Infratentorial Subdural Empyema Associated with Long Standing Occipital Dermal Sinus: Case Report

Abstract

Infratentorial subdural empyema is a rare form of life threatening intracranial infection, requiring immediate neurosurgical intervention. We present this 4-years-old girl with posterior fossa subdural empyema which is associated with congenital occipital dermal sinus. A contrast-enhanced CT scan showed an infratentorial supracerebellar hypodense fluid collection with the peripheral rim enhancement to the left of the midline that raised suspicion of a subdural empyema with supratentorial mild ventricular dilatation which was confirmed by MRI with contrast. The patient was operated through sub-occipital decompression and drainage of the collection and the samples were sent for culture and sensitivity. Dermal sinus can be a cause for intracranial infection and should be investigated to rule out intradural connection. Infratentorial subdural empyema should be managed urgently by neurosurgical intervention to prevent further life threatening complications.

Keywords

Infratentorial; Subdural empyema; Dermal sinus; Craniectomy; Hydrocephalus

Introduction

Subdural empyema is defined as a collection of pus in the preformed space between the cranial dura mater and arachnoid mater [1]. Due to its life threatening nature, most cases require neurosurgical drainage of the collection. Infratentorial subdural empyemas are uncommon constituting only 0.6% of all cases of intracranial suppurative conditions [2]. A congenital dermal sinus is a tract lined by epidermis communicting between the skin and the deeper tissues and may be connected with the central nervous system. It is rarely connected with posterior fossa [3].

In this paper, we report a rare case of congenital dermal sinus with acute presentation of subtentorial subdural empyema which was successfully treated with neurosurgical intervention.

Case Presentation

A four years old girl known to have a long standing congenital midline occipital scalp dimple (Figure 1) which was treated expectantly as a superficial dermal sinus. She presented over 10 days period by persistent progressive pyrexia and headache, for which she was admitted in one of the local community hospital for suspected bacteremia versus meningitis. Routine blood tests revealed polymorphic leucocytosis, elevated erythrocyte sedimentation rate and C Reactive protein. In addition CSF analysis raised the suspicion of intracranial infection. She was initially treated with antibiotics (Penicillin, Ceftriaxone and Metronidazole) for a week prior to diagnosis. After a week she developed headache and deterioration of conscious level. We received a referral about her condition and arranged for her CT and MRI with contrast (Figure 2 and 3). She was transferred to our care in Damanhour Teaching Hospital for investigation and management, with GCS of 13/15, photophobia, mild cerebellar signs, neck stiffness and two discharging midline occipital dermal sinuses. CT and MRI were positive for infratentorial supracerebellar hypodense collection with contrast enhancement suggestive for empyema.

The patient’s condition required emergency surgery on day 10 of presentation involving a sub-occipital decompressive craniectomy and drainage of the collection and the samples was sent for culture and sensitivity. Dermal sinus can be a cause for intracranial infection and should be investigated to rule out intradural connection. Infratentorial subdural empyema should be managed urgently by neurosurgical intervention to prevent further life threatening complications.
with warm saline and vancomycin. Closure in layers with three-
way CVP catheter for drainage and further irrigation.

Postoperative care in the ICU was uneventful with
improvement of the conscious level and reduced severity of
headache. External ventricular drain was set to 10 cm H2O. It was
clamped for 24 hour and was removed on day 4 postoperatively.
We continued the empirical antibiotics until the results of
culture and sensitivity which showed Staphylococcus aureus and
sensitive to the same antibiotics. The patient gradually returned
back to normal activity with mild headache and cerebellar ataxia
which had improved a few weeks later.

Discussion

Our case represents a very rare condition with infratentorial
subdural empyema caused by dermal sinus connected to the
subdural space. This condition is associated with significant
morbidity and mortality with only few reported cases in the
literatures describing the posterior fossa subdural empyema [4].
CNS infection with dermal sinus also is an extremely uncommon
presentation [5]. MRI and DWI are the preferred imaging
modality for subdural Emphyema [6].

Hydrocephalus is a common complication of this condition
which mostly requires external ventricular drainage during
surgery or postoperatively while Shunt placement was required
in some cases [7].

Emergent surgical evacuation, simultaneous management of
the primary source of infection and intravenous long course of
appropriate antibiotics are all recommended [8].

The diagnosis and management in our case was delayed
because of delayed presentation of the intracranial suppuration
and hydrocephalus, however surgical evacuation, ventricular
drainage and antibiotic administration improved the condition
and reduced the risk of deterioration of the condition and the
major threatening complications.

Conclusion

In conclusion, infratentorial subdural empyema is an
uncommon life threatening condition can be rarely caused
by dermal sinus connected to the CNS. Diagnosis is mainly by
MRI and emergency drainage of the collection is mandatory to
prevent serious life threatening complications. Hydrocephalus
is a common complication of this disease, requiring surgical
diversion of the CSF either by EVD or permanently by shunt
insertion after resolution of the suppuration.

References

suppuration: A clinical comparison of subdural empyemas and
2. Nathoo N, Nadvi SS, van Dellen JR (1997) Infratentorial empyema:
associated with dermoid cyst in the fourth ventricle. AJNR Am J
Neuroradiol 16(4 Suppl): 945-948.
4. van de Beek D, Campeau NG, Wijdicks EF (2007) The clinical challenge
