Bilateral Chronic Subdural Haematoma After Endoscopic Third Ventriculostomy: Case Report and Review of the Literature

I Emmanuel, A Michael

Citation

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Abstract

Several complications related to Endoscopic third ventriculostomy (ETV) have been reported in the literature including chronic subdural haematoma. This is usually unilateral. We report a case of a 12-month-old female child with bilateral chronic subdural haematoma (CSH) 3months after an ETV. She had a ventriculoperitoneal shunt at 5months of age on account of congenital aqueductal stenosis with marked cerebral mantle thining. At 9months of age an ETV was done due to shunt obstruction. The CSH was successfully treated by burr-hole evacuation on both sides. Though ETV is a simple, effective and safe procedure, and also the main stay of treatment for noncommunicating hydrocephalus in many centres, long term follow up should still be emphasised.

INTRODUCTION

Endoscopic third ventriculostomy (ETV) is generally believed to be a safe procedure and is now the treatment of choice for noncommunicating hydrocephalus. It is associated with fewer complications than extracranial cerebrospinal fluid diversion [1]. Possible complications associated with ETV are cerebrospinal fluid leak, meningitis, ventriculitis, postoperative memory deficit, hypothalamic dysfunction, hemiparesis, midbrain damage, subarachnoid haemorrhage, and arrhythmia with cardiac arrest.

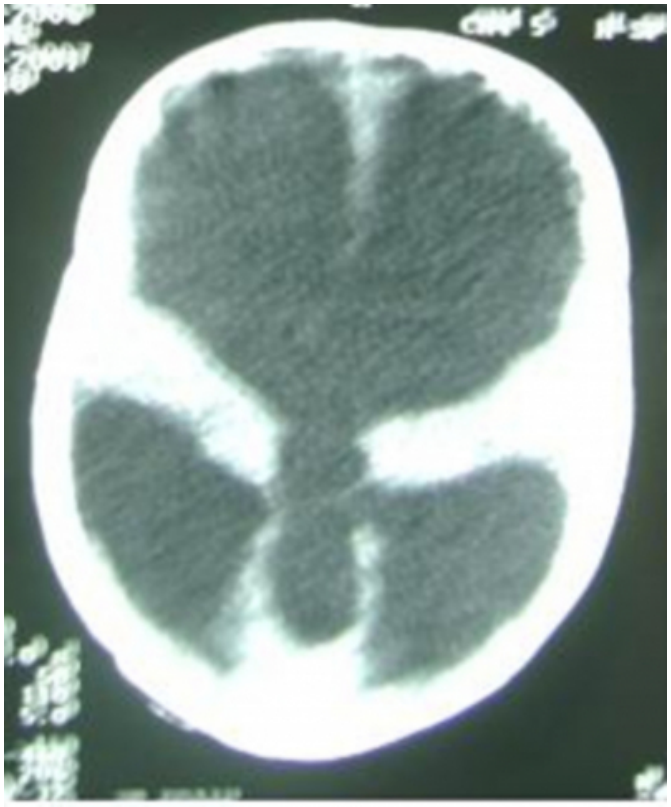
Subdural effusion or haematoma is not considered less frequent after ETV, but only a few cases occurring bilaterally have been reported[2]. We report a case of bilateral chronic massive subdural haematoma that developed after ETV. The clinical and radiological findings in this case are discussed. Possible mechanisms for this clinical occurrence are also discussed.

CASE REPORT

N. O. is a 12-month-old female child who presented with worsening restlessness and persistent vomiting of two weeks duration. Two days prior to presentation she became difficult to arouse. There was no antecedent history of child abuse, head trauma or fever. She was diagnosed with congenital aqueductal stenosis for which she had a ventriculoperitoneal shunt at 5months of age (Figure 1). This failed from proximal shunt obstruction. This was treated by ETV at 9months of age. The ETV was uneventful. Physical examination revealed a 12.5-kg girl who was drowsy, lethargic, afebrile and not pale. She had bilateral dilated pupils which reacted sluggishly to light, bilateral papilloedema, and bilateral abducent nerve palsy. There was no retina haemorrhage. Muscle stretch reflexes were increased globally.

Figure 1

Figure 1: Pre ventriculoperitoneal shunt cranial CT showing severely thin cerebral mantle.

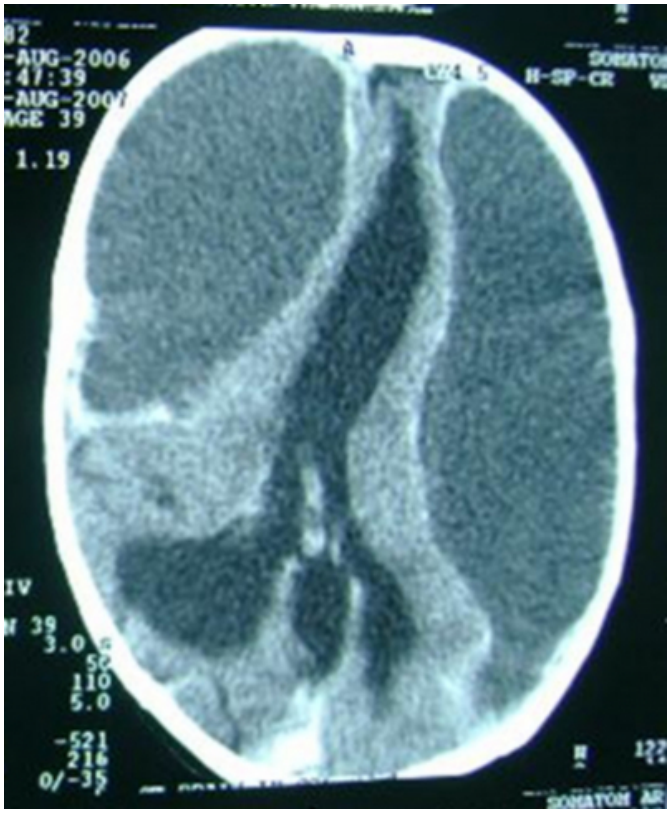


Cranial computerized tomographic scan revealed bilateral chronic subdural haematoma with significant mass effect (Figure 2).

She immediately underwent burr hole evacuation of the haematoma on both sides. The intraoperative findings were of subdural haematoma under high pressure. Postoperatively, she gradually regained full recovery of her mental and motor functions. She remains well on subsequent follow-up 8 months later.

Figure 2

Figure 2: Cranial CT showing extensive bilateral chronic subdural haematoma



DISCUSSION

Since the renaissance of neuroendoscopy over two decades ago, numerous papers have been published dealing with the indications, techniques, and results of neuroendoscopic

surgery. Endoscopic techniques have been well established in the treatment of certain disorders, such as hydrocephalus, intraventricular tumors and cystic lesions. It has been successfully used in aqueductal stenosis, tectal plate tumors, posterior fossa tumors, and myelomeningocoele-associated hydrocephalus. Symptomatic aqueductal stenosis, which can present at any age, is generally a strong indication for ETV [1]. Most of these patients with aqueductal stenosis can be managed successfully by ETV without ventriculoperitoneal shunting.

In this our patient, ETV relieved her obstructive hydrocephalus successfully. Jones et al. showed less success with ETV in patients less than 2 years of age [3]. They recommended the evaluation of CSF circulation for the indication of ETV in young patients in which the major CSF pathway is immature. This patient had a successful ETV at 9months of age.

Although ETV is an effective and safe procedure, it is associated with its own complications such as basilar artery injury, intraventricular hemorrhage, third cranial nerve injury, and injury of hypothalamus and thalamus. In several series, there are reports of ETV complication rate being between 0 and 20% [4,5,6]. In most series, bilateral CSH as complication of ETV is rare.

Subdural haematoma is one of the rarely reported complications following ETV. When reported they are usually unilateral. In our case report, the collection was bilateral and therefore most likely not directly connected with the surgical procedure. The mechanism of chronic subdural haematoma formation months after an ETV, as appeared in our case, we believe that other factors apart from the surgical procedure may play a role in the slow formation and development of the CSH. One possible explanation for this is that drainage of CSF during ETV may create a large space between the dura and the brain. This is likely in view of the pre-operative thin cerebral mantle (Figure 1). This space may gradually enable development of a subdural collection. Four months after the ventriculoperitoneal shunt there was no subdural haematoma but 3months after ETV she presented with bilateral CSH. Successful ETV encourages cerebrospinal fluid absorption, and overdrainage may therefore evolve. This situation could be the starting point of the subdural collection. A second possible hypothesis, though unlikely since the patient is virtually with the mother all the time, is a minor head trauma that the parents were not aware of.

In conclusion, although rare, bilateral CSH should be considered in the differential diagnosis of change in mental status in patients with previous ETV; hydrocephalic patients with pre-operative thin cerebral mantle who had ETV should also be followed closely for possible CSH formation.

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Author Information

Idowu Olufemi Emmanuel, MBBS, MsC, FWACS (neurosurgery)
Surgery, Neurological Surgery Division, Lagos State University College of Medicine

Atiba Adepoju Michael, MBBS
Department of Surgery, Lagos State University Teaching Hospital