

Neuro-ophthalmic Manifestations of Intra cranial Aneurysm

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Abstract

Purpose: To report four cases of intra cranial aneurysm with different neuro- ophthalmic presentations

Method: Descriptive case series

Introduction: Intracranial aneurysm is a cerebrovascular disorder where weakness in the wall of a cerebral artery or vein causes localized dilatation of the blood vessel. They are mostly asymptomatic and are present in approximately 5% of the population. Neuro ophthalmic manifestations can be the first presentation in many patients. Usually these presentations depend upon the size, location and the way of expansion of aneurysm.

Case summary: 4 patients of various age group of either sex came with different neuro-ophthalmic presentations. After detailed history, clinical examination, routine serological investigations, neuro imaging was done in every patient. Among them 1 patient had left total third nerve palsy and MRA of brain suggestive of aneurysm of left internal carotid artery, 1 had right 6th nerve palsy and MRA of brain suggestive of aneurysm in cavernous part of right internal carotid artery, 1 had left optic atrophy and MRI of brain suggestive of thrombosed aneurysm in sellar and supra sellar region and 1 patient presented with right recurrent optic neuritis, MRI of brain suggestive of giant aneurysm in right internal carotid artery. All the patients were sent to neuro surgeon for definite management and advised to follow up after treatment.

Conclusion: Many cases of cerebral aneurysm may present with neuro-ophthalmic manifestations. During clinical examination it should be kept in mind so that these life threatening conditions may not be over looked.

Key words: Intracranial aneurysm, Neuro-Ophthalmic manifestations.

Introduction

Intracranial or brain aneurysm is a cerebrovascular disorder in which weakness in the wall of a cerebral artery or vein causes a localized dilatation or ballooning of the blood vessel.

Aneurysms are mostly asymptomatic and present in 5% population¹. In case of 25% patients they are multiple in number². Peak incidence is between 40 to 60 years. Female are more prone to develop aneurysm than male.

Cerebral aneurysms are classified both by size and shape. Small aneurysms are less than 15mm. Larger aneurysms include as large (15 to 25 mm), giant (25 to 50mm) and super giant (over 50mm)³. Small aneurysms tend to rupture without previous symptoms, larger aneurysms carry higher risk of rupture, giant aneurysms are slow growing and produce neurological symptoms.

Case summary:

Case no 1:

1. Consultant & Assistant Professor, Neuro-Ophthalmology Dept, IIEI&H

2. Professor & Head of Neuro-Ophthalmology Dept, IIEI&H

3. Professor, Neuro-Ophthalmology Dept, IIEI&H

4. Long term Fellow, Neuro-ophthalmology Dept, IIEI&H

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A 55 years normotensive, nondiabetic female came with severe ptosis in left eye with restricted movements in all gaze except levo version. Left pupil was mid dilated, sluggish but no RAPD (Relative afferent pupillary defect). Visual acuity (VA), color vision (CV) was normal. Posterior segment reveals normal. Nervous system examination also reveals normal. The patient was diagnosed as Left pupil involving 3rd nerve palsy. Routine laboratory investigations were within normal limit. Magnetic resonance angiogram of brain suggestive of large fusiform aneurysm of left internal carotid artery.



Fig 1: Severe ptosis of left eye and anisocoria

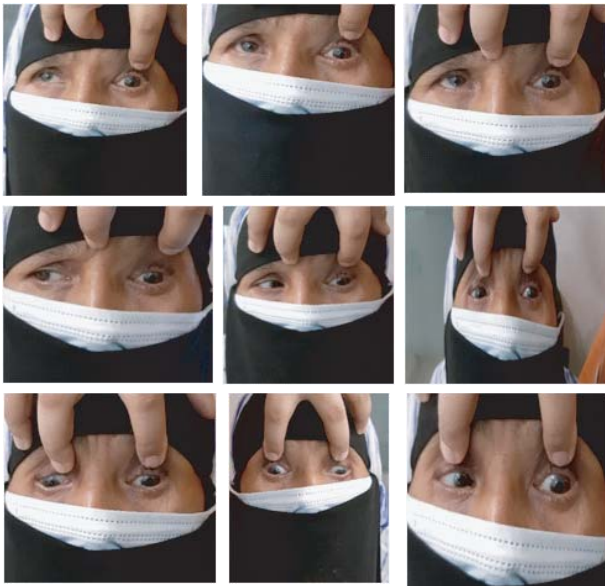


Fig 2: Movements restricted in all gaze except levoversion

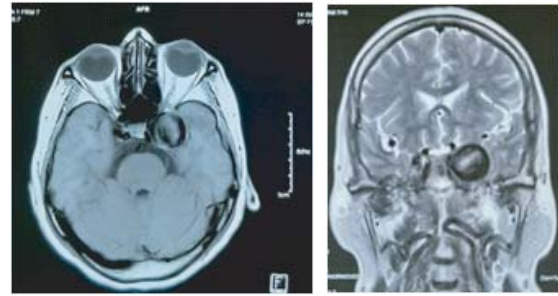


Fig 3: MRI of brain: Well circumscribed lesion in left parasellar region

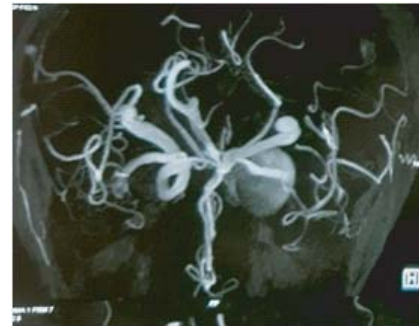


Fig 4: MRA of brain: Aneurysm of left internal carotid artery

Case no 2:

A 18 years male presented with sudden dimness of vision of right eye.VA of right eye was finger count (FC), there was RAPD and mild pallor of disc.VA left eye was 6/6.8 months back he had similar attack and diagnosed as Retrobulbar neuritis and treated with intravenous methylprednisolone. At that time he had partial recovery of vision. His routine investigations were normal. In MRI of brain a giant aneurysm was found in right internal carotid artery.

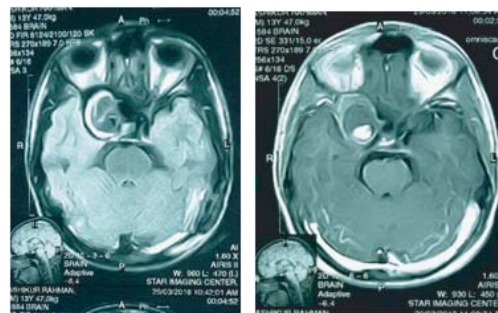


Fig 5: MRI of brain: Giant aneurysm of right internal carotid artery

Case no 3:

A 60 years female came with gradual dimness of vision of left eye for 2 months. VA right eye was 6/6, left eye FC. CV Right eye was 5/17 by Ishihara chart, left eye was not detectable. Pupillary reaction was sluggish in both eye with RAPD in left eye. Left optic disc was pale. MRI of brain suggestive of thrombosed aneurysm in sellar and suprasellar region.

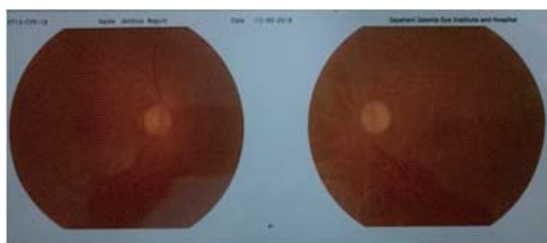


Fig 6: CFP shows left primary optic atrophy

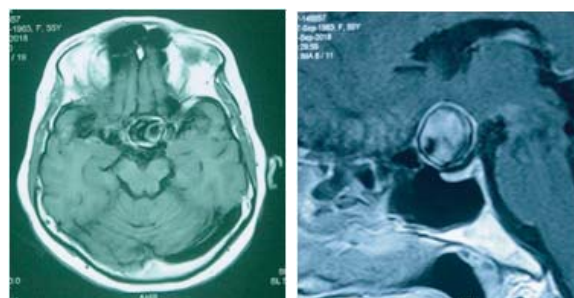


Fig 7: MRI of brain: Aneurysm of sellar and supra sellar region

Case no 4:

A 45year hypertensive female came with horizontal double vision with gradual outward restricted movement of right eye for 7 months. VA in both eyes was 6/6. Abduction restricted in right eye and full in left eye. Posterior segment was normal in both eyes. It was a case of right 6th nerve palsy. Routine blood test was normal. MRA of brain suggestive of aneurysm in cavernous part of right internal carotid artery.



Fig 8: Right 6th nerve palsy

Discussion

Aneurysm from post communicating artery (most common, runs along with 3rd nerve), post cerebral artery, internal Carotid artery (intra cavernous part), superior cerebellar artery usually causes 3rd nerve palsy. About one third ofrd post communicating artery aneurysm induce 3rd nerve palsy⁴. Here nerve palsy will be acute, isolated and painful.

Mechanism involved are direct mechanical compression of nerve by enlarging aneurysm, irritation of sub arachnoid hemorrhage and nerve injury by arterial pulsation of aneurysm (Water hammer effect) and pressure from arterial bleeding due to rupture.

Incidence of isolated 6th nerve palsy due to aneurysm is rare, may present with recurrent episodes. Up to 7% related to an intracerebral aneurysm but majority accompanied by other cranial nerve palsy⁵.

Mechanisms are direct compression, compression due to thick cisternal hematoma, stretched nerve at petrous apex by raised ICP and vascular insufficiency of nerve by vasospasm.

Optic neuropathy secondary to nerve compression by aneurysm is rare (incidence rate 1.4% of all aneurysm). In this case visual recovery poor than other neuro ophthalmic manifestations⁶. RBN due to aneurysm of Ant. Communicating artery have been reported⁷. Vision loss usually progressive and not associated with headache, retro bulbar or

orbital pain. Pattern of visual field defect due to aneurysm is varied but a hemianopic field defect often detected⁸.

Conclusion

A common presentation in neuro-ophthalmology may unveil the clue of a severe life threatening condition, misdiagnosis of which can jeopardize the patient morbidity. The ophthalmologists must have a keen eye to avoid the dread complications.

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