Congenital Arteriovenous Aneurysm in the Neck

A Case Report

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Congenital arteriovenous aneurysm in the neck has rarely been described. A review of the available literature shows that only two cases have been reported up to the present time. The diagnosis in these two cases was confirmed by surgery. The anastomosis of the arterial and venous channels was produced by abnormal blood vessels, connecting, in one case, the external jugular vein with the external carotid artery and in the other the internal carotid artery with the external jugular vein. Both cases survived radical surgical intervention.

The following case is presented for its interesting clinical and angiographic features.

Case Report

History. A 53-year-old woman had lived in Athens, without symptoms until the autumn of 1961 when she noticed a swelling the size of a walnut on the upper part of the left side of her neck. The swelling gradually became more prominent and she noticed that at times it became much larger, especially after fatigue or emotional tension.

Nine months later, on July 15, 1962, she experienced a sudden attack of dizziness, accompanied by a ringing noise in the left ear. She did not lose consciousness, however, or fall down. Two weeks later and throughout the month of August she had several attacks similar to the first one. These attacks became more frequent and by the beginning of December, 1962, she described

![Image of radiographs showing the aneurysm](image-url)

Fig. 1. Preoperative arterial phase: Normal filling of the common carotid artery with prompt filling of an elongated mass of vessels, extending from the bifurcation of the common carotid artery to the condyloid process of the left jaw. The internal carotid artery is well filled and pushed forward by the mass. The carotid syphon is shown but of the cerebral arteries only the middle is slightly filled. The external carotid artery is also filled but no branches are shown, except the lingual artery.
severe continuing dizziness and tinnitus with a slight headache, and pain in the left ear.

In this condition the patient was admitted to the Neurosurgical Service of the Therapeutic and Diagnostic Centre of Athens, on February 22, 1963.

Examination. Physical examination was negative apart from the lesion in the neck. On the left side of the neck, just below the lobe of the ear and behind the angle of the jaw, there was a slightly pulsating mass which measured 8 × 5 cm. in transverse and vertical diameters. The superficial veins on either side of the neck were not dilated and the colour of the skin over the mass was normal. The mass was soft and compressible, circumscribed and not attached to the surrounding tissues. It pulsed in time with the heart beat, most markedly at a point ~ cm. behind the angle of the jaw. It was extremely difficult to determine whether this pulsation was of the mass itself or transmitted from the carotid arteries. An attempt was made to rule out ally transmitted pulsation, by pushing inward the common carotid artery and its branches, but this failed, as strong pressure stopped the pulsation of the mass. When a finger was placed over the point of most marked pulsation, an obscure thrill, confined to a very small area, could be felt. When pressure was put over the external jugular vein at the base of the neck, the mass remained unchanged in size. On auscultation, a slight but continuous bruit, definitely accentuated at the time of systole, could be heard over the mass.

The red blood cell count was 4.3 million per c. mm.; hemoglobin was 83 per cent; the white blood cell count was 7,200 per c. mm.; blood chemistries were found to be within normal limits; sedimentation rate was 64 mm. in the 1st hr., and 106 mm. in the 2nd hr.; Wassermann reaction was negative; urinalysis showed hyaline casts and 1–3 white blood cells per high power field; an electrocardiogram showed no abnormalities. Repeated punctures of the mass, by passing a very fine needle through the oral cavity at different points where it protruded into the pharyngeal fossa, always demonstrated arterial blood. Roentgenograms of the skull, jaw, cervical spine and chest showed no pathological changes. Results of angiography of the left common carotid artery were as shown in Figs. 1, 2 and 3.

The simultaneous presence of opaque medium in the carotid system and the mass, on the one hand, and the internal jugular vein, on the other, indicated that the mass in the neck was a congenital angiomatous arteriovenous aneurysm, feeding from the external carotid artery and short-circuiting into the internal jugular vein.

Operation. In view of these findings, the patient was advised to undergo surgery as the lesion in the neck was potentially dangerous. She was admitted on March 12, 1963. It was planned not to extirpate the arteriovenous lesion but to stop its blood supply by ligation of the external carotid artery. Thus, a skin incision was made across the inner border of the sternocleidomastoid muscle, extending upwards to ~ cm. below the lobe of the ear and downwards to the middle of the neck. When the skin flaps were turned back, the external jugular vein was verified but not ligated. It was normal in size. By dissecting across the inner border of the sternocleidomastoid muscle, the common carotid
Fig. 3. Venous phase: The sausage-shaped mass is now draining into a well-dilated and clearly outlined internal jugular vein.

Fig. 4. Postoperative arterial phase: Good filling of the internal carotid, anterior cerebral and middle cerebral arteries. The internal carotid artery again describes a forward arch. The stump of the ligated external carotid artery is clearly seen and the aneurysm is empty of any arterial supply.
artery and the internal jugular vein were exposed. The first was normal in size but the second was markedly enlarged, tense and pulsating. On carrying the dissection further up, a plexus of enormously dilated abnormal blood vessels were found covering the point of bifurcation of the common carotid artery and its branches. All abnormal blood vessels around the external carotid artery were detached, with extreme care, and pushed upwards, exposing the origin of the external carotid artery. When the external carotid artery was compressed at this point, the mass and dilated blood vessels collapsed and pulsation and thrill ceased both in the mass and in the internal jugular vein. The external carotid artery was then tied with a double ligature.

**Post-operative course.** The patient’s recovery was uneventful and convalescence proceeded normally. She was entirely relieved of the pain and tinnitus in the left ear. When the dressing was removed, the mass, although still present, was much smaller. No pulsation or thrill could be felt and no bruit could be heard. When pressure was put over the external jugular vein at the base of the neck, it remained unchanged in size. Two weeks later, on March 27, 1963, the patient was discharged.

When she was seen two weeks after discharge in the outpatient clinic, her condition was satisfactory. She was still free of symptoms and the swelling had diminished further in size. The results of a control angiography are shown in Figs. 4, 5 and 6. A follow-up report obtained 16 months later, stated that she still had no symptoms and that the mass in her neck continued to get smaller.

**Summary**

A 53-year-old Greek woman was found to have a congenital angiomatous arteriovenous aneurysm in the neck, between the external carotid artery and the internal jugular vein. The patient underwent surgery for the ligation of the external carotid artery which restored a normal blood supply to the left cerebral hemisphere. The post-operative stage was uneventful. When last seen, she remained free of symptoms and the swelling in her neck continued to diminish in size.

**References**