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Case report

Perforated Meckel's diverticulum in a 6-day-old neonate: A case report

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ABSTRACT

Introduction and importance: Meckel's diverticulum is The most common congenital anomaly of the gastrointestinal tract, Meckel's diverticulum, affects around 2 % of the general population. Meckel's diverticulum symptoms in the newborn stage are quite uncommon.

Case presentation: A male newborn, aged 6 days, was brought to our hospital due to recurrent episodes of vomiting during nursing and fever. There was bilious vomiting along with distention of the abdomen. Following a physical assessment and radiological analysis, the patient had an exploratory laparotomy with a bowel perforation impression. The abdominal cavity contained bowel content and a diagnosis of perforated MD was made. Following a thorough abdominal wash with warm normal saline, wedge resection and anastomosis were performed. Released three days following eight days of hospitalization and attaining full feeding. Six-month follow-up showed good recovery and ideal growth and development.

Clinical discussion: Meckel's diverticulum (MD), the most prevalent congenital gastrointestinal tract malformation, results from partial obliteration of the proximal portion of the omphalomesenteric duct during the seventh week of pregnancy. We report in this study an MD case with a range of complex spectra, such as severe distention and vomiting in the neonatal period. Meckel's diverticulum perforation is a deadly complication that typically results from gangrene, diverticulitis, or peptic ulceration brought on by an ectopic stomach mucosa.

Conclusion: The two most common clinical manifestations of symptomatic MD in newborns are partial bowel obstruction and pneumoperitoneum. Surgery is the only accurate method for both diagnostic and therapeutic purposes with a successful outcome.

1. Introduction

The most common congenital anomaly of the gastrointestinal tract (GI), Meckel's diverticulum (MD), affects around 2 % of the general population [1]. MD symptoms in the newborn stage are quite uncommon. Nearly 4 % of cases are complicated [2]. Pneumoperitoneum is a severe disorder in newborns that needs to be treated surgically right away. In this age range, necrotizing enterocolitis and intestinal atresia, which include a variety of idiopathic illnesses, are the most frequent causes. A perforated Meckel's diverticulum (MD) is an uncommon cause; to date, only a small number of cases have been published [3]. Here we present 6 days-old neonate patient who presented distention and bilious vomiting with pneumoperitoneum on an erect abdominal x-ray.

2. Case presentation

A male newborn, aged 6 days, was brought to our hospital due to recurrent episodes of vomiting during feeding and fever. There was bilious vomiting along with distention of the abdomen. With an APGAR score of 9 at minute 1 and 10 at minute 5, the neonate weighed 3200 g at birth and was delivered vaginally by a 26-year-old mother who was gravid 3. The patient was transferred from the hospital where he was born. Upon arrival, the newborn had a sluggish state and underwent a thorough physical examination that showed tachycardia, fever, and considerable abdominal distention. Assessment in the laboratory was completed on the first day of admission. 13.36 g/dL of white blood cells were counted. It had 8.4 g/dL of hemoglobin. There were 123,000 platelets (Fig. 1). Urea nitrogen in the blood was 35 mg/d, creatine 0.17 mg/dL, CRP 18, and albumin 2.5 (Fig. 2). Thoraco-abdominal

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WBC	Onaylandı	13.36	↑	x1000/...	4	10
RBC	Onaylandı	2.31	↓	x10'6/...	4	6.1
HGB	Onaylandı	8.4	↓	g/dL	11,7	18
HCT	Onaylandı	21.4	↓	%	42	52
PLT	Onaylandı	123		x1000/m...	100	430
MCV	Onaylandı	92.9		fL	80	100
MCH	Onaylandı	36.4	↑	pg/cell	27	34
MCHC	Onaylandı	39.2	↑	g/dL	32	36
NE#	Onaylandı	8.99	↑	x1000/...	2	7
LYM#	Onaylandı	2.22			0,8	4
MONO#	Onaylandı	2.06	↑	x1000/...	0,12	1,12
EOS#	Onaylandı	0.09		x1000/m...	0,02	0,5
BASO#	Onaylandı	0.00		x1000/m...	0	0,1
NE%	Onaylandı	67.3		%	50	70
LYM%	Onaylandı	16.6	↓	%	20	40
MONO%	Onaylandı	15.4	↑	%	3	12
EOS%	Onaylandı	0.7		%	0	5
BASO%	Onaylandı	0.0		%	0	2
RDW-CV	Onaylandı	16.1	↑	%	11	14
RDW-SD	Onaylandı	61.6	↑	fL	29	47
MPV	Onaylandı	11.2	↑	fL	7.8	11

Fig. 1. Hemogram results.

Glukoz (AKŞ)	Onaylandı	55		mg/dL	50	80
Üre	Onaylandı	35		mg/dL	10	45
Kreatinin	Onaylandı	0,17	↓	mg/dl	0,35	1,10
AST	Onaylandı	25		U/L	0	35
ALT	Onaylandı	7		U/L	0	45
Ürik asit	Onaylandı	2,8		mg/dL	2.3	8.2
Total Protein	Onaylandı	4,2	↓	g/dl	6.4	8.3
Albümin	Onaylandı	2,5	↓	g/dl	3.8	5.4
Kalsiyum (Ca)	Onaylandı	8,6		mg/dL	8,3	10,6
Total Bilirubin	Onaylandı	5,23	↑	mg/dL	0,30	1,10
Sodyum	Onaylandı	140		mEq/L	135	150
Potasyum	Onaylandı	4,6		mEq/L	3.5	5.5
Klor	Onaylandı	103		mEq/L	95	106
CRP	Onaylandı	18	↑		0	10

Fig. 2. Biochemistry results.

radiography was performed as a result of bilious vomiting, which showed peumoperitoneum (Fig. 3). Following a physical assessment and radiological analysis, the patient had an exploratory laparotomy with a bowel perforation impression. The abdominal cavity contained bowel content, and free air burst out as soon as it entered and relieved distension. and a perforated MD diagnosis was made (Fig. 4). Following a thorough abdominal wash with warm normal saline, wedge resection and anastomosis were performed. After which the abdomen was closed and a drain was put in place. The pathological report verified the diagnosis of MD in the absence of heterotopic gastric mucosa. Five days following the procedure, the nasogastric tube was taken out, and oral feeding was initiated with 5 % dextrose and then formula, which was then gradually increased without any complications. Released three days following eight days of hospitalization and attaining full feeding. Six-month follow-up showed good recovery and ideal growth and development.

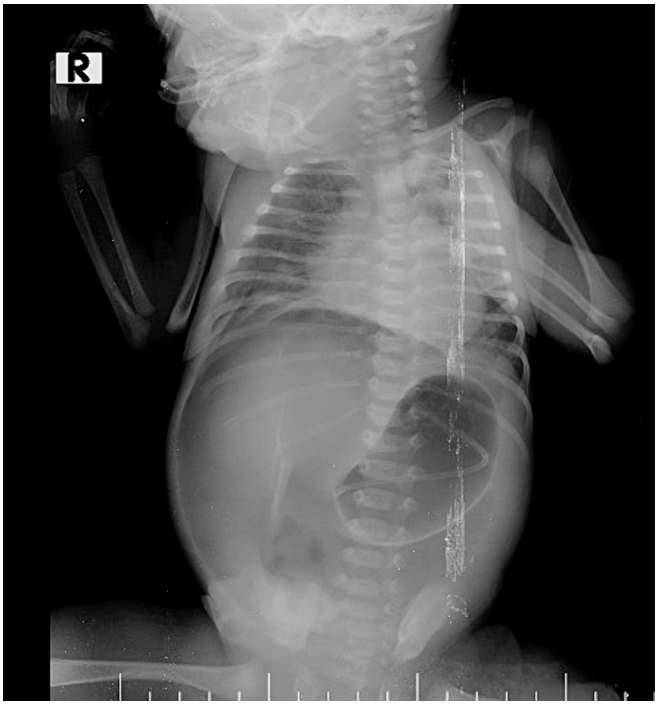

Fig. 3. Thoracoabdominal x-ray with large peumoperitoneum appearing football sign.

3. Discussion

Meckel's diverticulum (MD), the most prevalent congenital gastrointestinal tract malformation, results from partial obliteration of the proximal portion of the omphalomesenteric duct during the seventh week of pregnancy [4]. We report in this study an MD case with a range of complex nonspecific clinical symptoms, such as severe distention and vomiting in the neonatal period. Patients with MD rarely exhibit a clinical feature, but they can experience a range of symptoms, such as severe anemia from gross or occult gastrointestinal bleeding, small-bowel obstruction, or peritonitis [5]. Anemia and nonspecific clinical manifestations were present in the study's case report. Meckel's diverticula contain up to 55 % ectopic tissue [6]. This case ectopic tissue was not present. Meckel's diverticulum perforation is a deadly complication that typically results from gangrene, diverticulitis, or peptic ulceration brought on by an ectopic stomach mucosa. Littre's hernia and tumors such as leiomyosarcoma, lymphatic sarcoma, and poorly differentiated stromal tumors are among the other various pathologies that can result in perforation [7]. According to reports, perforation results from acute inflammation of MD, however the precise proportion of this pathology has not been disclosed [8]. Current case pathology of the specimen revealed presence of inflammation which is consistent. Bertozzi etel [9] reported case of two site perforation of Meckel's diverticulum with histopathology revealing neither inflammation of the MD nor heterotopic tissue, which is contrary to our case in which pathology revealed Meckel's diverticulum inflammation. Clinicians frequently lack the time to pursue different diagnostic measures when dealing with acute abdomen conditions, and conventional radiographs are not very useful in detecting perforated MD [10]. Duplication or mesenteric, ovarian, or choledochal cysts are among the differential diagnoses. Planning for delivery and managing the newborn are aided by prenatal evaluation. Following delivery, plain abdominal radiography, US, CT, and laparotomy may be required to confirm the diagnosis [11].our case erect abdominal x-ray was only image modality used. Treatment choice of symptomatic MD is surgery. The type of resection is determined by the shape of the diverticulum and the surgeon's experience and preference [12]. The type of resection is determined by the shape of the diverticulum and the surgeon's experience and preference [12]. The current case wedge resection and anastomosis were done as the base of the diverticulum was narrow. If the diverticulum has broad base resection, anastomosis is the best choice. BR Alvares et al. reported case of perforated MD and managed surgically with segmental resection anastomosis [13]. We emphasize that neonates with acute abdominal Meckel's diverticulum should have a first-line differential diagnosis, and exploratory laparotomy is the only approach that can be an accurate diagnosis.

This study was reported in accordance with the SCARE 2020 guidelines [14].

4. Conclusion

The two most common clinical manifestations of symptomatic MD in

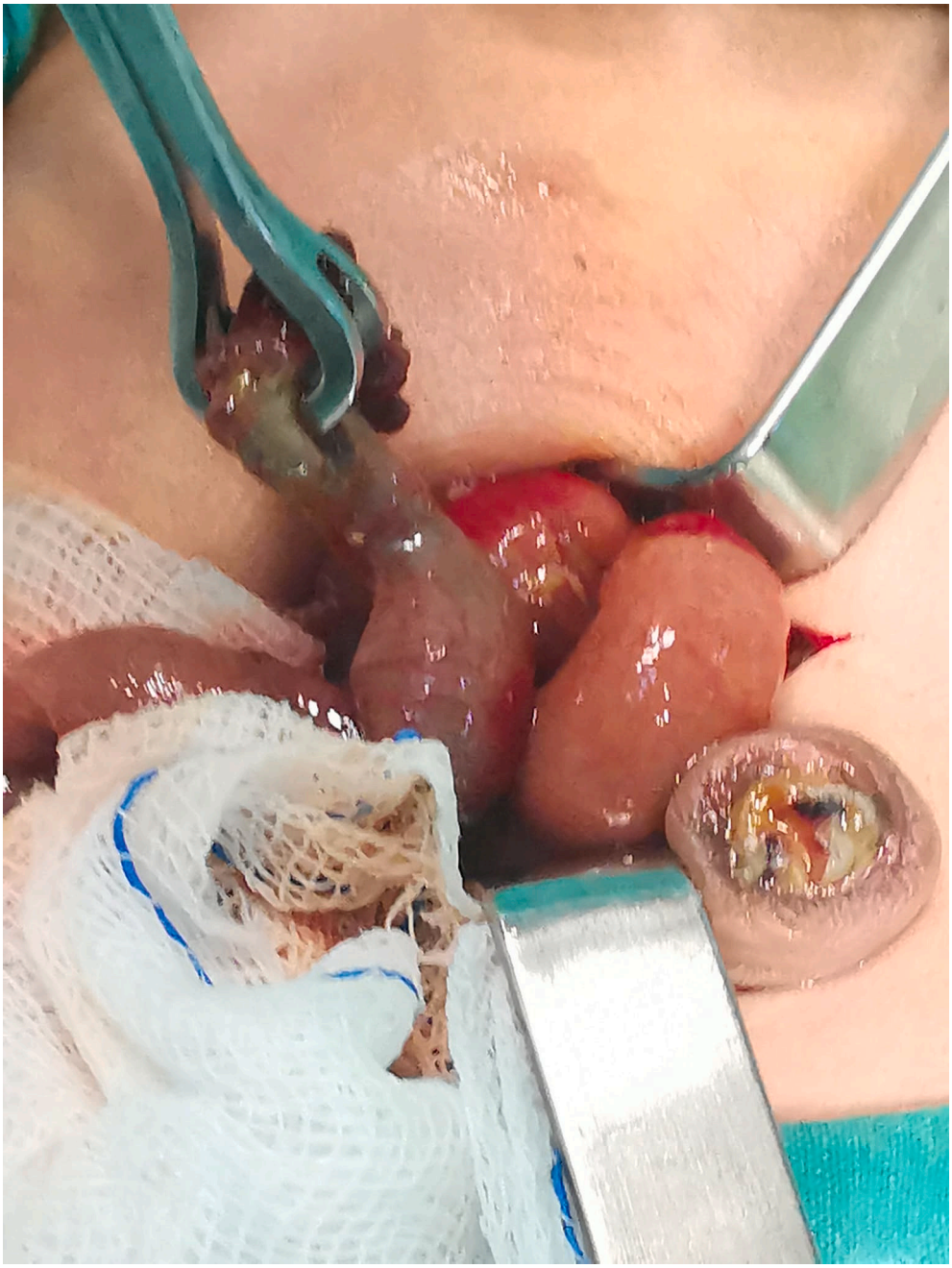

Fig. 4. Perforated Meckel's diverticulum.

newborns are partial bowel obstruction and pneumoperitoneum. We emphasize that neonates with acute abdomen and Meckel's diverticulum should have a first-line differential diagnosis, and exploratory laparotomy is the only approach to reaching an accurate diagnosis. Wedge resection with anastomosis is the surgical method for narrow-base Meckel's diverticulum with a successful outcome.

Abbreviations

MD	Meckel's diverticulum
US	ultrasonography
CT	computed tomography

Consent

Written informed consent was obtained from the patient's parents/legal guardian for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Ethical approval was waived by the ethical committee of Mogadishu Somali Turkey, Recep Tayyip Erdogan Training and Research Hospital. No need ethical approval for case report study in our Hospital.

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Author contribution

Abdishakur Mohamed Abdi: wrote the manuscript and corrected the manuscript for its scientific basis.

Abdullah Yusuf Ali: collected the data for the study.

Abdisalam Abdullahi Yusuf: head of pediatric neonatal ICU and was taking care of the patient after operation.

Ibrahim Mohamed Hirsi: pediatric emergency resident doctor received and stabilized the patient.

Ismail Gedi Ibrahim: radiology specialist reported abdominal x-ray.

All authors have read and approved the final manuscript.

Guarantor

Dr. Abdishakur Mohamed Abdi.

Research registration number

None.

Declaration of competing interest

This manuscript has not been submitted to, nor is it under review at, another journal or other publishing venue.

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

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