

Isolated right RAPD secondary to posterior fossa sol left side

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Abstract

We present a case of right sided RAPD with normal visual function secondary to a left sided posterior fossa tumor (Teratoma), producing pressure effect on left tectum and left optic tract affecting the crossed pupillary fibres from the right side, due to more number of crossed fibres (53:47) in ipsilateral optic tract, thus producing contralateral RAPD.

Key words: Left sided posterior fossa tumor, Normal visual field and acuity Right side RAPD, Tectum.

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CASE REPORT

20 years old male with no relevant medical history presented with double vision on walking downstairs. On examination best corrected visual acuity on right eye was 6/6 and on left side 6/24 not improving. Pupillary reaction shows right sided RAPD and left side normally reacting to light. Extra ocular movements were full on right side and on left side intorsion was restricted with nystagmus on downgaze. Colour vision with pseudoisochromatic chart was normal and visual fields were full on confrontation, Tangent screen and octopus automated perimetry. Fundus examination shows normal disc on right side and hyperemic disc on left side. MRI showed left sided posterior fossa tumor with pressure effect on left tectum. Pupillary fibres of ipsilateral optic tract were selectively damaged to produce contralateral RAPD. This is explained by the fact that, there are more number of crossed (53:47) fibres in ipsilateral optic tract, thus

producing contralateral RAPD. The lesion also involves adjacent trochlear fascicle to produce ipsilateral superior oblique palsy.

DISCUSSION

On tracing the optic nerve fibres, nasal fibres undergoes a partial decussation in the chiasma, while the temporal fibres enters the same side optic tract. The majority of optic tract fibres provide afferent information to the lateral geniculate body and further to the primary visual areas on the calcarine cortex. Approximately 10% of fibres bypass the lateral geniculate nucleus and are relayed to the pretectal area of midbrain. These fibres travel through the brachium to synapse at the level of the superior colliculus. From pretectal nucleus neurons further relay pupillary light information to Edinger Westphal nuclei on both sides. From Edinger Westphal nuclei neurons travel in the dorsomedial aspect of the ipsilateral oculomotor nerve to reach the ciliary ganglion. From ciliary ganglion short ciliary nerves innervate the pupillary sphincter muscles promoting constriction. A relative afferent pupillary defect is characterised by pupillary dilatation upon illuminating the eye during the swinging flash light test. It is one of the most important signs of dysfunction in the afferent visual pathway RAPD is usually attributed to lesion in the retina or optic nerve. RAPDs also seen in contralateral optic tract lesions A tract lesion affects fibres from the contralateral nasal retina and ipsilateral temporal retina, thus disproportionately affects input from the contralateral eye

and producing a corresponding RAPD. A lesion of pretectal nucleus which constitutes afferents from optic tract, or disruption of the pretectal nucleus itself, produce a contralateral RAPD without a visual field defect. In this case patient had a tumor (6×5×5.5 cms) in left aspect of posterior fossa [Fig.1 and 2]. Due to its pressure effect on left sided tectum, pupillary fibres of ipsilateral optic tract were affected. But due to more number of crossed fibres (53:47) in ipsilateral optic tract, it produces contralateral RAPD and patients clinical findings were correlated with

anatomical substrates on MRI finding. The additional clinical finding of left fourth cranial nerve palsy again localises the level of lesion at left tectum, caused by indirect pressure effect due to a posterior fossa SOL on the left side. Contralateral RAPD due to midbrain lesions has been reported in the literature, but contralateral RAPD due to indirect pressure effect of a posterior fossa tumor has not been reported in the literature to the best of our knowledge.^{1,2,4}

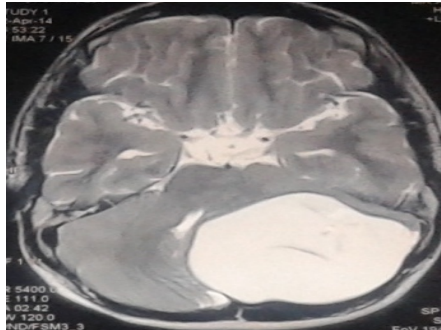


Figure 1

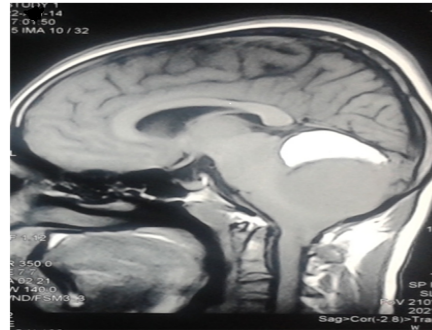


Figure 2

Legend

Figure 1: Axial T2 W image showing well defined lobulated heterogeneous mass in posterior fossa left side showing fat, calcification and soft tissue, measuring 6×5×5.5 cms ; Suggestive of mature teratoma; causing mass effect on left cerebellar hemisphere, 4th ventricle and brain stem

Figure 2: Sagittal T1 W image showing well defined lobulated heterogeneous mass in posterior fossa causing indirect pressure effect on tectum

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