Epistaxis from Aneurysm of the Internal Carotid Artery Due to a Gunshot Wound*  

Case Report  

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Delayed epistaxis following either penetrating or blunt injuries of the head should be suspected of originating from a defect in the internal carotid artery. Herein a case is described in which such a lesion was demonstrated by arteriography and treated surgically.  

Case Report  

An 18-year-old white man was admitted to Barnes Hospital on April 16, 1966, 5½ hours after having been shot through the right side of the forehead with a 22 caliber bullet. There was no loss of consciousness, and he remained well oriented.  

First Examination. On physical examination the patient was drowsy and bleeding from the nose. Blood pressure was 190/105, and pulse rate was 75. A small wound of entry was present just to the right of the glabella; there was no exit wound. The right eye was proptosed without visible pulsations of the globe. There was total ophthalmoplegia with a dilated and fixed pupil. Funduscopic examination disclosed elevation of the retina about a recessed optic disc, edema of the macular area, and subretinal hemorrhage. The patient was blind in this eye. A lateral rectus paralysis was present on the left, otherwise examination of this eye was normal. There was diminished pinprick sensation in all three sensory divisions of the right trigeminal nerve, and the jaw deviated to the right when he opened his mouth. An extensor response to plantar stimulation was present bilaterally. The remainder of the neurological examination was normal.  

Skull films showed multiple missile fragments along a tract through the right orbit, ethmoid and sphenoid regions with total opacification of the ethmoid, sphenoid, and frontal sinuses. One large metallic fragment lay in the region of the right cerebral peduncle, another in the posterior superior part of the right cerebellar hemisphere (Fig. 1).  

Soon after admission, the wound of entry was debrided and closed primarily, and the patient was started on antibiotic therapy. For the first few days he was intermittently confused. Lumbar puncture on the day of admission showed bloody spinal fluid which cleared progressively on five subsequent taps. He complained frequently during the first 2 weeks of swallowing blood and had several minor nosebleeds. Nasopharyngeal examination showed a shaggy white area on the right middle turbinate which oozed fresh blood; clotted blood was noted in Rosenmueller's fossa. He improved progressively and was discharged on May 20, 1966. The only neurological deficits were blindness and total ophthalmoplegia of the right eye, hypesthesia over all three divisions of the right fifth cranial nerve with right trigeminal motor weakness, and a left Babinski response.  

Second Examination. The patient was readmitted 13 days later, on June 2, 1966, actively bleeding from the nose. In the interim he had noted small amounts of blood in his sputum daily. Five days before admission he experienced profuse bleeding from the nose and mouth which stopped spontaneously.  

General physical and neurological examination was unchanged from the time of his discharge. Blood pressure was 150/90, pulse was 100. Hemoglobin was 8 gm% and hematocrit was 27%. No bruits could be heard over the neck or head. Anterior and posterior nasal packs were placed in the nasopharynx which controlled the epistaxis. Three units of whole blood were given, and his vital signs remained stable.  

On June 7, 1966, a right common carotid
The arteriogram showed a large lobular aneurysm of the right internal carotid artery arising within the cavernous sinus and extending just proximal to the origin of the ophthalmic artery (Fig. 2).

Operation. Immediately following arteriography, the right internal carotid artery was exposed in the neck and ligated. Through a right frontal craniotomy, the supraclinoid portion of the right internal carotid was occluded with a torsion spring clip placed proximal to the origin of the posterior communicating artery. The ophthalmic artery was clipped after unroofing the optic canal a short distance.

Postoperative Course. No hemiparesis was present postoperatively. Both anterior and posterior nasal packs were removed on the second postoperative day without further bleeding. On the fifth postoperative day, the patient complained of a thumping noise in the right ear, which disappeared by the next morning. Four generalized seizures occurred on the eighth postoperative day. These were
controlled with Phenobarbital and Diphenylhydantoin, and none occurred thereafter. On June 24, 1966, right brachial arteriography demonstrated: 1) occlusion of right internal carotid in the neck; 2) no filling of the aneurysm; and 3) filling of the right internal carotid artery distal to the intracranial clip (Fig. 3).

The patient was discharged on July 2, 1966. Again, the only neurological abnormalities were blindness and ophthalmoplegia of the right eye and sensory and motor deficit of the right V cranial nerve. The left extensor toe sign was no longer present.

Discussion

Instances of delayed posttraumatic hemorrhage from the nose caused by a defect in the internal carotid artery are usually associated with total unilateral blindness and paresis of neighboring cranial nerves.6,8 In the early stages after injury, transient hemiparesis can also occur.2 The onset of massive bleeding is usually from 6 to 12 weeks after the injury,8 but frequently patients complain of bloody mucus in the mouth or of swallowing blood in the interim.

Treatment of epistaxis suspected of originating from a defect in the internal carotid artery should not be delayed. The nose should be packed to control bleeding and angiography done before removal of the packs. If an aneurysm is demonstrated, the ipsilateral carotid blood flow should be interrupted, and, depending on site of aneurysm and source of filling, a "trapping" procedure may be necessary. In a review8 of 21 cases of severe epistaxis following head trauma, 10 of 11 survivors had ligation of the ipsilateral internal carotid artery. Six of these required additional surgery.

Summary

A case of delayed epistaxis following a penetrating gunshot wound of the skull has been described. The bleeding was from a traumatic aneurysm of the internal carotid artery successfully managed by ligation of the internal carotid artery proximal and distal to the aneurysmal orifice. We have cited comparable reports and emphasized the importance of prompt diagnosis and surgical treatment.

References