Case 13329

Cerebellar abscess secondary to occipital dermoid cyst with dermal sinus
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Section: Neuroradiology
Area of Interest: Head and neck
Procedure: Diagnostic procedure
Technique: MR
Special Focus: Abscess Case Type: Clinical Cases
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Patient: 28 years, male

Clinical History:
A young man with known Goldenhar syndrome with hemifacial microsomia and dextrocardia presented with four weeks history of headaches and dizziness. Examination revealed nystagmus, unsteadiness, inability to stand in Romberg with eyes open or closed, inability to perform tandem gait, complete deafness on right side and a small abscess on his scalp in the occipital region.

Imaging Findings:
There is an approximately 2.6 x 2.5 cm sized peripherally enhancing and restricted diffusion focal lesion noted in the posterior fossa in the mid line in the region of the cerebellar vermis with adjacent diffuse high signal in the cerebellar hemispheres in keeping with cerebellar abscess formation. This results in mass effect and distortion of 4th ventricles causing proximal hydrocephalus and cerebellar tonsillar descent.

The lesion shows apparent extension posteriorly through a defect (15 mm) in occipital bone in the region of the external occipital protuberance and extends to the scalp tissue lesion which is likely to indicate an underlying dermoid cyst and dermal sinus track.

Another intense inhomogenously enhancing mass lesion of 2.2 x 1.7 x 2.1 cm is noted in the right cerebellopontine angle region which is extending into the widened internal auditory meatus and is associated with displacement of the adjacent cerebellum and pons. Appearances are highly suspicious for vestibular schwanomma.

Discussion:
Intracranial abscesses are uncommon but serious and life-threatening infections. They may enter the intracranial compartment directly or indirectly via 3 routes.
1. Contiguous suppurative focus (45-50% of cases)
2. Trauma (10%)
3. Haematogenous spread from a distant focus (25%)
In 15% of cases, no source can be identified. [1]
The most frequent intracranial locations (in descending order of frequency) are frontal-temporal, frontal-parietal, parietal, cerebellar, and occipital lobes. [2]
With the advent of imaging studies and availability of antimicrobials it is now possible to diagnose intracranial
abscess and intervene promptly and effectively, which has resulted in a decreased mortality rate (5-15%). Rupture of a brain abscess, however, is associated with up-to 80% mortality.

The clinical presentation depends on the location of the abscess. The frequency of neurological sequel in survivors varies from 20-79% and depends on how quickly the diagnosis is reached and antibiotics administered. [3]

As discussed above posterior fossa abscesses are rare and their association with dermoid cysts is even rarer (<1%). Dermoid cyst are benign, rare, ectodermal, congenital lesions, located along the cerebrum midline and infratentorial regions, usually in the posterior cerebral fossa. The size of the cysts is variable, and their content is sebum, desquamated epithelial cells, hair and rarely teeth. The calcifications are seen on CT [4]. Dermoid cysts have slow growth rates but eventually present with headache, hemiparesis, visual field defects, signs of increased intracranial pressures, seizures, exophthalmos and oculomotor palsy [5].

All cases of intracranial infected dermoid cysts reported in the literature are in the paediatric ages (newborn–11 years) with abscess formation. Our patient is unlikely to fit in this category of intracranial dermoid cyst. This case appears to be the first reported case of extra-cranial dermoid cyst with connection to a midline cerebellar abscess which could be explained by a slow growth of dermoid cyst with transcranial extension of a dermoid cyst in an adult male patient with transfer of infection from extra-cranial dermoid cyst to form a deep seated cerebellar abscess.

Diagnosis requires imaging like CT and MRI. In our case, MRI scan appearance is in conformity with the diagnosis of cerebellar abscess with a sinus opening extra-cranially in a dermoid cyst on the scalp. Surgical excision or drainage with prolonged antibiotics (4-8 wk) remains the treatment of choice. Some neurosurgeons advocate complete evacuation of the abscess, while others advocate repeated aspirations as indicated. [6]

This patient was operated and the infected dermoid cyst with tract was excised, while the schwannoma will be under surveillance.

**Differential Diagnosis List:** Cerebellar abscess in adult secondary to occipital dermoid cyst with dermal sinus, Bacterial meningitis, Brain cancer (primary or metastatic), Focal encephalitis, Septic dural sinus thrombosis

**Final Diagnosis:** Cerebellar abscess in adult secondary to occipital dermoid cyst with dermal sinus

**References:**


Figure 1

**Description:** Sagittal View MRI Brain, T2, FLAIR images showing perilesional oedema in cerebellum and communication. **Origin:** Muhammad Asim Rana King's Mill Hospital, Notts, UK
Description: Sagittal T2, FLAIR images showing perilesional oedema in cerebellum and communication. Origin: Muhammad Asim Rana King's Mill Hospital, Notts, UK.
Description: Axial T2W image, lesion in midline in vermis region perilesional oedema and mass effect over 4th ventricle with hydrocephalus. Dermal sinus tract through occipital bone defect to scalp dermoid with secondary infection. Origin: Muhammad Asim Rana King’s Mill Hospital, Notts, UK
Description: Axial T2W image, lesion in midline with perilesional oedema and mass effect. Communication/dermal sinus tract through occipital bone defect to scalp dermoid with secondary infection.
Incidental detected right sided acoustic schwannoma. **Origin:** Muhammad Asim Rana King's Mill Hospital, Notts, UK
Description: MRI Brain, axial view, diffusion weighted image showed restricted diffusion. Origin: Muhammad Asim Rana King's Mill Hospital, Notts, UK
Description: MRI Brain, axial view, diffusion weighted image showed restricted diffusion. Origin: Muhammad Asim Rana, King’s Mill Hospital, Notts, UK
Figure 2

**Description:** Pre-contrast T1W coronal images – high signal in subarachnoid space in posterior fossa consistent with leakage of fatty content of dermoid. **Origin:** Muhammad Asim Rana, King's Mill Hospital, Notts, UK
Description: Pre contrast T1W image shows multiple foci in posterior and midline region of cerebellar folia in keeping with leakage of fat content from high signal dermoid cyst in occipital region of scalp through sinus. **Origin:** Muhammad Asim Rana, King's Mill Hospital, Notts, UK
**Figure 3**

**Description:** Post-contrast T1W MR shows high signal foci which were non-enhancing suggesting leakage of fat containing dermoid cyst in cerebellar folia. **Origin:** Muhammad Asim Rana King's Mill Hospital, Notts, UK
Description: Post-contrast coronal T1W images showed ring enhancement around focal collection.

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