

CASE REPORT

Unruptured Giant Intracranial Aneurysm of the Internal Carotid Artery: Late Ocular Symptoms

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ABSTRACT

An unruptured giant intracranial aneurysm of the internal carotid artery may tend to present with late ocular symptoms. This is the case of a 58-year-old female patient with a giant unruptured aneurysm of the right internal carotid artery. The patient presented with exclusively progressive reduction of visual acuity and visual field defects due to the mass effect of the growing aneurysm. The rupture of the aneurysm occurred before planned treatment. Clinical suspicion and timely recognition as well as prompt treatment play an important role in the final outcome of the management of giant unruptured intracerebral aneurysms.

Keywords: Aneurysm size, anterior intracranial circulation, mass effect, subarachnoid hemorrhage, vascular abnormalities, visual field defect

INTRODUCTION

Intracranial aneurysms are defined by size as small (<10 mm), large (<25 mm), and giant (>25 mm).¹ The average incidence of giant aneurysms is 5% in various studies.^{1–3}

Giant brain aneurysm is a severe disease with respect to both the diagnosis and treatment. The onset of the disease is usually sudden and without warning. The most common symptoms are subarachnoid hemorrhage or local mass effect mimicking a slowly growing tumor.^{1,4} The symptoms depend on the location and size of the aneurysm. The risk of the rupture rises as the aneurysm size increases.^{1,5,6} The giant aneurysm may cause neurological symptoms but rarely symptoms of intracranial hypertension.⁷

Internal carotid artery (ICA) is the predominant localization of giant intracranial aneurysms (GIA) associated with a high risk of rupture and poor clinical outcome.⁵

MATERIALS AND METHODS

A 58-year-old female patient presented with decreased visual acuity in her left eye. She had no previous medical history other than an amblyopic right eye. She was myopic with a prescribed correction of –5.50 SPH with –1.25 CYL in the right eye and –4.75 SPH and –1.00 CYL in the left eye. A standard ophthalmic exam revealed best-corrected Snellen visual acuities of 20/100 in the right eye and 20/30 in the left eye. A complete eye exam was normal in both eyes. One month later, the patient returned for further deterioration of visual acuity, counting fingers in the right eye and 20/100 in the left eye with a relative afferent pupillary defect. Visual field examination revealed incongruent hemianopia in the right eye and dense central scotoma in the left eye (Figure 1A, B). Five days later, the patient presented to our clinic and underwent another visual field examination. The exam revealed even further deterioration

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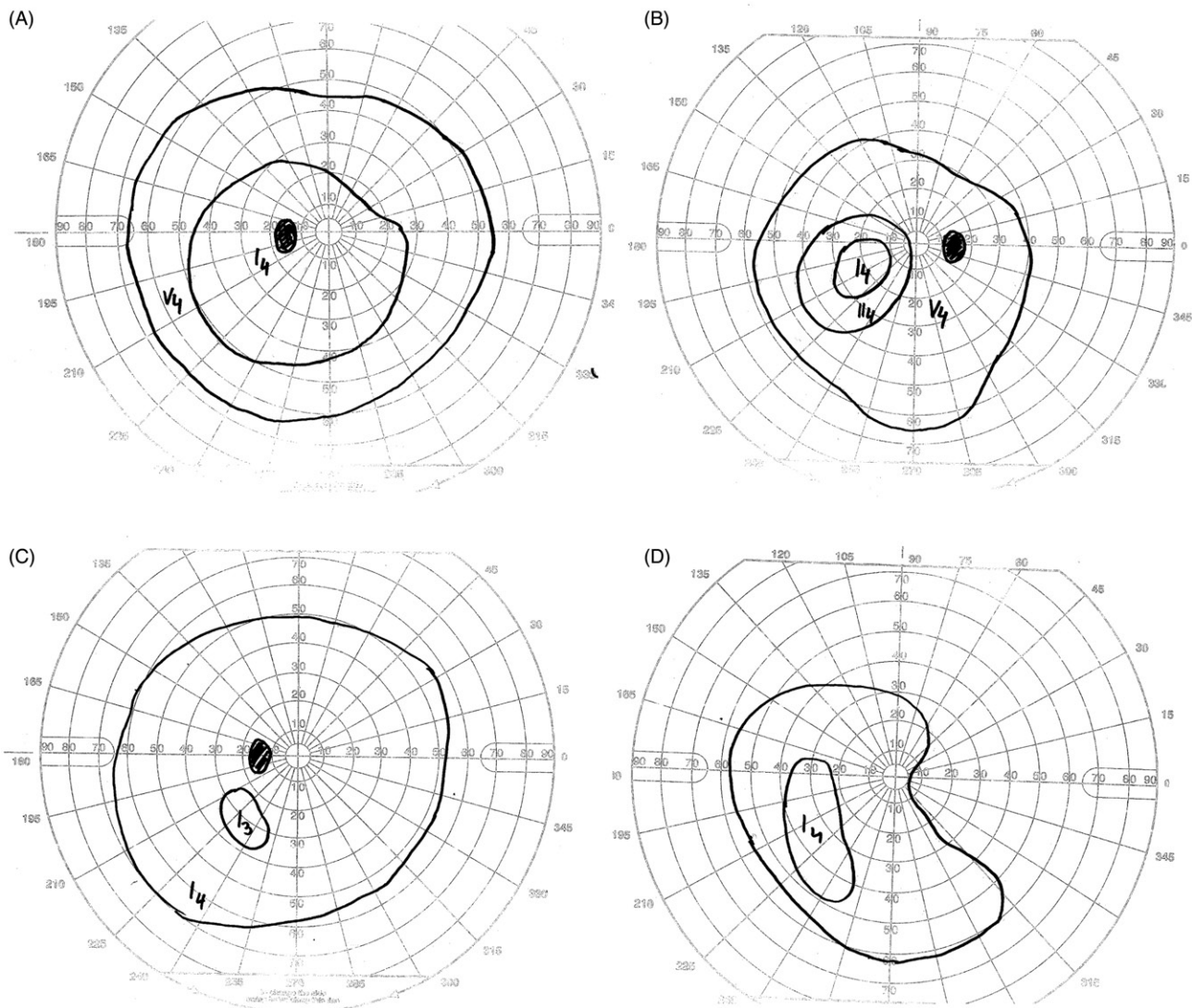


FIGURE 1. Visual fields on presentation: right eye (B) and left eye (A); control visual fields of the right eye (D) and left eyes (C) five days later.

with more prominent incongruent hemianopia in the right eye and more dense central scotoma in the left (Figure 1C, D). Intraocular pressure was 21/21 mmHg. Gonioscopy demonstrated open angle with grade 3 pigmentation. Optical coherence tomography measured normal peripapillary retinal nerve fiber layer (RNFL) thickness. Fluorescein angiography showed no abnormalities (Figure 2A–F).

Magnetic resonance imaging (MRI) of the brain showed a giant unruptured aneurysm of the supra-sellar region (Figure 3A). MR angiography demonstrated that the aneurysm originated from the supraclinoid portion of the right ICA (Figure 3B). Digital subtraction angiography (DSA) measured a 4.7 cm aneurysm with a very wide neck, proceeding directly from the sixth segment of the right ICA, 10 mm distally to the origin of the ophthalmic artery (Figure 4A, B). Intense vortex flow of blood colored with contrast was noted inside the aneurysm body with some dilution of the contrast. An arched body of

the aneurysm was repressed laterally in the final part of ICA at the C7 segment looking somewhat repressed and partially filled with contrast. The bifurcation of ICA was seen some 14 mm distally to the initial origin of the aneurysm and the frontal meningeal artery was also repressed, having an atypical flow. The medial meningeal artery on the right side showed neither aneurysmal nor arteriovenous malformations. The angiogram of the left carotid artery showed some deflection of the C7 segment of ICA and A1 segment of the anterior meningeal artery to the left, with the body of the aneurysm crossing the medial line for 10 mm. No additional intracranial aneurysms were identified.

RESULTS

The patient was urgently referred for endovascular treatment at the neurosurgical department.

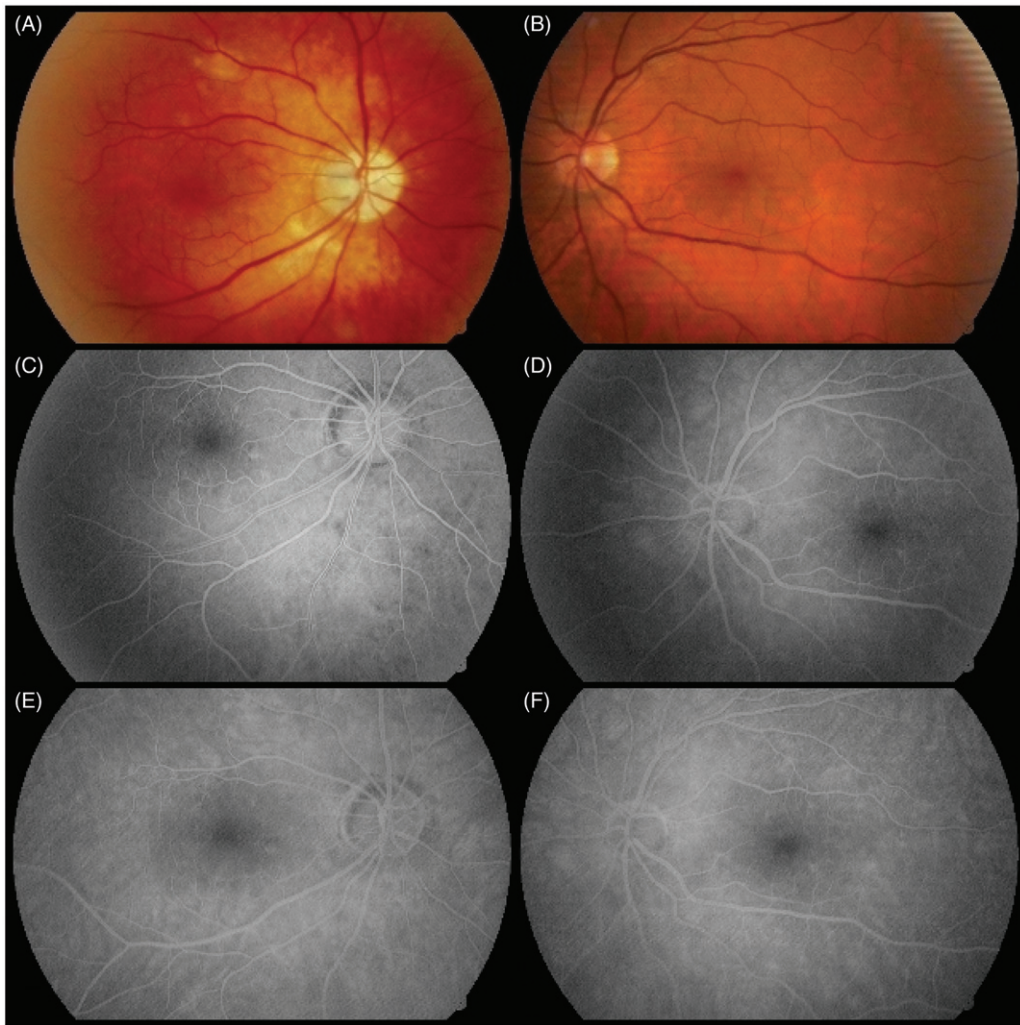


FIGURE 2. Fluorescein angiography was unremarkable on both eyes, with no noteworthy changes seen. Pictures are showing color fundus photographs (A, B), early phase of FA (C, D), and late phase of FA (E, F).

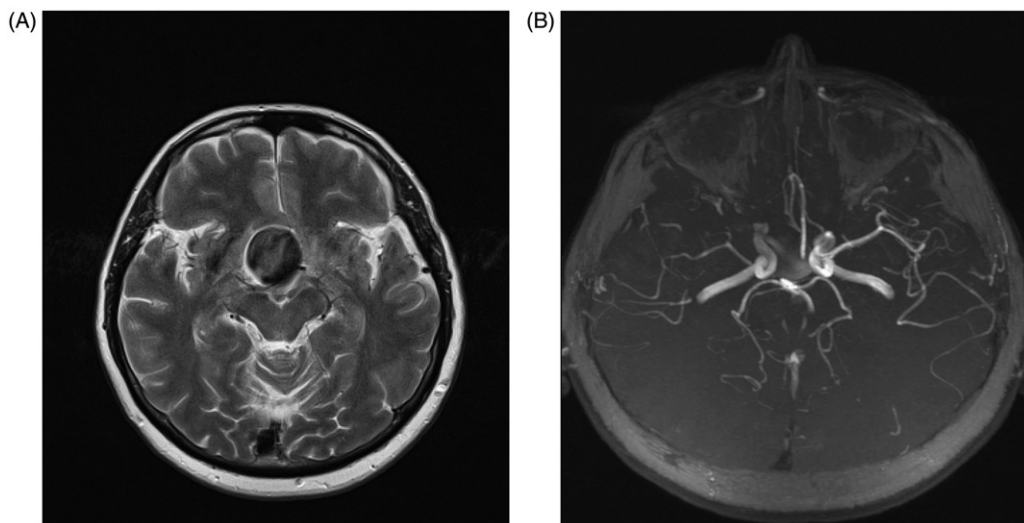


FIGURE 3. Axial T2 weighted MR image of giant aneurysm (A); MR angiography of the giant unruptured aneurysm (B).

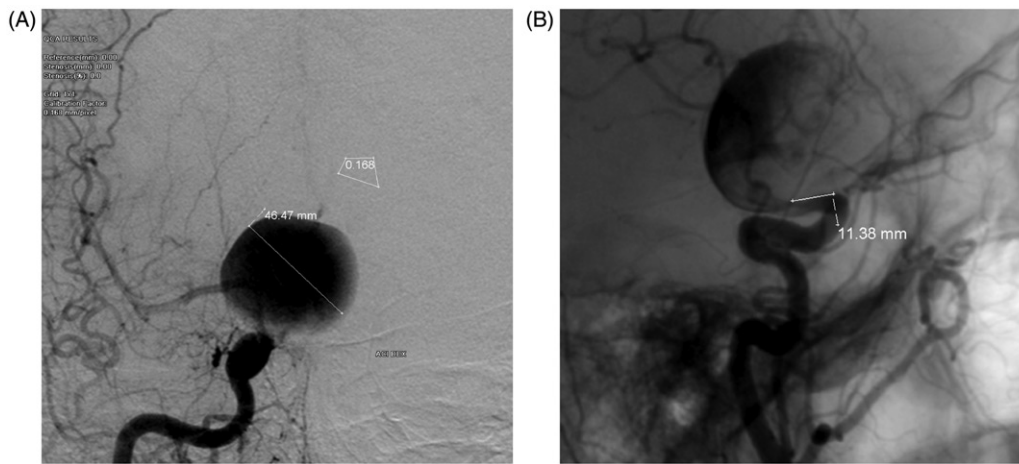


FIGURE 4. Digital subtraction angiography of 46.47 mm giant aneurysm (A); the wide neck of giant aneurysm (B).

Unfortunately, the rupture of the aneurysm with massive hemorrhage occurred after the period of preoperative assessment, just before the planned procedure.

DISCUSSION

The course of giant aneurysms is unpredictable. According to the International Aneurysms study, giant aneurysms carry 6% annual risk of rupture compared with a 1–3% annual risk for smaller aneurysms. The risk of rupture in giant aneurysms is as high as 50% in five years.⁵ Untreated, these aneurysms carry a five-year mortality rate in excess of 80%. Treatment of such aneurysms provides about 70% of patients with an excellent outcome.^{1,8,9}

Aneurysms of the ICA distal to the ophthalmic artery usually produce late symptoms, just like in our case. The aneurysms present with eye movement dysfunction and deterioration of visual acuity.^{10,11} Peiris and Russel¹¹ reported 19 cases of giant aneurysms of the carotid system presenting exclusively as progressive visual loss with some degree of visual field defect. Lownie et al.⁷ reviewed a 20-year experience with giant anterior communicating artery (ACoA) aneurysms to correlate aneurysms size with clinical presentation. Four out of 18 analyzed cases presented with mass effect on the optic apparatus. The mean aneurysm's size was 2.8cm, whereas in our case the aneurysm size was 4.7cm. Such aneurysms are rare and produce neither early nor typical visual symptoms. Patients have progressive visual loss rather than sudden rupture. Unfortunately, this case highlights the significance of early clinical suspicion and recognition as well as prompt treatment when dealing with giant unruptured intracerebral aneurysms.

DECLARATION OF INTEREST

The authors report no financial or other conflicts of interest. The authors alone are responsible for the content and writing of the paper. The conflict of interest statement has been modified. Please confirm that it is accurate as it currently appears.

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