

# An unusual case of ‘collapse query cause’

A. Barclay and C. Weaver

*Department of Critical Care, University Hospital of Wales, Cardiff, UK*

*Corresponding address: Dr Amanda Barclay, Department of Clinical Pharmacology, Llandough Hospital, Cardiff and Vale NHS Trust, Penlan Road, Cardiff, CF64 2XX, UK.*

*E-mail: amanda\_barclay@hotmail.com*

Date accepted for publication 21 May 2007

## Abstract

A 60-year-old woman attended A&E following an unwitnessed ‘collapse query cause’. Over 4 months she recalled involuntary movement of her eyes and head to the left and, on one occasion, complete rotation of her body. She had subtle neurological signs. Imaging identified the cause of these adverse seizures.

## Keywords

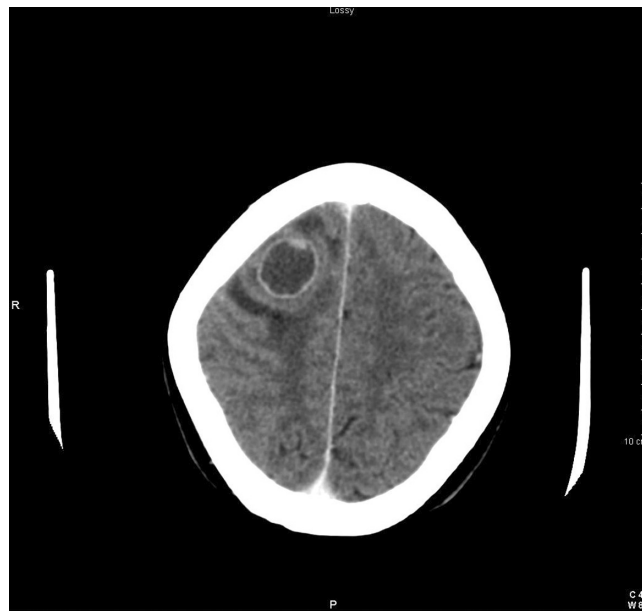
Seizure; adverse seizures; collapse.

## Case history

A 60 year-old woman presented to A&E following a collapse. That day she had been folding washing in the kitchen when she became unable to concentrate and her left arm began moving outwards involuntarily and grasping at the wall. She felt confused and was searching for the basket, despite knowing that it was in front of her. She bent over and recalls falling and hitting her head. She was found unconscious by a friend’s child who alerted neighbours. Upon regaining consciousness, she was orientated, with no sensory or motor deficit and there had been no tongue biting or incontinence. According to witnesses a left sided facial droop and slurred speech persisted for a few minutes.

On further questioning, it transpired that over 4 months she had experienced several episodes of sudden involuntary eye and head deviation upwards and to the left, with no alteration in consciousness. On one occasion, this deviation of her eyes and head was followed by whole body rotation around the vertical axis for a period of approximately 2 minutes. During this time, she did not suffer any weakness or sensory disturbance and again her consciousness was not impaired. She was unable to curtail this bizarre episode. Her daughter had not noticed any change in her behaviour, although she had been complaining of a mild headache intermittently for several months. There was no history of any medical conditions or injury and no family history of convulsions.

On examination her chest, heart and abdomen were unremarkable. She was alert and appropriate, with no deficit of higher cortical function. The relevant neurological signs elicited were: impaired dexterity of the left hand, minimal downward drift of the outstretched left arm, 4/5 power on left ankle dorsiflexion, 4+/5 power on left hip flexion and an equivocal



**Fig. 1.** A CT scan of the head shows a 2-cm diameter round lesion in the right fronto-parietal region with a thick rim, contrast enhancement and surrounding oedema.

left plantar response. The clinical impression was of adverse seizures as a result of right frontal lobe pathology.

### Clinical evidence and unusual features

A computed tomography (CT) scan of the head confirmed the clinical diagnosis. It revealed a 2-cm diameter round lesion in the right fronto-parietal region with a thick rim, contrast enhancement and surrounding oedema (Fig. 1). The differential diagnosis was of a primary brain tumour, a metastatic deposit or an abscess.

### Diagnosis

The tissue diagnosis was of a metastatic adenocarcinoma. The adverse seizures leading to her presentation were due to the infiltrative and pressure effects of this metastasis. Whole body imaging failed to locate the primary lesion, but suggested metastatic lymphadenopathy in the chest and abdomen, with possible liver and intrapulmonary metastases. Despite negative imaging, a bowel primary lesion was considered the most likely source. Unfortunately the patient died shortly afterwards.

### Teaching point

Adversive seizures are the more common presentation of frontal lobe seizures compared with the better known Jacksonian 'march'. The description of the episode above demonstrates the deviation of conjugate gaze that typifies an adverse seizure. In addition there is version of the head and sometimes trunk when the eyes assume an extreme lateral position. Usually the gaze deviates away from the irritant focus, as in this case. In contrast Jacksonian seizures classically begin in the thumb or index finger or corner of the mouth and spread to involve the limbs contralateral to the seizure focus. They are both classified as partial seizures involving the motor areas and neither features impairment of conscious level, however they may become secondarily generalised.

Whilst classical Jacksonian motor seizures tend to involve the contralateral motor area, more complex activity, such as adverse seizures, may originate from the premotor complex or the supplementary motor area<sup>[1]</sup>. Frontal eye fields are located anterior to the premotor cortex and spreading ictal stimulation may cause contralateral eye deviation. It is possible that if stimulation of this region is sustained, version of the whole body may result<sup>[2]</sup>. However research

has shown that stimulation of posterior frontal lobe motor areas only results in eye and head deviation. Therefore it has been postulated that epileptogenic stimuli in deeper structures, such as the striatum, influence the motor areas to produce the complex integration required for this rotation<sup>[2,3]</sup>. The pathways are not clearly delineated at present. This complex rotatory component is also found in temporal lobe epilepsy, although it is more frequently associated with frontal lobe pathology. Nevertheless it is regarded as uncommon, although it may be under reported in those cases where a generalised tonic-clonic seizure ensues, overshadowing the rotatory element<sup>[3]</sup>. As they seem so bizarre, these seizures may be misdiagnosed as non-epileptic episodes.

'Collapse ? cause' is a common presentation to Accident and Emergency departments and encompasses a multitude of pathology. In the case of unusual seizure-like presentation, a cause should be ascertained. The most sensitive tests in clinical neurological examination detect an abnormality in 50% of cases in patients without obvious focal neurological deficit or other focal signs<sup>[4]</sup>. These tests combined an upper motor neurone pattern of weakness, abnormal forearm or finger rolling test, pronator drift and impaired rapid alternating movements<sup>[4]</sup>. CT is the simplest imaging technique to investigate the cause of a seizure, be it a vascular insult or, in this case, a space occupying lesion. In the largest series of cases of frontal lobe epilepsy managed surgically, 63 out of 250 were due to a tumour, whether primary or metastatic<sup>[5]</sup>, highlighting the importance of this as a differential diagnosis.

Finally, this lady was managed entirely as an outpatient by our acute care physician. As she was alert, orientated, sensible and accompanied by members of a supportive family she was referred directly from Accident and Emergency. A further detailed history and other investigations to explore a possible primary source for her brain metastasis (as this was considered the most likely diagnosis) were undertaken. She was then commenced on dexamethasone and anticonvulsants whilst being referred for urgent neurosurgical investigation. This resulted in a total stay in hospital of approximately 6 hours, rather than an overnight admission and possible wait for inpatient transfer to the local neurosurgical unit, thus reducing pressure on A&E and inpatient beds.

## Acknowledgements

With thanks to Dr Strang, Acute Care Physician, Royal Glamorgan Hospital.

## References

1. Manford M, Fish D, Shorvon S. An analysis of clinical seizure patterns and their localising value in frontal and temporal lobe epilepsies. *Brain* 1996; 119: 17-40.
2. Dobesberger J, Walser G, Embacher N, *et al.* Gyrotary seizures revisited. A video-EEG study. *Neurology* 2005; 64: 1884-7.
3. Donaldson I. Volvular epilepsy. *Arch Neurol* 1986; 43: 260-2.
4. Anderson N, Mason D, Fink J, *et al.* Detection of focal cerebral hemisphere lesions using the neurological examination. *J Neurol Neurosurg Psychiatry* 2005; 76: 545-9.
5. Rasmussen T. Surgical therapy of frontal lobe epilepsy. *Epilepsia* 1963; 4: 181-98.