Intracranial Arteriovenous Malformation, Pulmonary Arteriovenous Fistula, and Malignant Glioma in the Same Patient

Case Report

GLEN C. WARREN, MAJOR, USAF (MC)
Department of Neurosurgery, University of Mississippi School of Medicine, Jackson, Mississippi

Intracranial arteriovenous malformations and pulmonary arteriovenous fistulas, existing as separate entities, have been diagnosed and reported with increasing frequency since the advent of angiography. Pulmonary arteriovenous (AV) fistulas are commonly associated with other vascular anomalies; especially hereditary hemorrhagic telangiectasia. Chandler reported a family in which the father had an intracranial AV malformation and the mother a hereditary hemorrhagic telangiectasia with multiple pulmonary AV fistulas. However, no previous report of these pulmonary and intracranial vascular anomalies occurring in the same patient has been found. This is a case report in which both an intracranial AV malformation and a pulmonary AV fistula were demonstrated in a patient who also had a malignant glioma.

Case Report

A 21-year-old Negro man was admitted to a local hospital on August 5, 1966, because of a 2-month history of headache and vomiting. The past medical history and family history were both negative. The patient was somnolent and had papilledema. The chest x-ray revealed an area of increased density in the right pulmonary apex which was thought to represent tuberculosis. Spinal fluid examination revealed four lymphocytes and a protein of 170 mg%. Smears for acid fast bacilli were negative, but the clinical impression was that the patient had tuberculous meningitis. Anti-tuberculous therapy was begun, and, because of the alteration of consciousness, intravenous Mannitol was also administered with some temporary improvement. The level of consciousness subsequently deteriorated to a stuporous state, however, prompting transfer to the University Hospital on August 14, 1966.

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Examination. The patient was well-developed but moderately dehydrated and stuporous. The blood pressure was 110/80, the pulse 110 and regular. Clubbing of the fingers and mild cyanosis were noted. No telangiectasia were seen on inspection of the visible mucous membranes and skin. A bruit with systolic accentuation was heard over the right pulmonary apex. No bruit was heard on auscultation over the skull. Chronic bilateral papilledema was present. There was a left central facial paralysis and moderate left hemiparesis. Reflexes were diminished throughout; no pathological reflexes were elicited.

Skull x-rays showed denimization and some erosion of the right anterior clinoid and of both posterior clinoids. The chest x-ray revealed the previously described area of irregular increased density in the right pulmonary apex (Fig. 1 left). The hematocrit was 53, probably reflecting dehydration since it returned to normal with hydration. The electrocardiogram was normal. A bilateral carotid angiogram showed a left parasagittal AV malformation fed primarily from the left middle cerebral artery (Fig. 2). On the right a marked elevation of the middle cerebral complex was demonstrated along with some shift of the anterior cerebral artery from right to left. A large tumor stain with arteriovenous shunts and deep draining veins was identified in the right frontotemporal area.

It was apparent that the patient's immediate problem was the intracranial neoplasm, which was thought to be a malignant glioma. Because of this, further diagnostic studies relative to the pulmonary lesion were postponed. Large doses of methylprednisolone were begun, to control the cerebral edema while the patient was being prepared for surgery. His level of consciousness improved considerably within the first 24 hours, and
he was able to speak and carry out simple commands.

Operation. On August 16, 1966, a right temporal craniectomy was performed under general anesthesia. A large necrotic tumor extending to near the midline and involving the entire anterior temporal lobe was excised. Histological examination of this tumor revealed it to be a glioblastoma multiforme.

Postoperative Course. The patient showed rapid improvement in his neurological state and by the second postoperative day was alert and oriented with only a mild left hemiparesis. A left homonymous hemianopsia was present. A course (5000 r) of cobalt irradiation was begun.

A pulmonary angiogram was done in the postoperative period and this showed an AV fistula to be the cause of the right apical density which had been observed on the