

## References

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## Iatrogenic internuclear ophthalmoplegia

Sir: Unilateral lesions of the medial longitudinal fasciculus, clinically manifest as internuclear ophthalmoplegia, are usually vascular in origin. Smith and Cogan<sup>1</sup> in a series of 29 patients, with unilateral internuclear ophthalmoplegia, attributed the condition to a vascular cause in 67% of cases. Despite the high incidence of a vascular aetiology, only one previous case of internuclear ophthalmoplegia following iatrogenic embolisation of the vertebro-basilar system has been reported.<sup>2</sup> We report a case of unilateral internuclear ophthalmoplegia following cardiac catheterisation.

A 15-year old male patient underwent cardiac catheterisation for the investigation of a suspected ventricular septal defect. The procedure was performed under local anaesthesia by percutaneous puncture of the right femoral vein. The foramen ovale was patent, facilitating the passage of the catheter into the left atrium. The catheter was then advanced into the left ventricle via the mitral valve. Left ventricular angiography was performed by the injection of 60 mls of "Hexabrix 320"\* into the ventricle. \*(Hexabrix 320 is an ionised, iodinated contrast agent, being a sterile solution of meylamine ioxaglate 39.3% w/v and sodium ioxaglate 19.65% w/v containing 320 mg iodine in combined form per ml.) Ventricular septum profiles demonstrated a small perimembranous ventricular septal defect.

The patient reported no side effects during, or immediately after the investigation. However, the following day the patient complained of horizontal diplopia. This improved gradually after the next few days. He was examined in the ophthalmology department four days later, where he was

found to have a horizontal diplopia, manifest on dextroversion. Further examination of his ocular movements revealed an underaction and updrift of the left eye on adduction, and nystagmus of the right eye on abduction. A pronounced slowing of the saccadic velocity in the left eye on dextroversion was also noted. The rest of the examination including visual acuity, pupil reactions and general neurological assessment was normal. The patient was examined one month later; he was now asymptomatic, the eye movements having returned to normal except for a minimal underaction of the left eye on adduction.

Disorders of ocular motility represent a rare complication of cardiac catheterisation. Indeed, Hildner *et al*<sup>3</sup> in a review of the complications in 600 adult patients who underwent transbrachial left heart catheterisation, failed to record any ocular motility problems. Thomas *et al*<sup>4</sup> have reported a case of a partial third nerve palsy in a 42-year-old male following retrograde cardiac catheterisation.

Unilateral internuclear ophthalmoplegia is most commonly associated with brainstem infarction.<sup>1</sup> Less common causes include demyelination, diabetes, systemic lupus erythematosus, Wernicke's syndrome, encephalitis, brainstem tumours,<sup>5</sup> trauma<sup>6</sup> and phenothiazine intoxication.<sup>7</sup> Only one previous case of iatrogenic embolisation as a cause of internuclear ophthalmoplegia has been reported. This report<sup>2</sup> described the sudden onset of unilateral ophthalmoplegia following carotid angiography for the investigation of a parasellar lesion in a 27-year-old woman. A persistent primitive trigeminal artery connecting the carotid and basilar systems was present, the posterior communicating arteries being absent. In common with the patient reported here, a full recovery occurred within one month.

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## The predictive value of 5 days CSF diversion for shunting in normal pressure hydrocephalus

Sir: The literature gives many different criteria for selection of patients with normal pressure hydrocephalus who might benefit from shunting. Apart from clinical criteria and the CT scan findings,<sup>1,2</sup> the most reliable predictive tests are: 24-hour intracranial pressure monitoring,<sup>3,4</sup> infusion test,<sup>5</sup> isotope cisternography,<sup>6-8</sup> and CSF outflow conductance measurement.<sup>9</sup> However, occasionally there are doubtful<sup>10</sup> or variant<sup>11</sup> cases, where the only test is to observe the postoperative neurological status. From the observation that any improvement of the clinical picture is evident during the first postoperative days,<sup>1-12</sup> we propose a simple, but invasive predictive test. CSF drawings for five consecutive days, with the opportunity to regulate the quantity of CSF removed every 24 hours, may predict with considerable precision whether the patient will improve with later permanent shunt. A similar test was introduced 3 years ago by Wikkels *et al*<sup>12</sup> who evaluated their patient's psychometric and motor capacities before and after lumbar puncture and removal of 40-50 ml of CSF. They found a close correlation between improvement after lumbar drainage, which started after 30-60 minutes and lasted several hours, and improvement after a permanent shunt.

Twenty four hours after lumbar pressure monitoring, we connected a lumbar catheter (Thuoy needle No 16) to a drainage bag hanging at the patient's side so that he