Reversely Directed Branches Arising from the Left Aortic Arch*
Report of a Case

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It is a well known fact that the aortic arch and its branches present great anatomic variations of different types. Edwards1 considered the matter from a clinical point of view. Liechty et al2 studied the aortic arch and its branches in 1,000 adult cadavers and presented an extensive survey of the literature. Brombart,3 again, looked upon the problem from the radiologic standpoint. We have found it appropriate to introduce the case below since a similar variation, as far as we are aware, has not been reported previously.

Case Report

A woman, 37 years of age, was admitted to the hospital due to transient disturbances of vision from which she had suffered for the last two years. During the attacks, the field of vision of one eye interchangeably grew narrower; this, however, never occurred simultaneously in both eyes. These optical illusions lasted for one hour and were succeeded by a slight headache in the frontal and temporal regions, bilaterally and of several hours' duration. She had no nausea, vomiting or disturbances with regard to consciousness. The subjective troubles were not due to the position of the head or to the mechanism of swallowing. She had never before suffered from any serious illness.

The physical examination revealed a healthy woman with no acute disease. The heart sounds

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FIGURE 1: Aortography. Sagittal picture showing the brachiocephalic artery arising from the anterior side of the aortic arch and its branches, both directed to the left. Esophagus, with uptake of contrast material, is compressed by the right common carotid and subclavian arteries and here kinks to the right.

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proved normal on auscultation. An early 3/6 grade ejection systolic murmur was heard along the left sternal border over the second and fourth intercostal spaces. The blood pressure was 110/80 in both arms. The arterial pulses were identical, bilaterally. The optic fundi were normal. The neurologic examination yielded normal findings.

The routine blood counts and the urinalysis disclosed nothing remarkable. The electrocardiogram and the electroencephalogram, too, were interpreted as normal.

**Radiologic Investigation**

The chest film showed the heart, aorta and pulmonary arteries to be normal in regard to size and position. After intake of barium, compression and kinking of the esophagus immediately over the aortic arch were perceptible in postero-anterior view of the chest. An aortogram showed the left-sided aortic arch to be normal in size. The common carotid and subclavian arteries arising from the brachiocephalic artery were directed to the left and passed the esophagus on the anterior side (Fig. 1, 2). The origin of the common carotid and subclavian arteries was normal, but they were directed to the right. The common carotid artery passed on the anterior and the subclavian artery on the posterior side of the esophagus causing, thus, an esophageal compression. By cineangiocardiography it was demonstrated that the contrast material passed through the compressed portion of the esophagus with but slight transient delay (Fig. 4). Both origin and course of the vertebral arteries were bilaterally normal.

**Figure 3:** Diagrammatic picture of the arterial anomaly. A.c.c.dex.=the right common carotid artery, A.s.dex.=the right subclavian artery, Oe=esophagus, A.c.c.sin.=the left subclavian artery arising from the brachiocephalic artery.

**Figure 4:** Cinefilm picture showing the changes in the lumen of the esophagus and in the esophageal course of direction, due to vessel anomalies.

**Comments**

In this case, the left aortic arch disclosed normal arrangement in regard to the origin of the branches, whereas the left common carotid and subclavian arteries arose from the brachiocephalic artery and the right common carotid subclavian arteries separately from the posterior side of the aortic arch. All the branches arising from the aortic arch, thus, represented aberrant vessels. The common carotid and subclavian arteries to the right were causative of an esophageal compression. The patient had no trouble in connection with the mechanism of swallowing. She suffered from occasional subjective visual disorders without objective signs. The relation between the subjective symptoms and the anatomic variation is questionable.

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CORONARY EMBOLISM

Bacterial endocarditis is a major cause of coronary embolism, and it is of interest that coronary embolism, a rare occurrence in itself, is a relatively common cause of death in subacute bacterial endocarditis. In the present series of five cases of coronary embolism, two of which survived, the embolus entered the anterior descending branch of the left coronary artery in all cases except one. Acute coronary occlusion may also occur from blockage of a coronary ostium by a large polyloid vegetation on the aortic valve.

Features which point to the diagnosis of coronary embolism in life are enumerated. It is shown that this condition is by no means so rare as has been thought, and that patients can survive myocardial infarction from this cause.


PULMONARY TRUNK AT SEA LEVEL AND AT HIGH ALTITUDE IN PERU

The histology, physical extensibility, and chemical composition of the media of the pulmonary trunk have been studied after death in people who had lived at sea level and at high altitude in Peru. Among those who had lived at sea level and who had a normal pattern of elastic tissue there was a gradual increase in the physical extensibility of the wall of the pulmonary trunk with increasing age and a gradual increase in the concentration of elastin.

Some of those native to high altitudes showed a pattern of elastic tissue similar to that found in the fetal pulmonary trunk or in the aorta, an abnormality which suggests the presence of pulmonary hypertension from birth. The extensibility of such specimens was inappropriately low for the age of the subject and the content of elastin inappropriately high. The decrease in extensibility was proportionately greatest at light loads where the effects of elastin are thought to predominate.


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REFERENCES


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