

In a patient with a solitary hepatic, homogenous lesion which is slightly decreased in density on a CT or ultrasound scan combined with a deeply staining vascular lesion on an angiogram strongly suggests the possibility of focal nodular hyperplasia.

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### Intracranial Teratoma in Early Infancy

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Intracranial teratoma is uncommon in infants less than a year old. It is defined as

true tumor composed of multiple tissues of a kind foreign to the part in which they arise. The incidence of these tumors is estimated to be between 0.3 and 0.6% of all intracranial neoplasms. In Cushing's 868 verified tumors, there were 4 teratomata, or 0.5%(1). The incidence increases to 2% if children upto 15 years are included(2). Those occurring in the newborn are a special variety which grow to a appreciable extent at very early period. We describe an immature teratoma in posterior fossa of a neonate.

#### Case Report

A 10-day-old boy was referred to Neurosurgery Unit for progressive macrocephaly and deterioration in the level of consciousness. He was born as full term but forceps were applied for delivery due to cephalo-pelvic disproportion. The Apgar scores were 8 and 9 at one and five minutes, respectively. His head circumference was 40 cm. The fontanelles were bulging, sutures were wide apart and had dilated scalp veins. MacEwen's sign was positive. The tonic neck and Moro's reflexes were present and equal. Deep tendon reflexes were increased in all four limbs and plantar responses were extensor bilaterally. Auscultation of the skull failed to reveal any intracranial bruits. The systemic examination was normal. His head circumference became 42 cm on tenth day after birth. He lost consciousness but was responding to painful stimuli.

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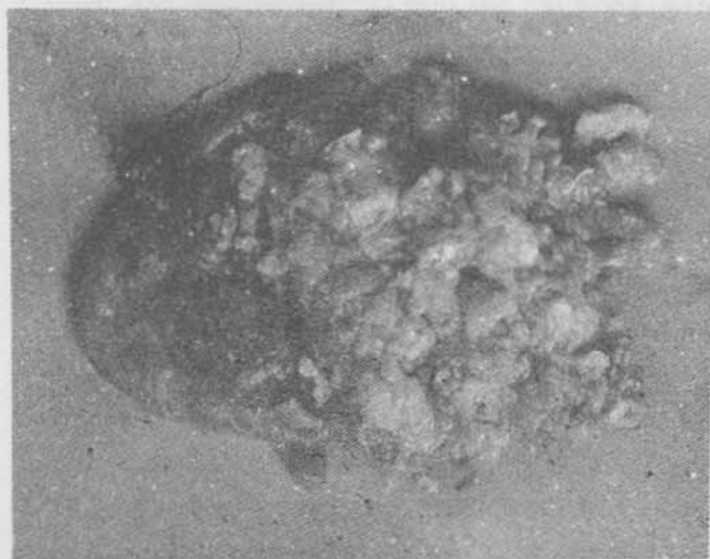
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Plain x-ray skull showed signs of raised intracranial tension and massive calcification in the posterior fossa, but computerized tomography revealed a large calcified heterogeneously enhancing lesion in mid-posterior fossa with obstructive hydrocephalus (*Fig. 1*).

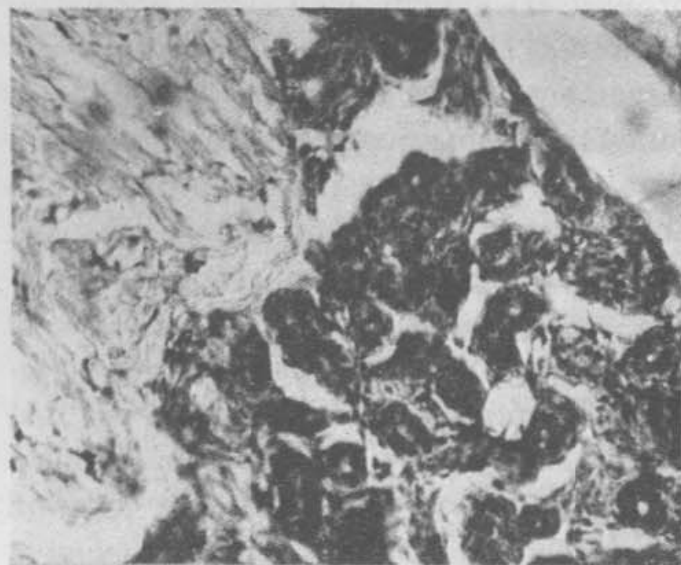


*Fig. 1. Enhanced CT scan showing peripheral enhancement of the lesion.*

A ventriculoperitoneal shunt was inserted after which the patient's level of consciousness improved. Two days later, a midline suboccipital craniectomy was performed. A huge calcified lesion was found in the fourth ventricle. Subtotal removal of this tumor was done. Tumor contained calcification, hair, cyst and vascular solid tissue (*Fig. 2*). Histopathological examination showed the tissue elements derived from all three germinal layers in various stages of evolution. The findings were consistent with immature teratoma (*Fig. 3*). Postoperative phase was uneventful and the infant was discharged on the 12th postoperative day.



*Fig. 2. Specimen of the tumor showing the lesion comprised of cartilage, bone, hair and other derivatives of germinal layers.*



*Fig. 3. Photomicrograph showing the derivatives of all three dermal layers with immature elements suggestive of immature teratoma (Hematoxylin and Eosin  $\times 160$ ).*

## Discussion

Intracranial teratoma is rarely encountered. Sixty four neonatal tumors of this

type have been reported in the world literature so far. Maier(3) described the first case of teratoma of the brain in a male child. These tumors occur more commonly in females in the neonatal period, but the sex predominance shifts to the male later in life(2,4). The characteristic of progressive uncoordinated growth qualifies this lesion as true tumor and not merely a quiescent malformation. It may be solid or cystic, yet each other may coexist. Tumors wholly composed of mature tissues are usually benign, whereas those composed of embryonic or immature tissues are malignant. Askanazy(5) mentioned that teratoma must arise from abnormal tissue primordia in early embryonic life.

Greenhouse and Neubuerger(6) classified the neonatal teratomas into three groups: (i) Infants who were normal at birth but abruptly developed cranial enlargement days to weeks later; (ii) Stillborn infants with massive heads caused by a tumor that virtually replaced normal brain substance; and (iii) Infants born alive but with enlarged heads harbouring intermediate-sized tumors. The majority of neonatal tumors are supratentorial at pineal or pituitary region. Hosoi(7) pointed out that almost all intracranial teratomata originate somewhere near the midline, a location with great potentialities for misplacement of embryonal tissue.

Congenital intracranial neoplasms usually produce macrocephaly due to internal hydrocephalus secondary to tumor obstruction to CSF pathways or to the bulk of the tumor itself. There may be stillbirths. Rarely they manifest as convulsions. Plain skiagrams skull show pathological calcifications which implies the benignity. Computerized tomography scan is an important

investigatory tool for early diagnosis. Angiography is valuable to give the idea of tumor vascularity and relation to the main cerebral vessels. Alpha fetoprotein may be present in high titre in serum of CSF, and correlate well with tumor recurrence. Cerebrospinal fluid in the presence of the brain tumor often is bloody or xanthochromic, with a high protein concentration, composed to that in a congenital hydrocephalus. It is the biopsy which confirms the nature of lesion and helps in deciding the prognosis.

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