Kocatepe Tıp Dergisi (2002), 3, 69-72
The Medical Journal of Kocatepe
2002, Afyon Kocatepe Üniversitesi

VENTRICULOPERITONEAL SHUNT WITH HYDROCELE: A CASE REPORT AND REVIEW OF THE LITERATURE

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ABSTRACT: Natural history of the processus vaginalis is not known clearly. It appears that raised intraabdominal pressure is associated with an increased incidence of patency of the processus vaginalis. We evaluated a male child who had ventriculoperitoneal shunt and congenital hydrocele with the review of literature.
[Key words: ventriculoperitoneal shunt, hydrocele]

INTRODUCTION

Childhood hydrocephalus is a common disorder in which too much cerebrospinal fluid (CSF) accumulates within the ventricles (fluid-containing spaces) of the brain and usually treated by cerebrospinal fluid shunting using a ventriculoperitoneal or ventriculoarterial shunts. The condition may occur at any age. It may be caused by a congenital defect, hemorrhage in the brain, infection, a tumor, or head injury. The most effective treatment is the surgical insertion of a device known as a ventriculoperitoneal shunt that can divert the excess CSF away from the ventricles in the brain to peritoneal space. Complications of these shunts are well known and documented [1-5]. The most common complications of ventriculo-peritoneal shunt placement include: ileus, catheter in brain, subdural hematoma, brain hematoma, neck hematoma, skin perforation, lung injury, bowel injury, peritonitis, meningitis, disconnection and exposed catheter.

After descent of the testis, the processus vaginalis closes and disappears between the internal inguinal ring and the upper pole of the testis [6]. Persisting patency of the processus vaginalis can lead to the development of inguinal hernias [7-10] and hydroceles of childhood [11-12].

This case represents the possibility of presence of bilateral patent processus vaginalis without clinical symptoms on both sides in children with ventriculo-peritoneal shunt.

CASE REPORT

We present 5-year old male child with congenital hydrocephalus had a right-sided ventriculo-peritoneal shunt 1 week after birth. Family noticed a gradually increasing swelling on the right scrotum when he was 2 years of age. There was a history of percutaneous aspiration of hydrocele by a GP about 1 year ago, but swelling recurred in a few days.

On physical examination, swelling on the right scrotum was easily noticed. Compression on the scrotum resulted disappearing of the swelling with a bruit on the inguinal canal. Bilateral testicles were palpable on both sides. Ultrasonographic examination revealed the hydrocele without hernia. Plain abdominal radiograph showed a normal localized VP shunt tip (Fig. 1).

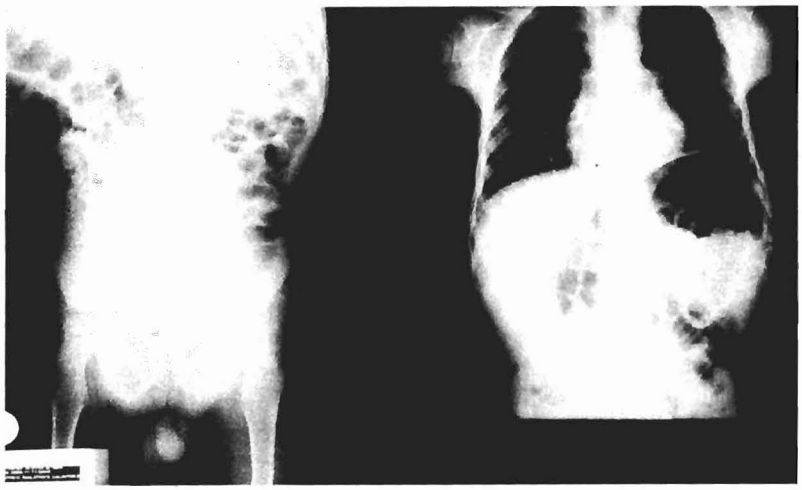

Fig.1. Normal tract of the ventriculoperitoneal shunt through its subcutaneous route and normal localization of the catheter tip intraperitoneally.

Operation was performed by right groin incision and the processus vaginalis was closed. On the first postoperative day, CSF leak was observed from the incision, which lasted about 12 hours, but resolved on the second postoperative day. The patient made a good recovery.

Two months after the surgery the patient was admitted to the clinic for a newly occurred left sided hydrocele. The parents of the child did not approve for a second surgical intervention.

DISCUSSION

Shunting of CSF is the treatment of choice in childhood hydrocephalus. The most common complications are the mechanical malfunction of the shunt being either by disconnection or blockage of its components and shunt infection [2-4].

With the review of literature a number of scrotal migrations of the VP shunts, few hydrocele formation without shunt migration and 31 inguinal hernias were reported [7-12].

The association between VP shunts and hydroceles is recognized [13-15]. Grosfeld et al [16] found 17% incidence of inguinal hernias in children with VP shunts. The hernias were bilateral in 70% of cases and appeared at an average of 6,8 months after shunt insertion. Clarnette et al. [17] also found 15% incidence of inguinal hernia after insertion of a VP shunt and a hydrocele developed in an additional 6% of boys among 430 children who had VP shunts. Inguinal hernias were bilateral in 47% of boys and 27% of girls. The incidence of development of an inguinal hernia or hydrocele was closely related to the age of insertion of the VP shunt, being 30% during the last 8 weeks of gestation and the first few months of life, then falling to reach about 10% at 1 year.

The occurrence of inguinal hernias and hydroceles after VP shunt insertion supports the role of raised intraabdominal pressure in the etiology of these conditions. Clarnette et al. [17] claims that raised intraabdominal pressure is associated with an increased incidence of clinical hernias, but not with increased incidence of patency of the processus vaginalis. They propose that the processus vaginalis remains patent in at least 30% of children in the first few months of life.

Poremba et al. investigated 63 children with ventriculoperitoneal shunt by different imaging modalities to recognize the rate and the main

reasons of abdominal complications. Eleven of the children had some intergrowth such as inguinal hernia and/or hydrocele [9 cases], bowel perforation [2 cases], CSF pseudocyst [1 case] and liver abscess [1 case]. They concluded that abdominal plain film, ultrasonography, occasionally CT has important role for the correct diagnosis of the complications [18].

Percutaneous aspiration of the hydrocele fluid may be an option for adult hydrocele, but not for communicating hydroceles at pediatric age. Unfortunately, this child had a percutaneous aspiration for his hydrocele. Both recurrence of the scrotal swelling due to flow of the cerebrospinal fluid to the scrotal sac through the patent processus vaginalis and the possibility of infection, which may cause peritoneal and then meningitis via shunt catheter makes this intervention inappropriate.

Communicating hydrocele is another rare complication of ventriculoperitoneal shunt. In conclusion, a child presenting with a communicating hydrocele with a history of ventriculoperitoneal shunt expands the differential diagnosis of pediatric hydrocele and the possibility of the bilateral persistence of the processus vaginalis should not be missed and should be investigated accordingly. Perutaneous aspiration must be avoided due to the possibility of infection.

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