

Coexistence of subdural and intracerebral hematoma in a shunted infant not related to ventricular catheter

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ABSTRACT

لدينا هنا تقرير عن حالة رضيع حضر إلى المستشفى وهو يعاني من وجود ورم تحت الأم الجافية وفي المخ، يمتد من موضع تركيب الصارفة البطينية الصفاقية بعد ستة أيام من إجراء العملية الجراحية. على الرغم من ذكر هذا المضاعفات سابقاً إلا أن ذلك يعد أمر نادراً الحدوث. لا يزال المرض والعلاج يمثلان المشكلة.

We have here, a case report of an infant who presented with subdural and intracerebral hematoma distantly from the site of insertion of a ventriculoperitoneal shunt 6 days after operation. Though this complication has been previously reported, it remains a rare event. Both pathogenesis and treatment still represent a problem.

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Ventriculoperitoneal shunt application is among the most frequently performed procedure in the treatment of hydrocephalus. In addition to the most common shunt complications, obstruction and infection, ventriculoperitoneal shunts have been associated with a variety of excessive CSF drainage complications, including slit ventricle syndrome, formation of intracranial hematomas, and the development of craniosynostosis and microcephaly.¹ In this report, an infant who developed subdural and intracerebral hematoma distantly from the site of insertion of a ventriculoperitoneal shunt 6 days after operation is presented. The aim of this report is to describe this rare condition and discuss both pathogenesis and treatment.

Case Report. A 5-day-old male was admitted to our clinic when his mother noticed that his head circumference had increased. On examination, he was irritable, the anterior fontanelle was tense and the head circumference was 43 cm. A CT of the head showed dilatation of the lateral and third ventricles (Figure 1). He underwent a right-sided ventriculoperitoneal shunt catheter insertion for hydrocephalus. The follow up CT performed 2 days postoperatively showed the significant decrease in size of the lateral ventricles (Figure 2). Shunt catheter was in the atrium of the left occipital horn. At the sixth postoperative day, we noticed the excessive collapse of the anterior fontanelle, and performed urgent CT. A cranial CT scan showed a left sided posterior fossa subdural hematoma measuring 0.8 x 0.8 x 0.9 cm, left temporoparietooccipital laminar subdural hematoma, and left temporoccipital intracerebral hematoma measuring 1.5 x 1.5 x 1 cm (Figure 3). Hematological findings and bleeding tests were all normal. He was treated nonsurgically as he was asymptomatic. He was discharged from hospital in a stable condition on the twelfth postoperative day.

Discussion. Intracerebral and subdural hematomas distantly from the site of insertion of a ventriculoperitoneal shunt are extremely rare complications. Though these conditions have been reported previously,²⁻⁶ we could not find a report of a combination of them in any patient in the literature to date. Their etiology is thought to be due to an overdrainage of CSF and a rapid lowering of intracranial pressure, leading to the development of these hematomas.^{1,6} In the present case, the putative pathophysiological mechanism that led to hematomas point to an excessive CSF drainage in a reduction of CSF volume with the associated lowering in intracranial pressure, which eventually increased the transmural pressure gradient of the vessels, leading to a secondary wall stress rupture. Since the advent of modern neuroimaging techniques, prompt diagnosis of post shunting intracranial hematoma has been possible even in asymptomatic patients. The choice between operative or nonoperative management of post shunting

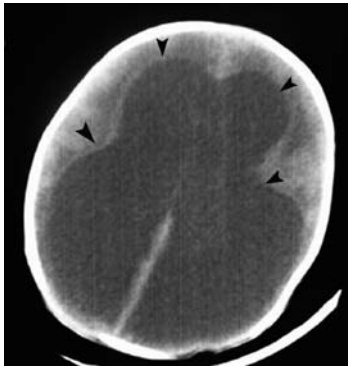


Figure 1 - Axial brain CT demonstrating the dilatation of the lateral ventricles.

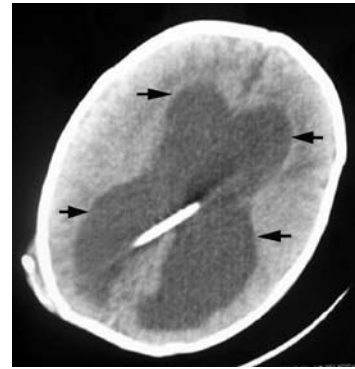


Figure 2 - Axial brain CT showing the significant decrease in size of lateral ventricles after catheter insertion.

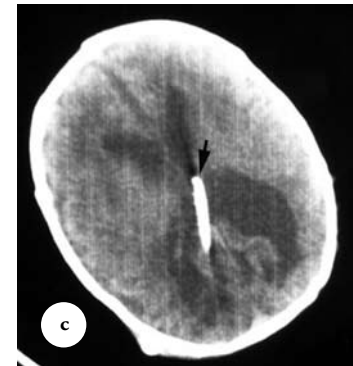
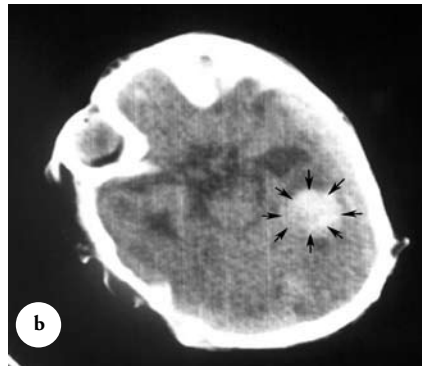


Figure 3 - Axial brain CT demonstrating a) the posterior fossa subdural hematoma, and b) the left parietooccipital intracerebral hematoma. c) Shunt catheter is seen in the atrium of left occipital horn.

intracranial hematoma is a difficult and controversial issue, especially in asymptomatic patients. The decision for operative or nonoperative treatment is based on the patient's clinical picture, age, CT findings including its mass effect, size, and stage of hematoma. Neurological deterioration over time is also an important factor influencing the decision to operate. Surgical evacuation of the hematoma is not often necessary.⁶ We treated our patient nonoperatively as he was asymptomatic. If neurological deterioration had begun, we would have carried out prompt surgical intervention. To prevent the formation of intracranial hematomas after ventricular shunting, the usual precautions of minimal CSF loss at the time of ventricular catheter insertion, use of higher-pressure valves or antisiphon valves and slow return to full upright position in the immediate postoperative period are necessary.

In conclusion, CSF overdrainage can either cause or precipitate intracranial hematomas affecting both the infratentorial and supratentorial regions. The choice between operative or nonoperative management of post

shunting intracranial hematoma should be based on each patient's clinical presentation.

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