Prepontine and Meckel's Cave Dermoid Cyst: MR and CT Findings with Literature Review

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ABSTRACT
Dermoid cysts (DCs) are benign, congenital tumors that comprise 0.04-0.6% of all intracranial tumors. DC rupture is a rare complication and usually occurs spontaneously. The most common localisations of intracranial DCs are the posterior fossa, and suprasellar and parasellar regions. The presentations of DCs are highly variable. They are often detected incidentally on computed tomography (CT) or magnetic resonance imaging (MRI) scans while investigating the cause of seizure or headache. Prepontine cistern is a rare localisation for intracranial DCs. To the best of our knowledge, only four cases have been reported in the literature so far. We present MRI and CT findings of a patient with DC, which ruptured into the subarachnoid space extending from the right Meckel’s cave to the prepontine cistern.

Key Words: Dermoid cysts, Meckel’s cave, Prepontine cistern, Rupture.

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INTRODUCTION
Dermoid cysts (DCs) are benign, congenital tumors that comprise 0.04-0.6% of all intracranial tumors. Dermoid and epidermoid cysts are both thought to originate from ectodermal inclusions due to the closing defect of the neural tube between the third and fifth weeks of embryonic life. Accordingly, they are located either at the caudal part of the neuroaxis or close to the midline. Intracranial DCs are most commonly located in the posterior fossa, suprasellar and parasellar regions.

DCs are considered to have a spectrum ranging from the epidermoid cysts, which contain only squamous epithelium to teratomas that contain all three layers of the embryonic tissue. Since they originate from the epidermis and dermis, they contain sebaceous glands, sweat glands, hair follicles, and dermal elements such as teeth and nails. These lesions grow slowly depending on the hair and oil production of the internal dermal elements.

The presentations of DCs are highly variable. They are often detected incidentally on computed tomography (CT) or magnetic resonance imaging (MRI) scans, while investigating the cause of a seizure or headache.

DC rupture is rare and usually occurs spontaneously. As the cyst contents spread to the subarachnoid space because of rupture, aseptic chemical meningitis, temporary cerebral ischemia due to vasospasm, hemiparesis, hydrocephalus; and even death may occur. In this case report, we present MRI and CT findings of a patient with DC, which ruptured into the subarachnoid space extending from the right Meckel’s cave to the prepontine cistern.

CASE REPORT
A 37-year male patient was admitted to the Neurology Clinic with a headache complaint that has been ongoing for 15 days. There was no neurological deficit on physical examination. The patient’s CT revealed a bilobular, hypodense lesion with a tiny calcific focus filling the Meckel’s cave and extending to the prepontine cistern (Figure 1a). Moreover, low-density areas compatible with scattered oil droplets were present in subarachnoid space, in the bilateral frontal and occipital lobes, right posterior fossa, and right quadrigeminal cistern (Figure 1b). The lesion’s average attenuation was measured between -13 and -88 Hounsfield units (Figure 1c).

MRI scan was performed for a more detailed lesion evaluation, and the lesion was seen to extend from the Meckel’s cave to the prepontine cistern with a slight right anterolateral indentation to thepons. It was hyperintense on T1-weighted images (Figure 2a) and heterogeneously hyperintense on T2-weighted images with chemical shift artifact (Figure 2b). The lesion did not enhance after intravenous gadolinium injection and did not show restricted diffusion. Small hyperintense foci were detected in subarachnoid space, compatible with free oil droplets seen in ruptured DCs, in the T1-weighted images. Although the lesion showed proximity to the cavernous segment of the right internal carotid artery and right
superior cerebellar artery, there was no stenosis or compression effect. The cisternal part of the right trigeminal nerve was pushed laterally in the prepontine cistern by the lesion, but the trigeminal ganglion could not be visualised separately in the Meckel's cave because of the mass effect. However, the patient did not have any complaints indicating trigeminal nerve function.

In this particular case, conservative treatment was chosen instead of surgery because of the patient's mild clinical condition and DC's location. The patient had mild headache during the last two years. The patient's follow-up interval was three months in the beginning, and the follow-up interval was extended to six months because there was no change in physical and radiological examinations (Figure 2c).

The patient had mild headache during the last

DISCUSSION

DCs consist of 0.04-0.6% of all brain tumors. These are benign tumors and tend to grow slowly. Due to the compression of neurovascular structures, these may cause focal neurological findings. Although rare, DCs may rupture. Rupture is usually spontaneous, less frequent and may occur secondary to a head injury. In cases of rupture, headache, seizures, change in consciousness, aseptic chemical meningitis, stroke secondary to vasospasm, hydrocephalus, increased intracranial pressure, or granulomatous arachnoiditis may occur.

In some patients, progressive neurological symptoms due to growing mass effect of DCs have been reported before the rupture.

In conclusion, limited literature is available regarding the incidence of ruptured DC. Although it is a benign lesion, rupture may cause clinical symptoms ranging from headaches to different neurological complications and even death. Therefore, it is vital to know the imaging features to make the correct diagnosis and differentiate other cystic lesions.

**PATIENT'S CONSENT:**

Informed consent was obtained from the patient.
CONFLICT OF INTEREST:
The authors declared no conflict of interest.

AUTHORS’ CONTRIBUTION:
BKY: Design, interpretation and analysis of data, writing manuscript, literature search.
NG, TSC, SO: Literature search, obtained images.
RT: Revising it critically for important intellectual content.

REFERENCES