance and most cases before 10 years old which may explained by smaller body and abdominal cavity. ^{1,2,4,6,9} All data were comparable with the present results.

Mesenteric cyst could present as acute, chronic or asymptomatic discovered accidentally. ^{7,10,11} Diversity in clinical finding arises from a variety of location and size. ^{3,12} Wide spectrum of presenting symptoms ranging from asymptomatic cases discovered incidentally to acute abdomen and including nonspecific complaints, nausea, vomiting, constipation, abdominal distension, mass, pain or present with complications as torsion, rupture, haemorrhage, intestinal obstruction. ^{3,11-17} Mobile abdominal mass was the clinical finding in up to 61% of the patients. ¹⁸

The opportunity of a complicated mesenteric cyst should be judged in the differential diagnosis in patients with an acute abdomen.⁴ In this study acute intestinal obstruction was the presentation only in two cases.

Although abdominal US considered the superior imaging study; many other diagnostic modalities are available. 19 CT seems to be favorable confirmatory technique in suspected cases with equivocal US in addition to its higher reliability regarding location, relationship with intestine and nature of the cyst to reach a conclusive diagnosis. 20 Other techniques like contrast studies and MRI may be helpful in selected cases and for differential diagnosis. 21 Antenatal detection is possible during fetal ultrasound scanning. 22

Complete cyst excision at time of diagnosis to avoid possible complications with or without related bowel resection and reanastomosis is the procedure of choice either via laparotomy or laparoscopy. 1,13,23-26 Other treatment options for selected cases include marsupialization, sclerotherapy, drainage, enucleation and percutaneous aspiration. 2,7,21,26-31 Urgent surgery is necessary in considerable number of patients due to volvulus. 10 In the present series laparotomy performed in

all cases and excision was possible in all cases. However; related bowel segment resection and reanastomosis was necessary in 11 cases.

Grossly, mesenteric cysts have different size, shape, and may be single or multiple, unilocular or multilocular with variable fluid contents serous, bloody or milky.¹⁶

Along gastrointestinal tract mesentery the cyst can arise with the majority located in ileal mesentery.^{2,13,16} This data run in parallel with the present results.

Supposed classification depends on ethology, cyst contents or pathological bases.^{5,32,33} A chylolymphatic cyst is an extremely rare variant of a mesenteric cyst in pediatric population.^{32,34,35} It contains both chyle and lymph; multiloculated, lined with a thin endothelium and absence of smooth muscle and lymphatic spaces in the wall of the cyst differentiates mesenteric cysts from cystic lymphangioma.^{4,33,35,36}

CONCLUSION

Mesenteric cysts are unusual in children with changeable clinical presentation. Complete excision was feasible in nearly all cases, bringing a favourable outcome. The possibility of this disease entity should be reserved in mind for patient presenting with acute abdominal symptoms.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- 1. Chang T, Ricketts R, Abramowsky C, Cotter B, Steelman C, Husain A, et al. Mesenteric cystic masses: a series of 21 pediatric cases and review of the literature. Fetal Pediatr Pathol. 2011;30(1):40-4.
- Kurtz R, Heimann T, Holt J, Beck A. Mesenteric and retroperitoneal cysts. Ann Surg. 1986;203:109-12
- 3. Tan J, Tan K, Chew S. Mesenteric cysts: an institution experience over 14 years and review of literature. World J Surg. 2009;33(9):1961-5.
- 4. Bliss D, Coffin C, Bower R, Stockmann P, Ternberg J. Mesenteric cysts in children. Surg 1994;115(5):517-77.
- Beahrs O, Judd E, Dockerty M. Chylous cysts of the abdomen. Surg Clin North Am. 1950;30(4):1081-96.
- Richard R. Mesenteric and omental cysts. 6th ed. Pediatric surgery In: Grosfeld JL, O' Neill JA Jr, Coran AG, Fonkalsrud EW, editors. Philadelphia: Mosby Elsevier; 2006:1399-1406.
- 7. Vanek V, Phillips A. Retroperitoneal, mesenteric, and omental cysts. Arch Surg. 1984;119:838-42.

- 8. de Perrot M, Brundler M, Totsch M, Mentha G, Morel P. Mesenteric cysts. toward less confusion? Dig Surg. 2000;17:323-8.
- 9. Goh B, Tan Y, Ong H, Chui C, Ooi L, Chow P, et al. Intra-abdominal and retroperitoneal lymphangiomas in paediatric and adult patients. World J Surg. 2005;29:837-40.
- 10. Advait P, Amit A, Rahul K, Beejal S, Sandesh P. Early management of mesenteric cyst prevents catastrophes: A single centre analysis of 17 cases. Afr J Paed Surg. 2010;7(3):140-3.
- 11. Miliaras S, Trygonis S, Papandoniou A, Kalamaras S, Trygonis C. Mesenteric cyst of the descending colon: report of a case. Acta Chir Belg 2006;106(6):714-6.
- 12. Walker A, Putnam T. Omental, mesenteric, and retroperitoneal cysts: a clinical study of 33 new cases. Ann Surg. 1973;178:13-9.
- 13. Chung M, Brandt M, St-Vil D, Yazbeck S. Mesenteric cyst in children. J Pediatr Surg. 1991;26(11):1306-8.
- Kamal N, Vimoj J, Manish P, Sanjay K. Case report Pediatric chylolymphatic mesenteric cyst: a separate entity from cystic lymphangioma: a case series. J Med Case Rep. 2009;3:111.
- 15. Egozi E, Ricketts R. Mesenteric Cysts and omental cysts in children. Am Surg. 1997;63(3):28-90.
- 16. Liew S, Glenn D, Storey D. Mesenteric Cyst. Aust N Z J Surg. 1994;64(11):741-4.
- 17. So Hyun N, Yeon DK, Chul SK, In Koo K. The surgical experience for retroperitoneal, mesenteric and omental cyst in children. J Korean Surg Soc. 2012;83:102-6.
- 18. De Perrot M, Bründler M, Tötsch M, Mentha G, Morel P. Mesenteric cysts toward less confusion? Dig Surg. 2000;17:323-8.
- 19. Mason J, Soper N, Brunt L. Laparoscopic excision of mesenteric cysts: a report of two cases. Surg Laparosc Endosc Percutan Tech. 2001;11:382-4.
- 20. Senocak M, Gündoðdu H, Büyükpamukçu N, Hiçsönmez A. Mesenteric and omental cysts in children: Analysis of nineteen cases. Turk J Pediatr. 1994;36:295-302.
- 21. Prosanta K, Himanshu R, Navin R, Debarati C, Rajendra P. Mesenteric cyst: an unusual presentation. Indian J Surg. 2008;70:247-9.
- 22. McEwing R, Hayward C, Furness M. Foetal cystic abdominal masses. Australas Radiol. 2003;47(2):101-10.
- 23. Durshan A, Gokhan A, Volkan S. Laparoscopic management of mesenteric cyst: a case report. Mount Saint J Med. 2006;73:1019-20.
- 24. Raghupathy R, Krishnamurthy P, Rajamani G. Intraabdominal cystic swelling in children: laparoscopic approach, our experience. J Indian Assoc Peditr Surg. 2003;8:213-7.
- 25. Kosir M, Sonnino R, Gauderer M. Pediatric abdominal lymphangiomas: a plea for early recognition. J Pediatr Surg. 1991;26:1309-13.

- 26. Hancock B, St-Vil D, Luks F, Di Lorenzo M, Blanchard H. Complications of lymphangiomas in children. J Pediatr Surg. 1992;27:220-4.
- 27. Hebra A, Brown M, McGeehin K, Ross A. Mesenteric, omental, and retroperitoneal cysts in children: a clinical study of 22 cases. South Med J. 1993; 86(2):173-6.
- 28. Chirathivat S, Shermeta D. Recurrent retroperitoneal mesenteric cyst. A case report and review. Gastrointest Radiol. 1979;4(2):191-3.
- 29. Steyaert H, Guitard J, Moscovici J, Juricic M, Vaysse P, Juskiewenski S. Abdominal cystic lymphangioma in children: benign lesions that can have a proliferative course. J Pediatr Surg. 1996;31:677-80.
- Roisman I, Manny J, Fields S, Shiloni E. Intraabdominal lymphangioma. Br J Surg. 1989;76:485-9.
- 31. Konen O, Rathaus V, Dlugy E, Freud E, Kessler A, Shapiro M, et al. Childhood abdominal cystic lymphangioma. Pediatr Radiol. 2002;32:88-94.

- 32. Engel S, Clagett O, Harrison E. Chylous cysts of the abdomen. Surg. 1961;50:593-9.
- Losanoff J, Richman B, El-Sherif A, Rider K, Jones J. Mesenteric cystic lymphangioma. J Am Coll Surg. 2003;196(4):598-603.
- 34. Gupta A, Nanavati R, Fernandez A, Kalgutkar A, Nathani R, Deshmukh S. Chylous mesenteric cyst: an unusual cause of neonatal intestinal obstruction. Indian Pediatr. 1992;29(4):511-3.
- 35. Takiff H, Calabria R, Yin L, Stabile B. Mesenteric cysts and intraabdominal cystic lymphangiomas. Arch Surg. 1985;120(11):1266-9.
- 36. Fish J, Fair W, Canby J. Intestinal obstruction in the newborn: an unusual case due to mesenteric cyst. Arch Surg. 1965;90:317-8.

Cite this article as: Gafar AM, Batikhe MY. Surgical management for mesenteric cysts in pediatric patients: a single center experience. Int Surg J 2018;5:1217-21.