

# Posterior communicating artery aneurysm presenting with writing apraxia

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## Abstract

**Objectives:** We report the first case of writing apraxia as the main presenting feature of a posterior communicating artery aneurysm. Cerebral aneurysm usually presents with visual impairment, nausea and vomiting, severe headache and loss of consciousness. **Case report:** A 58-year-old man presented to the neurological department because of writing difficulty, which affected his work as an executive. Detailed clinical examination and supplementary radiological investigations confirmed a posterior communicating artery aneurysm. The patient was treated surgically with clipping of the aneurysm and he had full recovery at clinic review. **Conclusion:** To the best of our knowledge, there has been no previous report of a posterior communicating artery aneurysm presenting with writing apraxia. Our case is unusual because the patient's main presenting feature was writing apraxia secondary to a posterior communicating artery aneurysm.

## Keywords

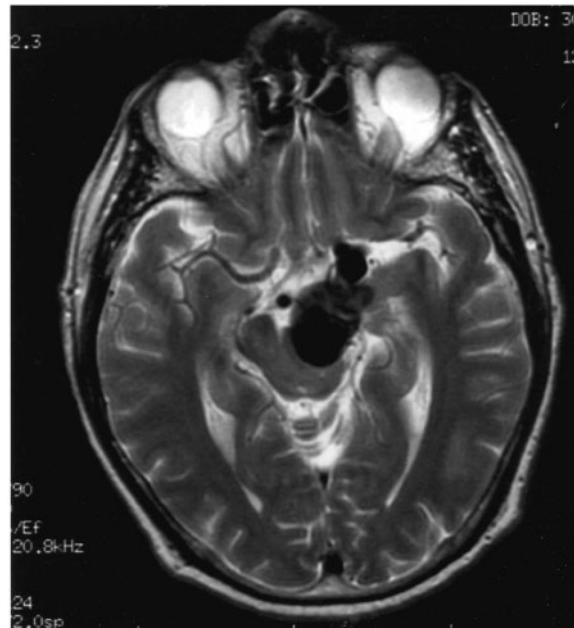
Posterior; communicating; artery; aneurysm; writing; apraxia.

## Introduction

Intracranial aneurysms usually represent a progressive degenerative process affecting the vessel wall. They can be classified on the basis of their shape (saccular, fusiform or dissecting), their size (non-giant or giant >2.5 cm), their location (anterior or posterior circulation), or the disease process (traumatic, non-traumatic, infectious). The pathogenesis of intracranial aneurysms is a combination of degenerative changes in the elastica, and acquired defects and progressive thinning in the muscular layer leading to funnel shaped dilatation<sup>[1]</sup>.

Eighty percent of intracranial aneurysms are located in the anterior circulation (circle of Willis)<sup>[2]</sup>. Twenty-five percent of these are located at the origin of the posterior communicating artery on the internal carotid artery<sup>[3]</sup>. The most devastating consequence of intracranial aneurysms is subarachnoid haemorrhage. The risk of death with subarachnoid haemorrhage without surgery is 43% at the initial episode, 63% at 1 year and <3% / year on a long-term basis<sup>[4]</sup>.

The presentation of intracranial aneurysm varies amongst patients. Patients with intracranial aneurysm can present with visual impairment, nausea and vomiting, severe headache and loss



**Fig. 1.** An MRI scan of the brain confirmed the presence of a mass-occupying lesion in an extra-axial location compressing the left side of the pons. The signal characteristics were consistent with an intracranial aneurysm.

of consciousness. In our case, we report a rare case of posterior communicating artery aneurysm presenting with writing apraxia.

### Case presentation

A 58-year-old right-handed man employed as an executive presented to the National Neurosurgical Unit in Beaumont Hospital, Dublin, with 6-month history of writing difficulties; his writing became slow, draggy and eventually illegible, and he gradually failed to perform dexterous tasks with his right hand.

Further questioning revealed that he had suffered from left-sided severe intermittent episodes of migraine like headaches for a year. Neurological examination revealed normal cranial nerves, no sensory deficit, weakness of the right lumbricals and interosseous muscles, weakness of the right hip flexor muscles, and brisk right upper and lower limb reflexes with up going right plantar.

His other past medical history included ischaemic heart disease, peptic ulcer disease and hypercholesterolaemia. He used to be a heavy smoker and used to consume a high amount of alcohol.

An magnetic resonance imaging (MRI) scan of the brain (Fig. 1) confirmed the presence of a mass-occupying lesion in an extra-axial location compressing the left side of the pons. The signal characteristics were consistent with an intracranial aneurysm. A cerebral angiogram (Figs. 2 and 3) confirmed the presence of a large  $2 \times 1$  cm aneurysm arising from the posterior communicating artery and a smaller aneurysm arising from the middle cerebral artery. No clots were demonstrated in the aneurysms and no other abnormalities were noted.

These aneurysms were deemed not suitable for coiling, and the patient underwent surgery. The posterior communicating artery and the middle cerebral artery aneurysms were occluded with two and one titanium clips consecutively. Temporary clipping of the internal carotid artery was performed intra-operatively because of rupture of the posterior communicating artery aneurysm. Postoperatively, the patient had an uneventful recovery and his writing was back to normal at clinic review.

### Discussion

Aneurysms can be incidental, asymptomatic, or symptomatic. Incidental aneurysms are increasingly found on imaging at investigations for unrelated conditions. Symptomatic aneurysms are those causing subarachnoid haemorrhage following rupture, or exerting symptoms by a

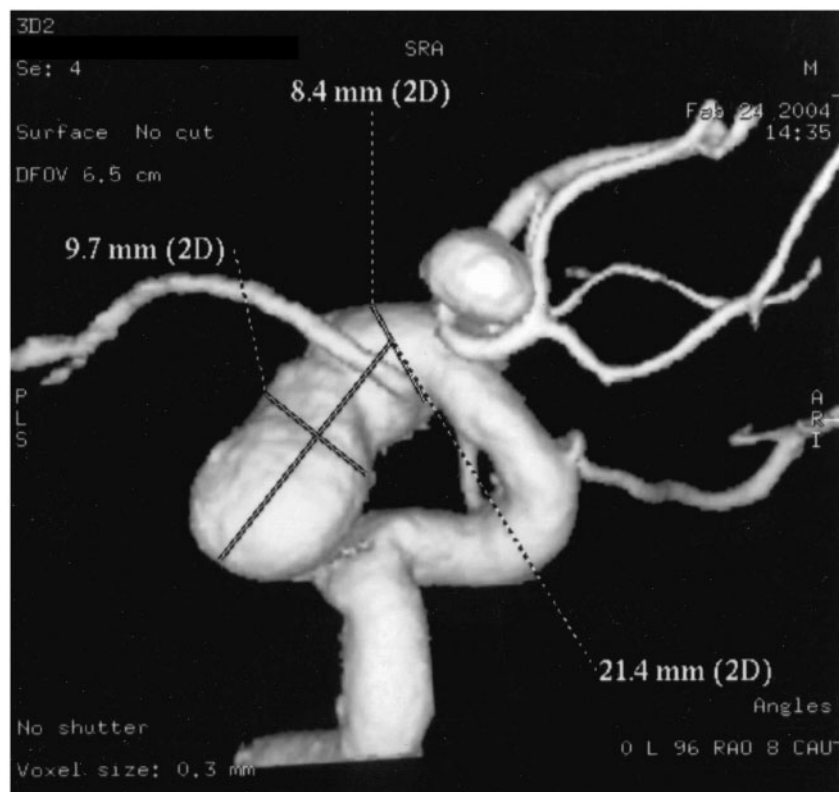


Fig. 2. A cerebral angiogram confirmed the presence of a large  $2 \times 1$  cm aneurysm arising from the posterior communicating artery and a smaller aneurysm arising from the middle cerebral artery.



Fig. 3. A cerebral angiogram screening showing the aneurysm arising from the posterior communicating artery.

space-occupying effect (oculomotor nerve palsy is a presenting feature in 20% of patients with posterior communicating artery aneurysms). Other common space-occupying effects of intracranial aneurysm include visual field deficits (contralateral homonymous hemianopia) in relation to compression of the optic tract, mental derangements if the aneurysm compresses the mammillary bodies, and pituitary insufficiency if the aneurysm grows into the sella turcica<sup>[5]</sup>.

Writing apraxia is the loss of the ability to execute or carry out writing activity, despite having the desire and the physical ability to write. It is a disorder of motor planning, and in our patient secondary to a posterior communicating artery aneurysm. To the authors knowledge, this is the first paper that reports writing apraxia as the main symptom of a posterior communicating artery aneurysm. Our patient requested medical opinion due to the development of writing difficulties that affected his job as an executive. Careful clinical examination was paramount in our case, which revealed long tract signs and episodic vascular-related headaches. Additional radiological investigations confirmed the diagnosis. Surgery in our case addressed the patient's symptoms. We thought that his writing apraxia was caused by the larger posterior communicating artery aneurysm rather than the smaller aneurysm. At clinic review, his writing was back to normal and he did not have any further headaches.

### Teaching points

- Presentation of posterior communicating artery aneurysm can be atypical; writing apraxia can be the main presenting feature of this pathology.
- Posterior communicating artery aneurysm can cause space-occupying effects. Careful clinical examination is paramount to elicit subtle neurological signs to help with diagnosis.

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