Case Reports

Angiographic Demonstration of Hemorrhage into the Fourth Ventricle

Case Report

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BLEEDING from a ruptured cerebral aneurysm may cause an intracerebral hematoma, which is likely to burst into the ventricular system. Crompton\(^5\) reported that in 57 of his 62 patients with intracerebral hematomas examined at autopsy, the lesions had ruptured into the ventricular system.

Leakage of contrast material from an aneurysm or further hemorrhage during angiography has been reported on a number of occasions,\(^1,4,5,7-9,11,12\) and there is one report of the contrast material passing into the ventricular system,\(^8\) presumably indicating active intraventricular bleeding at the time of angiography. The following case showed leakage of contrast material from an arteriosclerotic aneurysm of the vertebral artery with opacification of the fourth ventricle.

Case Report

A 46-year-old salesman experienced a sudden, severe occipital headache on November 10, 1967. The headache continued and diplopia developed 2 hours later.

The patient had been known to be hypertensive for 10 years and had irregularly taken antihypertensive medication. His health had otherwise been good.

Four hours after the onset of his symptoms he was examined by a physician. His blood pressure was 210/110. Mild neck stiffness was present, and his skin was cold and diaphoretic. He was accompanied on foot to The New York Hospital-Cornell Medical Center.

Examination. On admission the patient was alert, agitated, and suffering from a severe headache, but could relate clearly the history of his illness. His blood pressure was 210/130 mm of mercury, pulse 80, and breathing rate 16/minute. There was moderate neck stiffness, and the Brudzinski sign was positive. The optic fundi were normal, there were bilateral abducens nerve palsies and the pupils were equal but constricted. The remainder of the cranial nerves were unimpaired. The plantar responses were flexor.

Thirty minutes after admission the patient abruptly became unresponsive while an electrocardiogram was being performed. The plantar responses became extensor, and decerebrate posturing appeared. Breathing stopped and he required endotracheal intubation and respiratory assistance. Sodium bicarbonate, Mannitol, and methyl prednisolone were administered intravenously. Frequent ventricular premature contractions developed, but intravenous lidocaine promptly resulted in conversion to rapid (120 per minute) atrial fibrillation. Digitalization was begun. After 20 minutes of apnea, spontaneous breathing returned, and he was able to follow simple commands. The abducens palsies persisted and the pupils remained constricted. Response to pain was purposeful throughout. The plantar responses remained extensor. About 30 minutes later he again became unresponsive and decerebrate posturing reappeared. For a brief period breathing was erratic and required assistance but shortly thereafter it improved.

With his condition fairly stable, direct left vertebral angiography was performed. A single hand injection of 6 cc of 50% Hypaque was given. Immediately after the injection, breathing ceased for about 30 seconds but then returned. There was good filling of the left vertebral and basilar arteries (Figs. 1 and 2) and reflux down the upper portion of the right vertebral artery. A fusiform dilatation near the lower end of the basilar artery...
Angiography of Fourth Ventricle Hemorrhage

Fig. 1. Left vertebral angiogram. Left: Lateral view, early arterial phase, showing good filling of basilar artery and major branches but no contrast material in the fourth ventricle. Center: Later arterial phase showing contrast material in the dependent part of the fourth ventricle. Right: Venous phase still showing contrast material in fourth ventricle.

was shown and the remainder of the vertebral artery was moderately irregular. Soon after the basilar artery was opacified, contrast medium appeared in the subarachnoid cisterns ventrolateral to the brain stem on the right side; half a second later contrast medium appeared in the fourth ventricle.

Following angiography the patient remained decerebrate and breathing required assistance. He died about 12 hours later.

Postmortem Examination. The general postmortem examination showed cardiac en-

Fig. 2. Left: Frontal view, arterial phase, showing good filling of the dilated irregular basilar artery and its branches and reflux down the single vertebral artery. Contrast material is shown in the right cerebello-pontine angle cistern (arrow). Right: Venous phase showing contrast material in the fourth ventricle (arrow).