

**Picture Story**

## Intracranial dermoid cyst mimicking a meningocele: A diagnostic dilemma

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### Introduction

About 70% of dermoid cysts are reported in children 5 years or less<sup>1</sup>. Dermoid cysts are classified based on location as intracranial, intra-spinal, peri-spinal and intra-abdominal, of which intracranial dermoid cysts account for 0.5% of all intracranial tumours<sup>2</sup>.

### Case report

A five-month-old boy with an unremarkable birth history presented with a swelling over the back of the head since birth. According to the mother, the swelling was initially small in size at birth, and gradually increased in size. The infant was feeding well. Anthropometry showed a length of 62cm, a weight of 6kg and a head circumference of 41.5cm, all at the 80<sup>th</sup> percentile for his age. Child had a social smile. Rolling over was present. Partial neck holding was present due to enlarging mass over the occipital region.

Examination showed a soft, hemispherical lump, 6 x 4cm in size with well-defined margins in the occipital region. The lump was tender and non-pulsatile. Skin over the lump was shiny and inflamed. Surrounding skin showed signs of inflammation. Lump was not trans-illuminable. Slippage sign was not present (Figure.1).

There were no neurocutaneous manifestations. Cranial nerves were normal. Tone, power and reflexes of the lower limbs were normal, no sensory deficits were noted and there was no evidence of bowel and bladder incontinence.

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Magnetic resonance imaging (MRI) demonstrated an occipital meningocele about 35mm in size with a small defect in the occipital bone (Figure 2). There was moderate enlargement of the lateral ventricles and the 3<sup>rd</sup> ventricle. There was widening of obex (communication of 4<sup>th</sup> ventricle with the intra-spinal CSF column). The intracranial opening of the meningocele was located just below torcular herophili (confluence of sinuses).

During the pre-operative period, the child was given intravenous antibiotics as a prophylactic measure for meningitis. The lump ruptured and oozing of pus was noted. Emergency surgery was carried out. During surgery it was noted that there were no meninges in the lump and that the gross morphological features were suggestive of a dermoid cyst with intracranial extension (Figure 3). Lesion was excised completely with no intraoperative complications.

Histopathology of the excised lesion showed intracranial dermoid cyst with extensive acute on chronic lympho-plasmacytic inflammatory reaction along with granulation tissue formation (Figure 4). Post-operative non contrast computerised tomography (CT scan) of brain was done which was normal (Figure 5).

### Discussion

Intracranial dermoid cysts are typically located in the midline, other locations being midline sellar and suprasellar, para-sellar, frontonasal region, posterior fossa/vermis<sup>3</sup>. In recent times, a sufficient number of intracranial dermoid cysts have been reported revealing many interesting features<sup>4</sup>.

Intracranial dermoid cysts may gradually enlarge because of the sebaceous secretions and epithelial desquamation leading to progression of symptoms<sup>5</sup>. The increase in size is primarily due to desquamation of epithelium and glandular secretions<sup>6</sup>. Intracranial dermoid cysts are commonly found in the posterior fossa and less frequently in other areas like the third ventricle<sup>2</sup>. CT scan or MRI is required for precise identification of an intracranial dermoid cyst<sup>7</sup>. Intracranial rupture of dermoid cyst, noted in several reports, may lead to meningitis, seizures, headache (in older children)

and cerebral ischaemia<sup>8</sup>. Risk of malignancy (squamous cell carcinoma) is extremely rare<sup>4</sup>.

Differential diagnoses include epidermoid cyst, glioma, encephalocele, lipoma, meningioma, neurofibroma, teratoma, lymphoma, subcutaneous abscess, pilomatrixoma and lymphatic malformation<sup>9</sup>. The overall prognosis of dermoid cyst is good, if there is no intracranial or intra-spinal extensions which may lead to meningitis, abscess or local compression effects<sup>10</sup>.

Meningocele, a neural tube closure defect, is a spinal fluid filled sac containing meninges that protrudes through a defect in the posterior elements of skull or spine without any evidence of herniation of neural tissue<sup>11</sup>. Meningoceles are most commonly located in the lumbar or sacral region<sup>7</sup>.

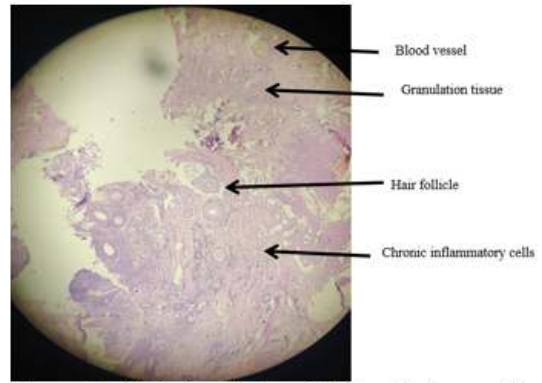
Dermoid cysts present a complex challenge to the treating paediatricians and surgeons because of frequent chances of misdiagnosis due to varied presentations. Immediate surgical excision should be planned for intracranial dermoid cysts to prevent complications.

#### References

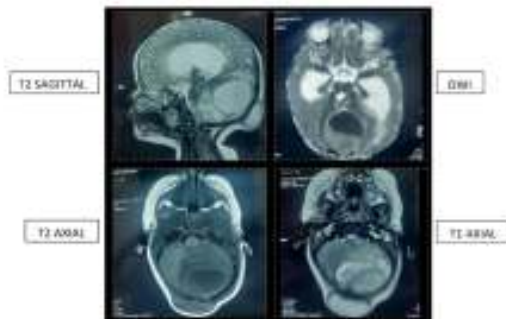
1. Pant I, Joshi SC. Cerebellar intra-axial dermoid cyst: A case of unusual location. *Childs Nervous System* 2008; **24**:157-9. <https://doi.org/10.1007/s00381-007-0445-z> PMID: 17657495
2. Ziv ET, Gordon McComb J, Krieger MD, Skaggs DL. Iatrogenic intra-spinal epidermoid tumour: Two cases and a review of the literature. *Spine (Phila Pa 1976)* 2004; **29**: E15-8. <https://doi.org/10.1097/01.BRS.0000104118.07839.44> PMID: 14699293
3. De Carvalho GT, Fagundes-Pereyra WJ, Marques JA, Dantas FL, de Sousa AA. Congenital inclusion cysts of the anterior fontanelle. *Surgical Neurology* 2001; **56**: 400-5. [https://doi.org/10.1016/S00903019\(01\)00621-8](https://doi.org/10.1016/S00903019(01)00621-8)
4. Cobbs CS, Pitts LH, Wilson CB. Epidermoid and dermoid cysts of the posterior fossa. *Clinical Neurosurgery* 1997; **44**: 511-28.
5. Peter JC, Sinclair-Smith C, de Villiers JC. Midline dermal sinuses and cysts and their relationship to the central nervous system. *European Journal of Pediatric Surgery* 1991; **1**: 73-9. <https://doi.org/10.1055/s-2008-1042463> PMID: 1854713
6. Herman JM, McLone DG, Storrs BB, Dauser RC. Analysis of 153 patients with myelomeningocele or spinal lipoma re-operated upon for a tethered cord. Presentation, management and outcome. *Pediatric Neurosurgery* 1993; **19**: 243-9. <https://doi.org/10.1159/000120739> PMID: 8398848
7. Lebkowski WJ, Lebkowska U, Dzieciol J. The giant dermoid cyst of the scalp mimicking skull tumour. Case report. *Rocz Akad Med Bialymst* 2000; **45**: 47-53.
8. Takemoto K, Matsumura Y, Hashimoto H, Inoue Y, Fukuda T, Shakudo M, et al. MR imaging of intra-spinal tumours – Capability in histological differentiation and compartmentalization of extramedullary tumours. *Neuroradiology* 1988; **30**: 303-9. <https://doi.org/10.1007/BF00328180> PMID: 3173671
9. Reissis D, Pfaff MJ, Patel A, Steinbacher DM. Craniofacial dermoid cysts: Histological analysis and inter-site comparison. *Yale Journal of Biological Medicine* 2014; **87**: 349-57.
10. Liu JK, Gottfried ON, Salzman KL, Schmidt RH, Couldwell WT. Ruptured intracranial dermoid cysts: Clinical, radiographic, and surgical features. *Neurosurgery* 2008; **62**: 377-84. <https://doi.org/10.1227/01.neu.0000316004.88517.29> PMID: 18382315
11. Kinsman SL, Johnston MV. Neural tube defects. In: Kliegman RM, Stanton BF, St Geme III JW, Schor NF, editors. *Nelson Textbook of Pediatrics*. First South Asia Edition. Gurgaon (Haryana), India: Reed Elsevier India Private Limited; 2015.p. 2802.



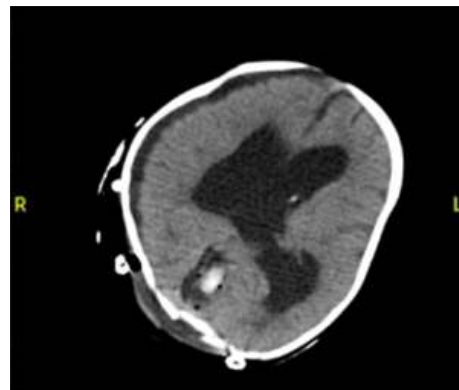
**Figure 1:** showing a single, round swelling with well-defined margins over occiput



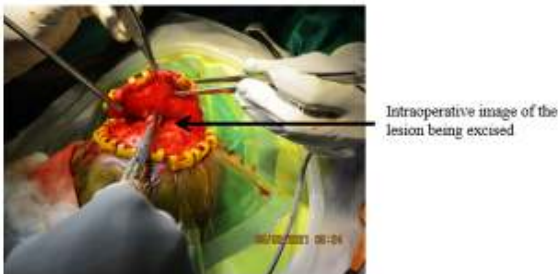
**Figure 4:** H & E staining of histopathology section showing multiple hair follicles along with granulation tissue, comprising of chronic inflammatory cells, blood vessels and fibrosis.



**Figure 2:** Preoperative MRI brain scans showing well defined well circumscribed area of altered signal intensity in posterior fossa of brain, appearing heterogeneously hyperintense on T1, heterogeneously hyperintense on T2, showing fine areas of restriction on DWI. The lesion is now compressing 4<sup>th</sup> ventricle causing hydrocephalus. Well defined fluid collection seen in the scalp region in occipital area communicating with the arachnoid space, containing inflammatory fluid, features suggestive of dermoid cyst



**Figure 5:** Post-operative CT scan with calvarial defect noted in occipital bone



**Figure 3:** Intra-operative image showing excision