

Fatal Intratumoral Hemorrhage Following Ventriculo-peritoneal Shunt

Ventriküloperitoneal Şant Takılmasını Takiben Gelişen Intratümöral Kanama

ABSTRACT

Ventriculo-peritoneal shunt, one of the most common surgical procedures performed by neurosurgeons all over the world has been associated with a number of complications; the most common being infection and mechanical failure. Most of these complications tend to increase morbidity with prolonged hospital stay and cost. Though subdural, extradural or intracerebral hematomas have been described after ventriculo-peritoneal shunt placement, fatal intratumoral bleed has been very uncommon. The authors describe a case of basal ganglionic tumor in a 15-year-old child who underwent emergency ventriculo-peritoneal shunt placement for associated hydrocephalus and deteriorating consciousness. She had a sudden deterioration following the procedure and imaging revealed massive intratumoral hemorrhage.

KEY WORDS: Complications, Hemorrhage, Intratumoral, Ventriculo-peritoneal shunt

ÖZ

Ventriküloperitoneal şant takılması beyin cerrahları tarafından en sık yapılan operasyonlardan birisidir. En çok karşılaşılan komplikasyonlar enfeksiyon ve mekanik yetmezliktir. Komplikasyonlar hastanede kalış süresini, maliyeti ve morbiditeyi artırmaktadır. Ventriküloperitoneal şant sonrası subdural, epidural ve intraserebral hematoma görülse de öldürücü intratümöral kanama oldukça az görülmektedir. Yazarlar basal ganglion yerleşimli tümörü olan ve buna bağlı olarak hidrosefalisi ve bilinç bulanıklığı olan 15 yaşındaki hastada ventriküloperitoneal şant takılmasını takiben gelişen massif intratümöral kanama olgusunu sunmaktadırlar.

ANAHTAR SÖZCÜKLER: Kanama, Komplikasyon, Tümör içine, Ventriküloperitoneal şant

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Received : 11.06.2008

Accepted : 31.07.2008

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INTRODUCTION

Ventriculo-peritoneal (VP) shunt, one of the most common surgical procedures performed by neurosurgeons has been associated with a number of complications. Most of the complications associated with VP shunt placement are associated with increased morbidity with shunt-related infections and obstruction being the most common.(2,3) The authors share a case of fatal intratumoral bleed in a case of thalamic tumor following insertion of a VP shunt.

CASE DESCRIPTION

A 15 year-old girl presented at our emergency room at night with complaints of headache and painless deterioration of vision in both eyes for two months. On examination she was drowsy with visual acuity of 6/36 bilaterally on the Snellen’s chart. Non-contrast computed tomography (CT) scan revealed a hyperdense soft tissue lesion in the right basal ganglionic region with hydrocephalus. (Figure 1) An emergency CSF diversion was planned and she underwent a left sided ventriculo-peritoneal (VP) shunt. Intraoperatively the cerebrospinal fluid (CSF) was under high pressure and clear. Minimal CSF was allowed to drain in a controlled manner during the surgery. Thirty minutes following the surgery, she had a sudden neurological deterioration with GCS falling to E1V1M3. Urgent CT head showed a massive intratumoral bleed with the VP shunt well placed in the left frontal horn. (Figure 2) She experienced a cardiac arrest while being taken to the operation room for emergency evacuation of the tumor and could not be revived.



Figure 2: CT scan brain following VP shunt placement showing intratumoral bleed and swelling with well placed VP shunt.

DISCUSSION

Ventriculo-peritoneal shunt, one of the most common surgical procedures performed by neurosurgeons for diverse indications has been associated with a number of complication most of which are responsible for increased morbidity.(2,3) Apart from the commonly associated complications

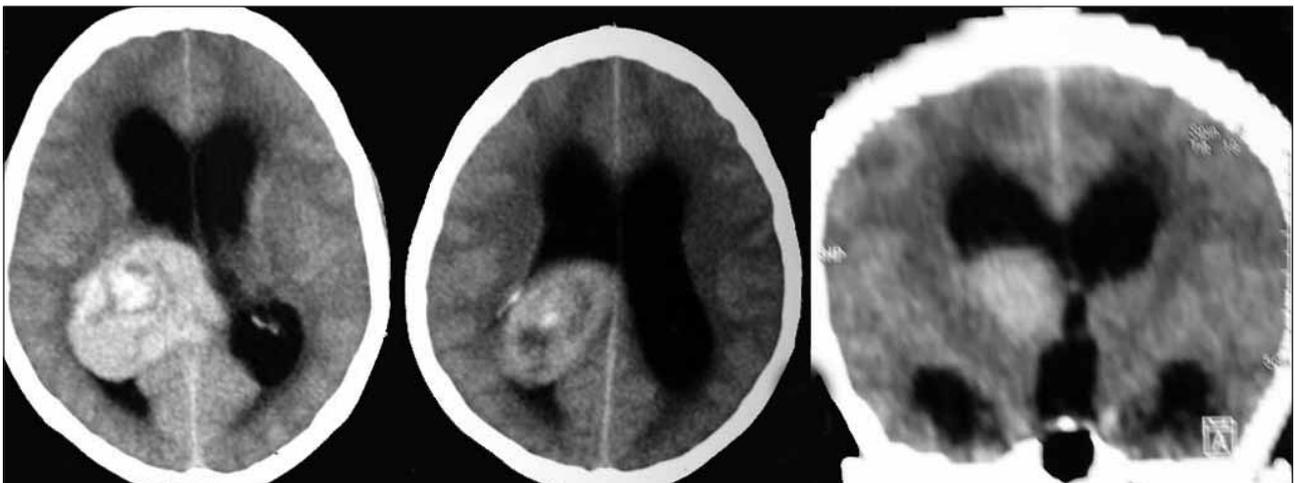


Figure 1: Non-contrast CT scan revealing a hyperdense soft tissue lesion in the right basal ganglionic region with hydrocephalus.

related to infection and mechanical failure of the shunt systems, (3) VP shunt placement can be associated with hemorrhage, the majority of which are subdural, extradural or intracerebral hematomas and can occur immediately or in a delayed fashion.(1,4,5) Specific complications can occur in patients with intracranial tumors with hydrocephalus following ventricular decompression.(6) The present case demonstrates a rare clinical occurrence of a fatal intratumoral hemorrhage following the placement of a ventriculo-peritoneal shunt. A sudden decrease in the CSF pressure following ventricular decompression resulting in rapid motion and distortion of the intracranial structures with disturbance of dynamic balance between intracranial and intratumoral pressures, leading to vascular insufficiency, congestion, and then hemorrhage within the tumor appears to be the most probable mechanism for intratumoral hemorrhage in the present case. However, considering the number of VP shunts performed in patients with intracranial tumors, such a complication is extremely rare.(6) Whether there is any predilection for intratumoral hemorrhage following CSF diversion in any specific location or histology of the tumor is a matter of conjecture. This case however highlights that rapid ventricular decompression should be avoided in cases of large intracranial tumors with hydrocephalus to avoid this rare but real and life-threatening complication. As it is difficult to predict the occurrence of this rare

complication in a particular case, avoidance of shunt placement and removal of the tumor can be the best alternative if the patient is clinically stable. Surgeons should be prepared for craniotomy as such a complication can occur even intraoperatively during placement of a ventriculo-peritoneal shunt. A careful watch for signs of raised intracranial pressure during VP shunt placement can help diagnose this lesion early so that appropriate measures can be taken before irreversible damage is afflicted. The present case is shared as recognizing and being aware of this complication can help appropriate prognostication and early intervention in case of its occurrence.

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