ROLE OF MRI IN EVALUATION OF INTRACRANIAL AS WELL AS SPINAL EPIDERMoids AND ITS CORRELATION WITH POST OPERATIVE HISTOPATHOLOGY.

Radiology

Dr. Shashikant Raghunath Mane

Assistant Professor, Department of Radiodiagnosis, Government Medical College, Miraj.

ABSTRACT

Background: - Epidermoid tumors are benign slow-growing tumors that usually manifest as insinuating masses. MRI evaluation is most sensitive radiological modality available in evaluation & characterization of intracranial epidermoid tumors. It can be accurately differentiated from arachnoid cyst from various characteristic features on MRI. However, post operative histopathology is the gold standard for diagnosis as well as confirmation of MRI findings.

Conclusion: - Epidermoid tumors can be accurately diagnosed with MR imaging with our study showing around 91% sensitivity and 75% specificity, positive predictive value 95% and negative predictive value 60%.

KEYWORDS

Epidermoid, MRI, signal intensity.

METHODOLOGY:-

- **Study design:** - Prospective observational study.
- **Study setting:** - 2 tertiary care hospitals.
- **Study duration:** - 1st November 2011 to 30th November 2013 & 1st January 2016 to 31st August 2017.
- **Sample size:** 30.

Participant selection:

Inclusion criteria –

- Lesions showing features of epidermoid on MRI.
- No features of epidermoid on MRI but positive on histopathology.

Exclusion criteria –

- Arachnoid cysts on MRI as well as on histopathology.

Procedure / Equipment / Materials:

- MRI – Philips Achieva 1.5 Tesla & Hitachi 0.3 T.
- Contrast media for MRI – Gadolinium based contrast media.

Pretested proforma with relevant clinical history & examination findings were noted followed by MRI study. Post operative histopathological reports were matched with preoperative MRI findings.

Institutional ethics committee approval was obtained for above mentioned study.

Observations: - 30 eligible patients were undergone MRI during period of 45 months at two tertiary centers. Out of these 30 patients 27 patients got operated by neurosurgeons.

Epidermoid cysts presented in this study were from 15 years to 55 years with slight male predominance. Clinically headache was there in majority of patients (55%). Cerebellopontine angle cistern was most common site of involvement (46.7 %), followed by suprasellar cistern (23.3 %), fourth ventricle (3.3 %), pineal region (10 %), perimesencephalic cistern (10 %) and spinal epidermoid (6.7 %).

Accuracy rate was 77.8 % for radiology (21 out of 27) and that for post operative histopathology 100%.

Sensitivity table (1st):-

21 (TP)	1 (FP)
2 (FN)	3 (TN)

Site of involvement (2nd):-

CP angle cistern	14 (46.7%)
Suprasellar cistern	7 (23.3%)
Fourth ventricle	1 (3.3 %)
Pineal region	3 (10%)
Pineal region	3 (10%)

DISCUSSION:-

Intracranial and spinal epidermoid tumors are usually congenital in nature with primary underlying pathology being inclusion cysts. They constitute 0.2%–1.8% of primary intracranial neoplasms (1, 2). Although acquired cases are rare, they are commonly secondary to trauma. Pathologically, epidermoids are having cholesterol-rich layer giving them their characteristic pearly white appearance. They grow by insinuating within CSF spaces and causing encasement of adjacent neurovascular bundle. Most of them are intradural tumors in location with cerebellopontine angle cistern being the commonest site (40%–50%) (1). Next common location is the sellar and parasellar region. Less common locations include intraparenchymal locations, the pineal gland, the thalamus, and the septum pellucidum (3). Extradural epidermoids have incidence of ten percent, located in the skull or spine (1).

On computed tomographic (CT) scans, epidermoids are non enhancing and hypo attenuating extra-axial masses. Calcifications are rare, occurring in 10%–25% of cases. On MRI, they are either iso intense or slightly hyperintense relative to CSF on T1- and T2-weighted images. Main differential diagnostic consideration is an arachnoid cyst. However, arachnoid cysts will follow the signal intensity patterns of CSF with all MR pulse sequences. On DW images, epidermoids typically show restricted diffusion, unlike arachnoid cysts. Epidermoids in 25% cases may show minimal rim enhancement (1). Their signal intensity characteristics may vary depending on the amounts of cholesterol and keratin within the tumor (4). These tumors may rarely appear hyper attenuated on CT scans due to high protein content (white epidermoids) and show signal reversal with MR imaging pulse sequences, with high signal intensity on T1-weighted images and low signal intensity on T2-weighted images (1). In addition, epidermoids in intraparenchymal tumors could be misdiagnosed as astrocytomas preoperatively (3).

The clinical manifestations will depend on location and mass effect by the tumour vis-a-vis gait disturbance (posterior fossa tumors); other symptoms being cranial neuropathies and seizures. Due to rupture of tumor contents in sub arachnoid space, chemical meningitis can occur. Subtotal resection is usually choice of treatment to relieve compression of adjacent structures. Overall prognosis is good (5). Tumor recurrence can be diagnosed easily via DW imaging.

Malignant degeneration of epidermoid is rare. Post contrast images showing focal enhancement is highly suspicious and histological confirmation is necessary (6).

CONCLUSION:-

Epidermoid tumors can be accurately diagnosed with MR imaging with our study showing around 91% sensitivity and 75% specificity, positive predictive value 95% and negative predictive value 60%.

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