Journal of Neurological Sciences [Turkish] **31:(2)**# 40; 408-412, 2014
http://www.jns.dergisi.org/text.php3?id=783

Case Report

Scrotal Migration as an Unusual Complication of Ventriculoperitoneal Shunt Case Report

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Summary

Introduction: Ventriculoperitoneal shunt is a widely used method in hydrocephalus treatment. Complications of catheters are not uncommon as well as dysfunctions.
Case: Ventriculoperitoneal shunt was implanted to a new born at twelfth day of his life because of hydrocephalus. Five months after operation he developed a swelling on his testicles and he was very disquiet. A scrotal migration of distal end of the shunt was discovered.
Conclusion: Migration of a shunt catheter causes shunt dysfunction and develops symptoms according to the area it is migrated. Such a condition is thought to be due to patent ductus arteriosus. In the presence of a patent ductus arteriosus, shunt catheter can be kept shorter. When a patient with hydrocephalus suffers with from his scrotum and develops shunt dysfunction scrotal migration should come to mind.

Key words: Hydrocephalus, ventriculoperitoneal shunt, complication, scrotal migration, hydrocele

Skrotal Migrasyon: Sıradışı Ventrikülöperitoneal Şant Komplikasyonu

Özet

Giriş: Ventrikülöperitoneal şant hidrosefali tedavisinde yaygın olarak kullanılan bir yöntemdir. Kateter komplikasyonları disfonksiyonu kadar sık görülmektedir.
Olgu: Hidrosefali nedeniyle 12 günlükken ventrikülöperitoneal şant takılmış. Ameliyattan 5 ay sonra testisler üzerinde şişlik geliştiği ve çok huzursuzluk olduğu görüldü.
Sonuç: Şant kateterinin migrasyonu şant disfonksiyonuna neden olur. migre olduğu bölgeye göre belirtiler oluşturur. bu durumun nedeni patent duktus artiozus olarak düşünülmektedir. bu nedenle şant kısa bırakılabilir. testise ait şikayetlerle gelen hastalarda skrotal migrasyon akılda tutulmalıdır.

Anahtar Kelimeler: Hidrosefali, ventrilüloperitoneal şant, komplikasyon, skrotal migrasyon, hidrosel

INTRODUCTION

Ventriculoperitoneal shunt is used very commonly in treatment of hydrocephalus. Even though same surgical procedures and localizations are used, venticulo-peritoneal shunt complications occur at %24-74 of cases[(11)]. Some of the complications occurring at distal edge of the shunt are: infections[(4)], occlusions, breaking apart,

CSF collection, peritoneal pseudo cyst, migration and dysfunction due to shunt apparatus itself[1,3,4]. Complications due to malposition are seen rarely but they cause shunt dysfunction and require reoperation. Shunt dysfunction cause local abdominal findings or findings due to increased intracranial pressure.

Distal migration of a ventriculoperitoneal shunt to scrotum is firstly recorded by Ramani at 1974[9]. It has been 39 years since the firstly described case of scrotal migration and 29 cases including present case of the same complication are recorded in this time[6,8,10].

Here we presented a case with testicular swelling because of ventriculoperitoneal shunt migration to the scrotum.

CASE PRESENTATION

The baby born from 21 years old G3P3 mother by normal vaginal delivery.

His head circumferential was bigger than normal. It was performed a transcranial (ultrasonography) USG because of macrocephaly. After detection of ventriculomegaly the patient was consulted to our department. On his cranial CT stenosis of aqueducts causing hydrocephalus was detected (Figure 1). The patient was operated and implanted a ventriculoperitoneal shunt at the first week of his life. His hydrocephalus was ameliorated and he was discharged from hospital.

5 months after operation the patient was brought to children's ER with complaints of bump formation at right testicular area, palpable induration at the same area and discomfort. His infection parameters were negative and his two sided abdominal x-rays showed that shunt's distal edge was in scrotum (Figure 2,3). His cranial CT scans showed increase of formerly diminished hydrocephalus. His signs of discomfort were thought to be due to inadequate function of the shunt at scrotal area. The patient was operated together with pediatric surgery.

Through an incision from inguinal area inguinal ring was reached. With help of an endoscope shunt was taken out from scrotum. CSF was seen clear. Distal end of the shunt was shortened and then replaced in peritoneum again with the help of an endoscope. Opened ductus arteriosus ring was fixed with a mesh. On x-ray imaging we saw that shunt was in peritoneum (Figure 4) and hydrocephaly was ameliorated according to cranial CT scans (Figure 5). He was discharged from hospital. He's been followed up since 2 years and has no complaints.

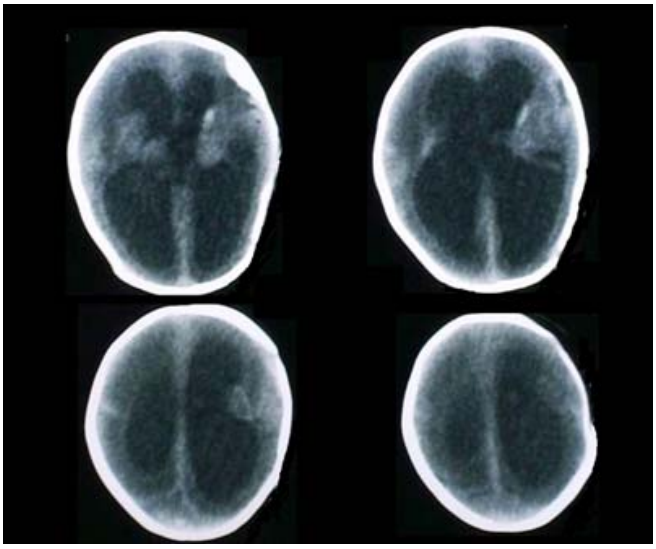

Figure 1: *Preoperative brain CT images showing hydrocephalus*

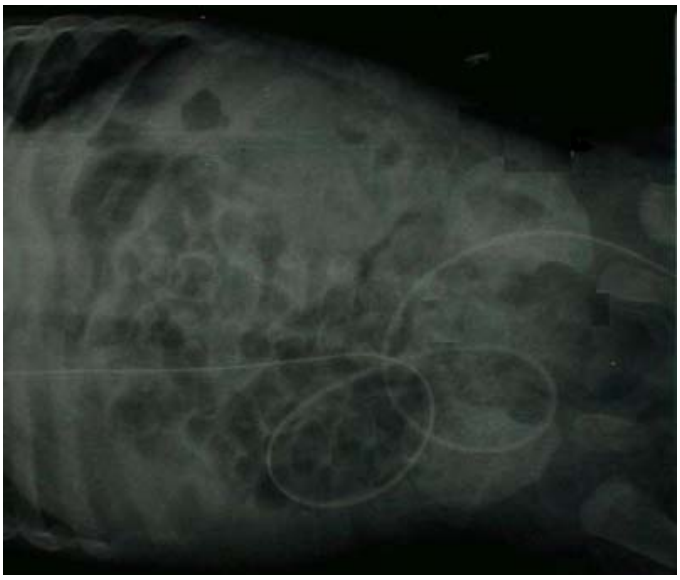

Figure 2: *Distal migration of shunt catheter into scrotum, AP X-ray imaging*

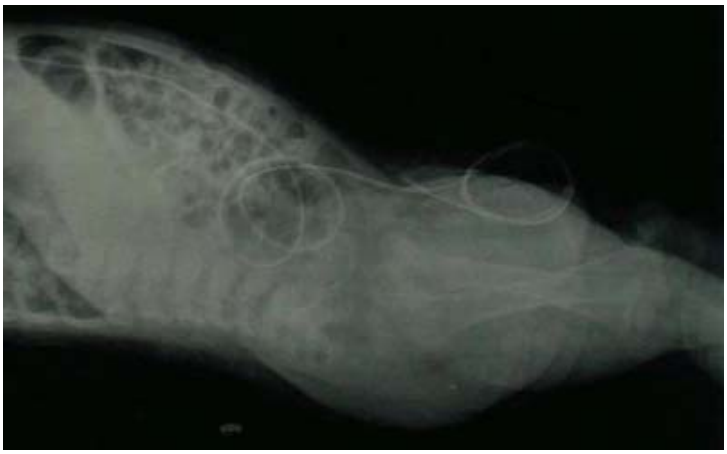

Figure 3: *Lateral abdominal X-ray showing migration of distal catheter into scrotum preoperatively*

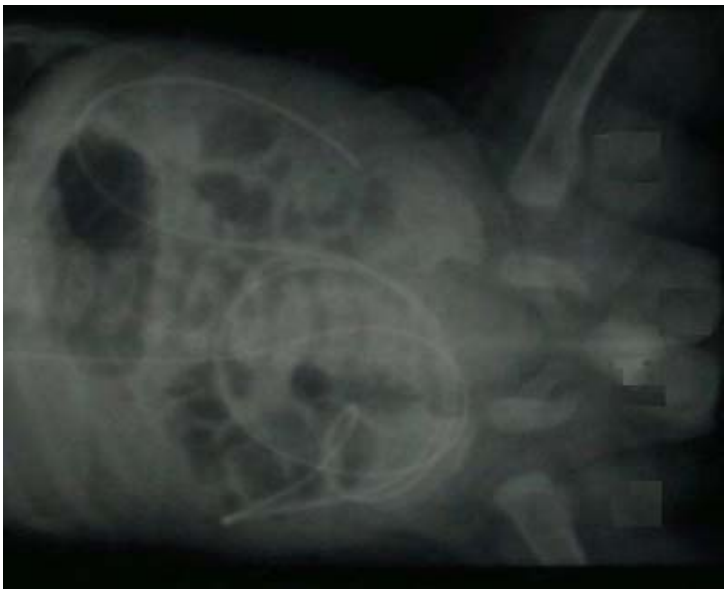

Figure 4: *Postoperative X-ray images, showing normal localization of distal catheter.*

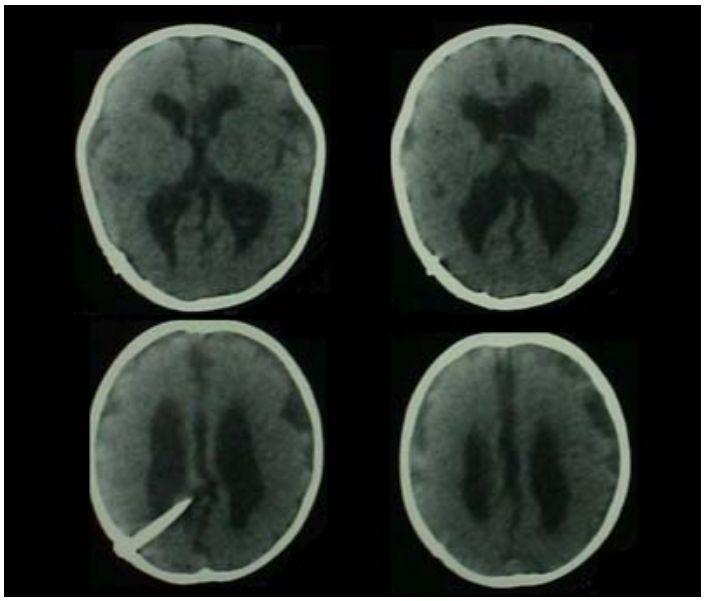

Figure 5: *Postoperative brain CT scan demonstrating decrease in size of ventricles.*

DISCUSSION

V-P shunt implantation is a common treatment used at hydrocephaly patients. Many complications can occur after this surgery[4,5]. Some of these are abdominal complaints. It's prevalence changes between % 5-45[5,7]. In addition to these complaints caused by dysfunction of distal edge of the shunt, intracranial symptoms also happen. The prevalence of scrotal migration of distal edge of the shunt is between % 3.8 and % 16.8[5]. This causes hydrocele and patients go to emergency room (ER) for testicular bumps such as our case. In addition to these complaints because of shunt dysfunction intracranial pressure increases and symptoms such as vomiting or discomfort happen. Time for such a complication varies between 1 day and 30 months. Mean time is 3.8 months[2,5]. At % 60 of the cases, scrotal migration happens at right side[5]. In our case this time interval is 5 months. It is very difficult to explain the reason for the migration of peritoneal catheter. But some possible mechanisms exist.

First of these are unclosed processus vaginalis. There are similar cases in the literature[11]. Normally, processus vaginalis is patent at % 60-70 of infants in first three months of life. It could be established as patent at % 50-60 of 1 year olds and % 40 for children between ages 2-16[5]. This ratio is approximately % 15-30 at adults[3]. Continuous CSF drainage to peritoneum can increase intraabdominal pressure and thus keep the processus vaginalis open[5]. This theory can explain why this situation is seen more in younger children.

Another reason for this situation is increased intracranial pressure[3]. The origin of this theory is also continuous intraabdominal CSF drainage. When intraabdominal pressure increases it keeps the processus vaginalis open as mentioned before. Children with a V-P shunt implantation are more likely to develop hernia and hydrocele[2,11]. Intraabdominal pressure increases after V-P shunt implantation for two reason: CSF drainage and localization of shunt catheter in abdomen. This causes migration of shunt to other anatomical localizations. Also past meningomyelocele operation increases intraabdominal pressure and thus is a risk factor for peritoneal catheter migration[5,11].

In our case there was no meningomyelocele. But both patent

processus vaginalis and increase in intraabdominal pressure can be accepted as causes of this complication. In such situation where there is continuous CSF production and lack of absorption, the drainage of CSF to another anatomical location is a non-physiological but artificial solution. Thus, whatever we do or wherever we drain CSF the real problem, which is the overproduction and lack of absorption of CSF, is left unsolved.

CONCLUSION

Ventriculo-peritoneal shunt implantation surgery may cause variable complications. Scrotal swelling after this procedure should suggest scrotal migration. The catheter we used was 90 cm in length and its edge was open. A suggestion of precaution is the usage of a shorter peritoneal catheter because we cannot diminish CSF drainage nor take preventive measures to eliminate patent processus vaginalis. In our case, we didn't shorten the size of the catheter because patent processus vaginalis was covered with a mesh. We think that usage of a catheter with a closed edge can prevent this complication and other distal shunt migrations as well.

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Received by: 06 August 2013
Revised by: 26 April 2014
Accepted: 02 May 2014

The Online Journal of Neurological Sciences (Turkish) 1984-2014
This e-journal is run by Ege University Faculty of Medicine,
Dept. of Neurological Surgery, Bornova, Izmir-35100TR
as part of the Ege Neurological Surgery World Wide Web service.
Comments and feedback:
E-mail: editor@jns.dergisi.org
URL: http://www.jns.dergisi.org
Journal of Neurological Sciences (Turkish)
Abbr: J. Neurol. Sci.[Turk]
ISSNe 1302-1664

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