

Issue Year : 2011, Issue Number : 3, Issue Month : September

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Belongs To : Pakistan Air Force Hospital Mianwali

HOMONYMOUS HEMIANOPIA DUE TO OCCIPITAL ARTERIOVENOUS MALFORMATION

Article

INTRODUCTION

Retrochiasmal optic tract pathology results in contralateral homonymous hemianopia. Hemianopia due to the lesion in anterior optic tract is characteristically non congruous, while that due to pathology in posterior optic radiations and occipital cortex are highly congruous¹. An arteriovenous malformation (AVM) of brain is an uncommon developmental vascular pathology that may result in significant visual morbidity. The prevalence of brain AVM ranges from 0.01% to 0.5%, generally affecting the population in between 10 – 40 years of age¹. CT and MRI scan of brain are the important noninvasive diagnostic tools for the brain AVM, but cerebral angiography remains the 'gold standard' for detecting the micro vascular architecture of the AVM². Treatment modalities include endovascular embolization, gamma knife stereotactic radio surgery and surgical resection. Each treatment alone or in combination has various pros and cons in terms of prognosis and complications.

CASE REPORT

A 21 year old male presented in eye OPD with headache, visual blur and difficulty in reading of over two month's duration. He reported inability to recognize objects in his right field of vision. He was diagnosed to have AVM of left occipital lobe in March 2009 (Fig 1&2)

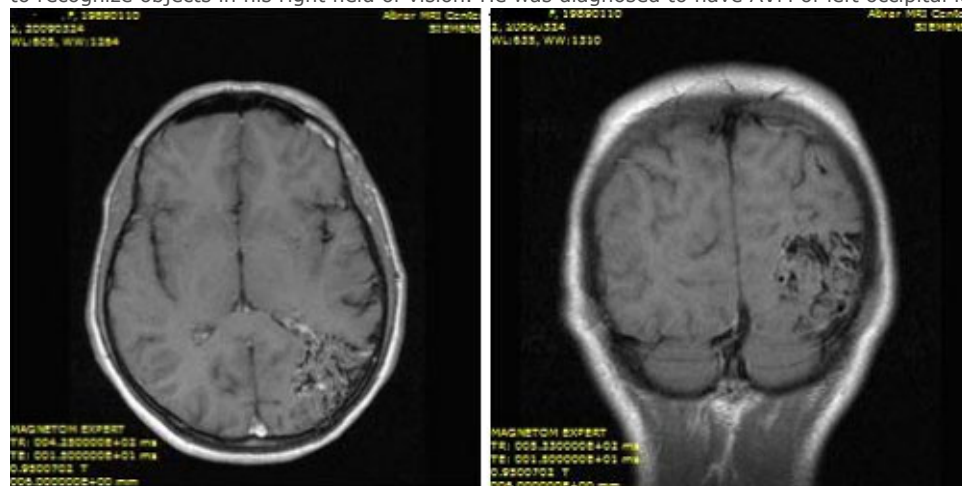


Figure-1: T-1 weighted MRI Brain of patient showing AVM

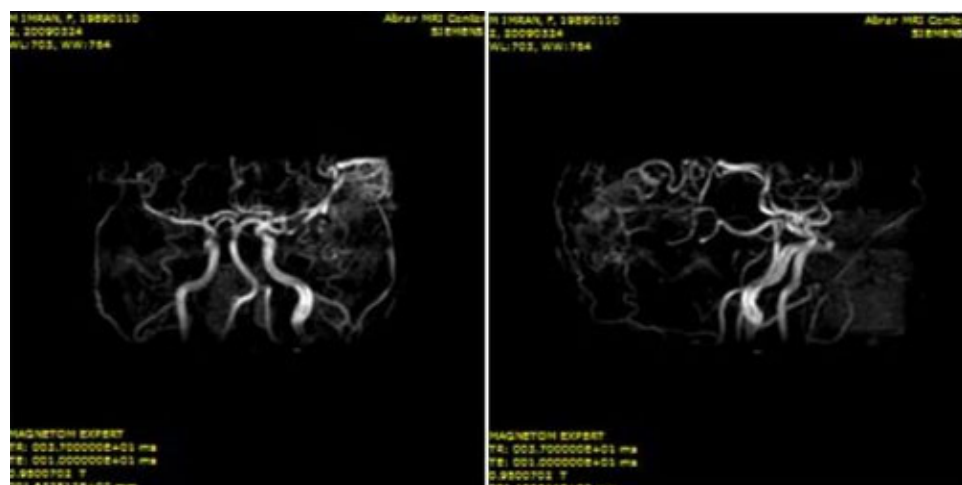


Figure-2: MRA of patient showing cerebral vessels with AVM on left side

for which he underwent gamma knife stereotactic radio surgery by an experienced neurosurgeon. Post operative recovery was uneventful with resolution of lesion and alleviation of symptoms. He remained asymptomatic till he presented again in eye clinic in Sept 2010 with above mentioned symptoms. On ocular examination, his visual acuity was 6/6 in both eyes with orthophoria, normal pupillary reflexes and ocular motility. Fundus examination showed bilateral disc pallor. Peripheral 60 – 4 threshold visual field (VF) analysis was done on Humphrey® Field Analyzer (720-i series), which revealed right dense, congruous homonymous hemianopia (Fig 3).

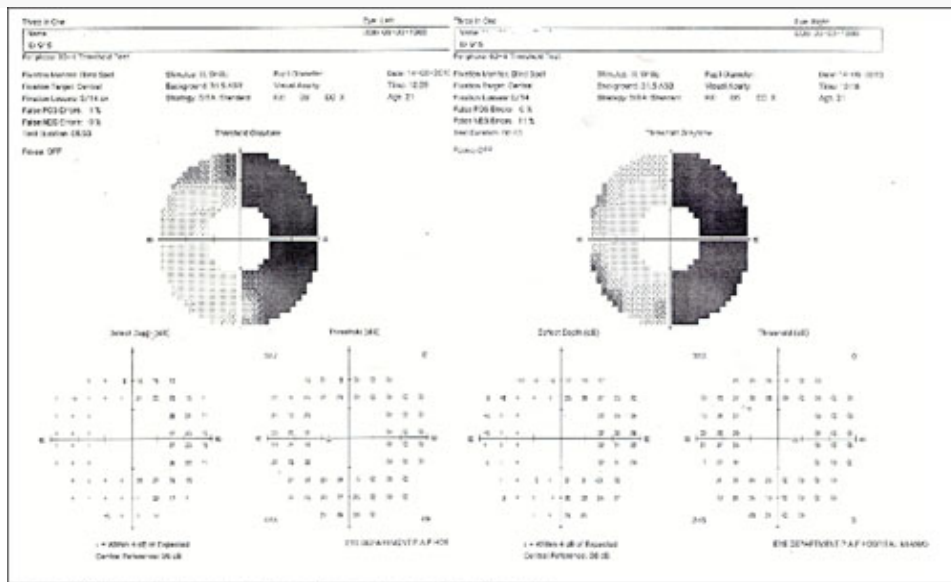


Figure-3: Right dense, congruous homonymous hemianopia

Since no active ocular management was indicated, patient was advised to have opinion of neurosurgeon as the recurring symptoms and signs suggested.

DISCUSSION

The incidence of occipital lobe AVM can be as high as 10.4-18.9% of all the cerebral AVM^{3,4}. The most frequent neurological deficit in occipital lobe AVM is homonymous hemianopia occurring in 39-57% of patients^{3,5,6}. There is no direct correlation between the size of the malformation and the severity of VF defects¹. The suggested pathogenesis of VF defects include direct compression of VF tracts, hemorrhage, and 'steal effect' causing cerebral ischemia in the region surrounding the AVM due to tissue hypoperfusion¹.

The primary objective of treating AVM of the brain is to obliterate the feeder vessel to AVM aiming at restoration of normal hemodynamics and preservation of neurological functions. Prognosis of VF defects and other complications cannot be systematically predicted. Bartolomei et al. documented post treatment development of new VF defects or worsening of pre-existing VF defects in 24% of patients, while 47.61% patients with pre treatment VF defects showed improvement or no change⁵. Seo et al. reported new VF defects in 13% of patients after treatment of occipital AVM, with improvement of VF defects in 27% patients³. In another study, 66.7% of patients showed no change in pre treatment VF defects, while VF changes worsened in 19% and improved in 14.3% of the patients after treatment of occipital AVM⁷.

Diagnosis of hemianopia and/or altered or new symptoms of headache in a relatively young patient should raise the index of suspicion towards cerebral AVM as a cause despite being a rare entity. General practitioners must remain aware of the condition and should conduct VF testing at least by confrontation method in such patients that may help in timely diagnosis of brain AVM.

Reference

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