Case Report

Transanal Extrusion of the Ventriculoperitoneal Shunt Tube

Farazi MMA[1], Salam MA[2] , Azim MA[3]

Abstract

Ventricular shunts are commonly employed in the management of hydrocephalus, Numerous complications such as dissection, migration and malfunction have been reported in the literature. Here we present a case of migration of the peritoneal catheter through anus who attended in our institute. He was managed successfully without further complications.

Keywords: Ventriculoperitoneal shunt (*VP shunt*)*, shunt infection, shunt migration, mediastinum, OFC* (*occipito frontal circumference*) .

1. Corresponding Author:
Dr. Md. Mohsin Ali Farazi, MBBS, MS
Junior Consultant, Department of Neurosurgery
Shaheed Sheikh Abu Naser Specialized Hospital, Khulna

2. Dr. Md. Abdus Salam, MBBS, MD
Junior Consultant, Department of Neurosurgery
Shaheed Sheikh Abu Naser Specialized Hospital, Khulna

3. Dr. Muhammed Arshad-ul-Azim, MBBS, FCPS, MD
Shaheed Sheikh Abu Naser Specialized Hospital, Khulna

Introduction

Ventriculoperitoneal (VP) shunt is one of the commonly performed procedures for the management of hydrocephalus[1]. Although shunts have decreased the mortality and morbidity associated with hydrocephalus, they are still associated with many potentially avoidable complications. The common complications of VP shunt surgery are infection of shunt, blockage and disconnection, migration of shunt tube, shunt failure, bowel perforation, cerebrospinal fluid (CSF) pseudocyst, inguinal hernia and hydrocele. The incidence of abdominal complication reported in the literature is 10-30%[2]. Extrusion of distal end of VP shunt through anal opening is rare and a lesser known complication[3]. We are reporting one such case of transanal extrusion of the distal end of the VP shunt.

Case Report

A male baby of 3 months of age presented with the complaints of gradual increasing size of the head since birth. On examination his OFC 47 cm, setting sun signs of the eyes, engorgement of the scalp veins, fontanelles arebulged, Ultra sonogram and CT Scan of brain shows gross ventriculomegaly of both lateral and third ventricles. We inserted a ventriculoperitoneal shunt and recovery was uneventful. The baby left the hospital after seven days with advice and follow up after one month. Accordingly after one month follow up he was normal. His OFC became 43cm, eyes are normal and he enjoying a healthy life. But after two months his parents came with the complaints of protrusion of abdominal end of the shunt tube through anus. We admitted him and examined that the peritoneal end of the tube is exteriorized but there was no sign of malfunction. The abdomen was not distended and bowel moved regularly. We did a X-ray abdomen and found that the tube came through perforating the rectum. We reposite the tube per rectally after cutting the distal end of the tube and finally discharged him without any problems.

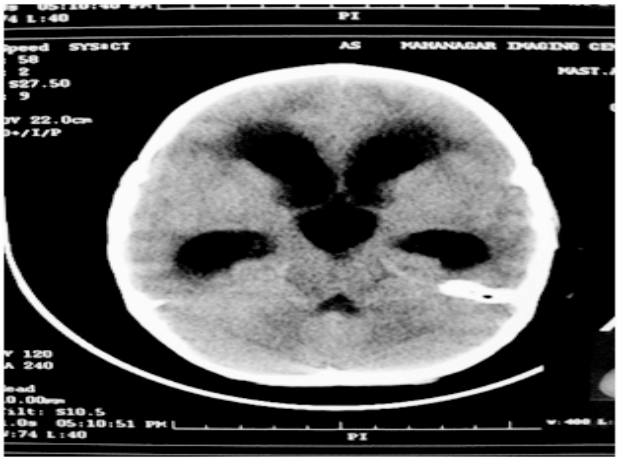

Figure- I: CT Scan of Brain shows hydrocephalus.

Figure- II: Abdominal end of the shunt tube through anus.

Discussion

There are many complications listed which may be seen after v-p shunt insertion[3, 4,9,13.] Most of these patients present with abdominal signs and/or intracranial sepsis [9]. Inguinal hernia and/or hydrocele may follow the insertion of a ventriculoperitoneal shunt with a frequency ranging from a minimum of 3.8% to a maximum of 16.8% [4,13]. Peritoneal CSF pseudocysts are an infrequent but important complication in patients with ventriculoperitoneal shunts. Their incidence is regarded as ranging between 1 and 4.5%.[4, 11]. Intestinal perforation and anal extrusion of a distal ventriculoperitoneal shunt is an unusual complication. Large intestine is considered the most frequent site of perforation due to VP shunt with an incidence of 0.1-0.7% [11]. The first case of anal extrusion of distal VP shunt was reported by Wilson and Bertrand in 1966[12]. Since then more than 100 such cases have been reported in the literature, predominantly in children. Most of these bowel perforations have asymptomatic course and are diagnosed only after the trans-anal shunt extrusion. Only a small proportion of children have clinical manifestations. Children with meningitis, encephalitis or ventriculitis due to *E.coli* or other gram negative coliform bacteria should be considered to have an undiagnosed asymptomatic bowel perforation due to VP shunt [13,14]. The exact basis of VP shunt related bowel perforation has not been fully defined. Various proposed mechanisms include foreign body reaction because of silicon tubing of VP shunt, pressure necrosis, and weak bowel musculature. Local inflammation and resulting fibrosis, adherence of shunt tube and continuous water hammer effect of CSF pulsations can erode the intestinal wall. Once in bowel lumen, shunt tube is driven downward and forward by peristaltic waves. Poor host immunity, surgical technique and long shunt tube in peritoneal cavity also contributes to shunt extrusion. The management of these cases most importantly involves early diagnosis of bowel perforation. X-ray following injection of contrast medium into shunt tubing, can give a clue to the diagnosis. The treatment of these cases involves shunt removal, intravenous antibiotics and re-insertion of shunt at an appropriate time or external ventricular drainage. In case of anal extrusion, distal shunt tube should be divided after traction at an anal verge and remaining shunt assembly should be removed by neck incision. After removal of VP shunt, intestinal perforation heals spontaneously. Emergency laparotomy in required only in cases presenting with features of peritonitis. In our case, only presentation was spontaneous protrusion of shunt tube from anal opening. Peritoneal end of shunt tube was divided after traction, as contaminated tube should not be allowed to be in contact with the peritoneum or the shunt tract[15]. It is done to lower the theoretical risk of infection. Patient was clinically asymptomatic during discharge from hospital.

In conclusion, this case reaffirms the need of close follow up of patients with VP shunts for timely detection and management of potentially fatal complications.

References

1. Lifshutz JI, Jonson WD. History of hydrocephalus and its treatments. Neurosurg Focus. 2001;11:E1.

2. Bryant MS, Bremer AM. Abdominal complications of ventriculoperitoneal shunts. Case reports and review of literature. Am Surg. 1988;54:50-55.

3. Akcora B, Serarslan Y, Sangun O. Bowel perforation and transanal protrusion of a ventriculo-peritoneal shunt shunt catheter. Pediatr Neurosurg. 2006;42:129-131.

4. Akyuz M, Ucar T, Goksu E. A thoracic complication of ventriculoperitoneal shunt: symptomatic hydrothorax from intrathoracic migration of a ventriculoperitoneal shunt catheter. Br J Neurosurg. 2004;18:171-173.

5. Imamura H, Nomura M. Migration of ventriculoperitoneal shunt into the heart- case report. Neurol Med Chir (Tokyo).

6. Eser O, Dogru O, Aslan A, Kundak A. Umbilical perforation: an unusual complication of a ventriculoperitoneal shunt. Childs Nerv Syst. 2006;22:1509-1510.

7. Zhou F, Chen G, Yhang J. Bowel perforation secondary to ventriculoperitoneal shunt: case report and clinical analysis. J Int Med Res. 2007;35:926-929.

8. Ramana Murthy KV, Jayaram Reddy S, Prasad DV. Perforation of the distal end of the ventriculoperitoneal shunt into the bladder with calculus formation. Pediatr Neurosurg. 2009;45:53-55.

9. Desousa AL, Worth RM. Extrusion of peritoneal catheter through abdominal incision: report of a rare complication of ventriculoperitoneal shunt. J Neurosurg. 1979;5:504-506.

10. Kim BJ, Cha SH, Park DJ, Song GS, Choi CH, Lee YW. A case of intracardiac migration of distal ventriculoperitoneal (V-P) shunt catheter. J Korean Neurosurg Soc. 2000;29:270-273.

11. Sathyanarayana S, Wylen EL, Baskaya MK, Nanda A. Spontaneous bowel perforation after ventriculoperitoneal shunt surgery: case report and a review of 45 cases. Surg Neurol. 2000;54:388-396.

12. Wilson CB, Bertrand V. Perforation of bowel complicating peritoneal shunt for hydrocephalus: report of two cases. Am Surg. 1966;32:601-603.

13. Sharma BS, Kak VK. Multiple subdural abscesses following colonic perforation- a rare complication of a ventriculoperitoneal shunt. Pediatr Radiol. 1988;18:407-408.

14. Longstreth G, Buckwalter N. Sterile cerebrospinal fluid ascites and chronic peritonitis. N Engl J Med. 2001;345:297-298.

15. Agarwal M, Adhana R, Namdev H, Yadav YR, Agrawal T. Transoral extrusion of the ventriculoperitoneal shunt: A case report and review of literature. Journal of Pediatric Neuroscience. 2011;6:149-151.2002;42:181-183.