CAROTID SINUS SYNCOPE SECONDARY TO LIGATION OF CAROTID VESSELS FOR INTRACRANIAL ARTERIO-VENOUS ANEURYSM

REPORT OF A CASE WITH SURGICAL CURE. ELECTROENCEPHALOGRAPHIC AND ELECTROCARDIOGRAPHIC STUDIES


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As a direct result of the present war, numerous freak injuries of the nervous system and/or the vessels directly supplying the brain and spinal cord have been observed.

The following case report is that of a soldier who received severe injuries to the head and body with the subsequent development of an intracranial arterio-venous aneurysm which was controlled by ligation of the carotid vessels. As a result of this operative procedure, which was aimed particularly towards the saving of the only remaining eye, opportunity was afforded for the study of the pathogenesis of a typical example of the syndrome of carotid sinus syncope of the cardiodepressor type. In addition, controlled serial electroencephalographic studies were carried out with some rather unusual findings.

Weiss, Ferris and co-workers\(^1\)\(^-\)\(^3\) have described the three types of syncope due to sensitive carotid sinus from the clinical standpoint, as follows: (1) Cardiodepressor, in which there is an appreciable slowing of pulse rate or even asystole, without essential change in the blood pressure; (2) the vasodilator type, in which syncope is associated with fall in blood pressure; and (3) the central type, in which syncope occurs without appreciable change either in blood pressure or pulse rate. Forster, Roseman and Gibbs\(^2\) have recently described the electroencephalographic pattern in all three types of the carotid sinus syncope syndrome. Yeager\(^4\) was able to study the electroencephalographic pattern before and after ligation of the carotid arteries in a case of intracranial saccular aneurysm and noted large slow waves in the electroencephalogram immediately following ligation. The examples referred to above are somewhat amplified in the following case report.

REPORT OF CASE

History. H.W., a single 28-year-old private, was admitted to the Walter Reed General Hospital on 29 September 1943. His past history was irrelevant except for the fact that in 1940, while in civilian life, he was accidentally shot, during a brawl, in the right lower quadrant of his abdomen with perforation of the bowel in several places and with subsequent development of a severe peritonitis. However, he made a slow but complete recovery from this accident and was in good health until his induction in the Army on 4 September 1942. He was
sent to Africa on 26 January 1943 as a mechanic in the Air Forces and was helping in the preparations for the forthcoming Sicilian campaign. On 22 July 1943, the patient was aiding in the loading of motorcycles and jeeps into air transports. He was driving a motorcycle up a ramp to one of the transports when he struck some obstruction and both he and the motorcycle overturned in such a fashion that the patient fell on his back and the cycle struck him on his face and head. The patient stated that he was unconscious for a period of two days and was "crazy in the head" for another week. He was admitted to a general hospital within a few hours following injury where it was noted that the right eye showed a marked degree of edema and ecchymosis of the lids, with chemosis of the conjunctiva and cornea, and no light perception. There was a laceration from 10 to 1 o'clock along the corneal region with some haze under the conjunctiva. There was subcutaneous emphysema about that eye and face, and tenderness all along the zygoma and maxillary bones on the right. Fresh blood was present in both nares and in the right auricular canal. The right ear drum was perforated. The patient was unconscious and in shock. X-ray studies revealed: Fractures of the base of the skull, right mastoid process, the right ramus and condyle of the mandible, the right malar bone extending across the orbital plate and the right clavicle at the junction of the outer and middle one-thirds.

The patient began to drain cerebrospinal fluid from both ears and nares. He was treated for shock by means of whole blood, plasma, immobilization of the accessible fractures, and by the judicious use of sedation. By 24 July he was well enough to be transferred to another general hospital, at which time he was drowsy but well oriented. On 26 July a complete paralysis of the left sixth and seventh cranial nerves was noted. Hearing in both ears was markedly impaired and there was a bluish discoloration and perforation of the left ear drum. He was placed on sulfadiazine on 26 July and this drug was continued in four gm. daily doses until 4 September. Cerebrospinal fluid continued to drain from both nostrils until 1 September 1943. By 1 September 1943 hearing in both ears had returned to normal and he was able to be up and around. His course during the first two months following injury was marked only by minor, comparatively rare, headaches. There were no other gross neurologic signs. Blood pressure was 120-130 systolic and 70-80 diastolic without much variation from these limits. The general medical examination otherwise was not remarkable.

Clinical Findings at Walter Reed General Hospital. On admission 29 September 1943 the nose and nasal accessory sinuses were found to be clear both on physical examination and by x-ray. The ear canals were normal and the drums appeared normal. Hearing in the right ear was 15/15 and in the left 12/15. Vision in the right eye was nil and in the left eye was 20/20—Jaeger-1. The visual field of the left eye was normal. The right eye showed a shrunken phthisical globe. There was paralysis of the left external rectus muscle and complete paralysis of the left face, of infranuclear type. The corneal reflex and the left fundus were normal. Lumbar puncture revealed initial pressure of 150 mm. of water, with clear colorless fluid containing no cells, negative globulin, total protein of 22 mg. per 100 cc. of spinal fluid, and negative Wassermann and colloidal gold reactions.

On or about 1 October 1943 the patient first noted a buzzing sound in his left ear. This sound was likened to a swishing noise, which was synchronous with his pulse beat, and varied in intensity from time to time, depending on his state of activity. Examination on 11 October revealed a slight proptosis of the left eye, and a definite bruit, which was synchronous with the pulse, could be heard by placing the stethoscope on the left temple and over the left eye. Obliteration of the left common carotid pulse by pressure caused immediate disappearance of the subjective noise and the objective bruit. A diagnosis of arterio-venous aneurysm of the left internal carotid artery and cavernous sinus was made. Because of the possible loss of vision in the one remaining eye, and because of the subjective noise, it was decided that ligation of the left common carotid artery was indicated.

Operation. Following prolonged periods of digital compression of the left common carotid artery, the patient was taken to the operating room on 15 October 1943 and a preliminary tarsorrhaphy of the left eye was performed. The left common carotid artery was then exposed for a distance of about two inches. A rubber band was placed about the vessel and by