Case report

Medical Ultrasonography
2012, Vol. 14, no. 2, 158-160

Scrotal migration of a ventriculoperitoneal shunt: a case report and review of literature

Afshin Mohammadi, Abbas Hedayatiasl, Mohammad Ghasemi-rad

Department of Radiology, Urmia University of Medical Sciences, Urmia, Iran

Abstract

Ventriculoperitoneal (VP) shunt insertion may be associated with migration into the abdominal wall, gastrointestinal tract, bladder, vagina, scrotum, and mediastinum. Migration of the VP shunt into the scrotum has been rarely reported. We present a 1 year old boy with cerebrospinal fluid hydrocele due to the migration of a VP shunt catheter into the right side scrotum.

Keywords: ventriculoperitoneal shunt, scrotum, hydrocele

Introduction

Ventriculoperitoneal (VP) shunt insertion is the most common procedure performed for the management of hydrocephalus [1]. One of the complications associated with the VP shunt is the migration of the peritoneal catheter into the abdominal wall, gastrointestinal tract, bladder, vagina, scrotum, and mediastinum [2].

One of the rare reported complications of VP shunt is the migration of the peritoneal catheter into the scrotum [1,3]. We report the case of a 1 year old boy with hydrocele due to VP shunt catheter migrations into the right scrotum.

Case report

A 7 month old boy with congenital hydrocephalus and VP shunt was referred to our university hospital with a history of right scrotal swelling of 1 month duration. On physical examination of the genital area the right scrotum was found to be distended without increased temperature or erythema. Both testes were descended and were palpable. No previous history of epididymitis or orchitis was noted. Laboratory data including cell blood count and urine analysis were normal and urine culture was negative.

Scrotal sonography revealed right sided hydrocele with an echogenic tubular structure in the right hemiscrotum extending into the peritoneal cavity through right inguinal canal (fig1).

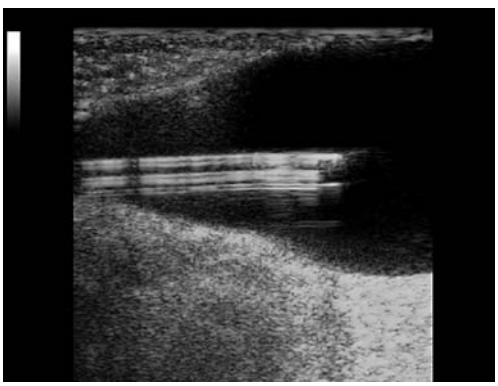


Fig 1. Scrotal sonogram shows echogenic tubular structure and significant hydrocele in the right hemiscrotum

Received 30.01.2012 Accepted 07.03.2012
Med Ultrason
2012, Vol. 14, No 2, 158-160
Corresponding author: Afshin Mohammadi
Department of Radiology,
Urmia University of Medical Sciences,
Imam Khomeini Hospital, Modaress BLVD,
Urmia, Iran
Tel. 0 989143480425
Email: mohamadi_afshin@yahoo.com



Fig 2. Abdominal radiograph reveals extension of VP shunt into the right scrotum through the inguinal canal.

Abdominal radiography revealed a coiled peritoneal catheter migrated into the right hemiscrotum (fig 2).

Displacement of the catheter was not possible through manual compression, so exploratory laparotomy to reposition the peritoneal catheter was performed. The pediatric surgeon performed prophylactic obliteration of processes vaginalis to prevent the recurrence. In six months of follow up, the patient was asymptomatic without recurrence or further complications.

Discussion

The most recognized complications of VP shunt are infection, perforation of the colon and bladder, peritoneal cerebrospinal fluid (CSF) cyst, and volvulus of small intestine [2].

Scrotal migration of VP shunt has been previously reported in 26 cases. Some of the latest published cases are summarized in Table I.

Most of the VP shunt migration occurs during infancy and in the first six months after VP shunt implantation (time interval range 1day to 5 years). VP shunt migration usually occurs in the right side and from 26 previously reported cases only three cases have occurred in the left side [3,15,16].

Table I. A summary of the results of previous published cases of scrotal migration of VP Shunt.

No	Author	Age	Time after shunt implantation	Side
1	Ram et al [4]	3 years	2.5 years	Right
2	Kobayashi et al [5]	23 days 45 months	3 days 9 months	Right Right
3	Kowk et al [6]	6 months	7 days	Right
4	Wong et al [7]	8 months	4 weeks	Right
5	Fuawa et al [8]	13 months	12 weeks	Right
6	Ozveren et al [9]	4 days	1 days	Right
7	Ward et al [10]	18 months	4 hours	Right
8	Walsh et al [11]	17 months	6 months	Right
9	De Aquino et al [12]	42 days 14 months	31 days 14 months	Right Right
10	Karaosmanoglu et al [13]	14 months	Not reported	Right
11	Rahman et al [14]	4 years	1 months	Right
12	Kita et al [3]	5 years	4 months	Left
13	Oktem et al [15]	2.5 months 4 months 7.5 months 16 months	1 day 4 months 5 months 6 months	Left Right Right Right
14	Crofford et al [16]	3 months 4 months 6 months 4 years	2 months 1 months 6 months 1 month	Right Right Right Left
15	Present case	7 months	5 months	Right

The presence of a patent processus vaginalis can predispose to the herniation of a VP shunt into the scrotum. At the age of one year old the processus vaginalis is patent in 50-60% of people [3]. Implantation of VP shunt can increase the intra-abdominal pressure and could be the causative factor for the prolong patency of processus vaginalis [13]. There is an increased incidence of hernia and hydrocele in patients with VP shunt when compared with normal children [16].

Smaller size of peritoneal cavity in infancy compared with older children could be an etiologic factor for VP shunt migration to processus vaginalis.

Surgical repositioning of VP shunt and obliteration of processus vaginalis is the most recommended method of surgery to prevent further complication and malfunctioning of the shunt [2].

In conclusion although an uncommon complication, VP shunt migration should be kept in mind for all infant and children with enlargement of scrotum after VP shunt placement.

References

1. Ho CC, Jamaludin WJ, Goh EH, Singam P, Zainuddin ZM. Scrotal mass: a rare complication of ventriculoperitoneal shunt. Acta Medica (Hradec Kralove) 2011; 54: 81-82.
2. Vuyyuru S, Ravuri SR, Tandra VR, Panigrahi MK. Anal extrusion of ventriculo peritoneal shunt tube: Endoscopic removal. J Pediatr Neurosci 2009; 4: 124–126.
3. Kita D, Hayashi Y, Kinoshita M, Ohama K, Hamada J. Scrotal migration of the peritoneal catheter of a ventriculoperitoneal shunt in a 5-year-old male. Case report. Neurol Med Chir (Tokyo) 2010; 50: 1122-1125.
4. Ram Z, Findler G, Guttman I, Cherniak R, Knoller N, Shacked I. Ventriculoperitoneal shunt malfunction due to migration of the abdominal catheter into the scrotum. J Pediatr Surg 1987; 22: 1045-1046.
5. Kobayashi H, Hayashi M, Kawano Y, Handa Y, Tsuji T, Ishii H. Migration of abdominal catheter of ventriculoperitoneal shunt into the scrotum. Zentralbl Neurochir 1987; 48: 232-234.
6. Kwok CK, Yue CP, Wen HL. Bilateral scrotal migration of abdominal catheters: a rare complication of ventriculoperitoneal shunt. Surg Neurol 1989; 31: 330-331.
7. Wong CW. Scrotal migration of a ventriculo-peritoneal shunt: report of a case. J Formos Med Assoc 1994; 93: 640-641.
8. Fuwa I, Matsukado Y, Itoyama Y, Yokota A. Migration of a dissected peritoneal shunt catheter into the scrotum. Brain Dev 1984; 6: 336-338.
9. Ozveren MF, Kazez A, Cetin H, Ziyal IM. Migration of the abdominal catheter of a ventriculoperitoneal shunt into the scrotum--case report . Neurol Med Chir (Tokyo) 1999; 39: 313-315.
10. Ward JF, Moquin RR, Maurer ST. Expanding the differential diagnosis of the acute scrotum: ventriculoperitoneal shunt herniation. Urology 2001; 58: 281.
11. Walsh AR, Kombogiorgas D. Coiled ventricular-peritoneal shunt within the scrotum. Pediatr Neurosurg 2004; 40: 257-258.
12. de Quintana-Schmidt C, Laria PC, Folch MT, Calderón EM, Rodríguez RR. Scrotal migration of ventriculoperitoneal shunts. An Pediatr (Barc) 2010; 73: 219-221.
13. Karaosmanoglu D, Metin Y, Akata D, Haliloglu M. An unusual cause of hydrocele: malpositioned ventriculoperitoneal shunt in the scrotum. J Ultrasound Med 2008; 27: 159-160.
14. Rahman N, Lakhoo K. Patent processus vaginalis: a window to the abdomen. Afr J Paediatr Surg 2009; 6: 116-117.
15. Oktem IS, Akdemir H, Koç K, et al. Migration of abdominal catheter of ventriculoperitoneal shunt into the scrotum. Acta Neurochir (Wien) 1998; 140: 167-170.
16. Crofford MJ, Balsam D. Scrotal migration of ventriculoperitoneal shunts. AJR Am J Roentgenol 1983; 141: 369-371.