Thrombosis of aberrant right subclavian artery co-existing with infarction of left cerebellar hemisphere: Case report

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Abstract: Anomalies of the aortic arch and its main branches are rare; estimations from autopsy series indicate a frequency of 3%. The incidence of an aberrant right subclavian artery is up to 0.5% of the population.

A putrefied corpse of 59-year old women was found in her locked apartment seating in armchair. The autopsy as a direct cause of death revealed chronic heart failure. The autopsy also revealed aberrant right subclavian artery occluded by thrombosis and acute infarction of the left cerebellar hemisphere.

The purpose of this report is to describe an unusual case involving acute ischemia of the right upper extremity due to extensive thrombosis of a retroesophageal right subclavian artery (RSA) in a 59-year-old woman. In literature was described clinical presentation left hemiparesis caused by right subclavian artery thrombosis and retrograde embolization of thrombus via the common carotid artery to the right middle cerebral artery distribution. In our case, right subclavian artery thrombosis was co-existing with acute encephalomalation of the left cerebellar hemisphere. This may be result of retrograde embolization of thrombus via the left vertebral artery or hypercoagulability of blood with co-existing thrombosis of this two arteries. At autopsy we exclude existence of paradoxal thrombosis via atrial or ventricular septal defect or arterio-venous fistula, and also exclude existence of a thrombosis od left atrial auricula.

Key Words: aberrant right subclavian artery, thrombosis, brain infarction, autopsy

Abnormalities of the aortic arch and its main branches are rare; estimations from autopsy series indicate a frequency of 3%. One of the most common anomalies of the aortic arch is an aberrant right subclavian artery (ARSA). The incidence of an ARSA is up to 0.5% of the population [1]. While presenting different clinical manifestations, 75% of the patients remain asymptomatic [2]. In 80% of the cases, the ARSA runs between the spinal column and the esophagus, in 15% of the cases between the esophagus and the trachea, and in 5% of the cases ventrally of the trachea [2, 3, 4, 5, 6]. Compression of the esophagus due to a retroesophageal course of the ARSA may produce difficulty in swallowing. This phenomenon was termed dysphagia lusus naturae (“dysphagia by freak of nature”) by David Bayford in 1794 and has since come to be known as dysphagia lusoria [7, 8]. Other symptoms of ARSA are hoarseness, airway (trachea) obstruction, stridor, apnea, cyanosis, and recurring infection.
Case report

In the following we present the forensic investigations and technical examinations in chronological order.

History: A putrefied corpse of 59-year old women was found in her locked apartment seating in armchair. Notable in the patient’s history was the fact that she had been previously diagnosed diabetes mellitus and arterial hypertension were reported. Symptoms as difficulty in swallowing, hoarseness or stridor was not documented.

Autopsy: The autopsy as a direct cause of death revealed chronic heart failure (left ventricular hypertrophy with dilatation of the heart and cardiac fibrosis). The autopsy also revealed that a right subclavian artery was run between the spinal column and the esophagus - figure 1 [6], and take retroesophageal course to the right arm. Aberant right subclavian artery (ARSA) was occluded by thrombosis. Autopsy determine that acute thrombosis of aberrant right subclavian artery - fig. 2 and acute infaction of the left cerebellar hemisphere was in a causal relationship with a direct cause of death. Examination od heart not revealed a atrial or vetricular septal defect or thrombosis od left atrial auricula.

Microscopic findings: Patho-histology examination confirmed a acute encephalomalation of the left cerebellar hemisphere and acute thrombosis of aberrant right subclavian artery.

Toxicology findings: Determine a ethyl-alcohol in blood in concentracion of 0,30‰ (6,51 mmol/L).

Discussion

Thrombosis of a subclavian artery is an uncommon cause of acute upper extremity ischemia in the elderly. Malformations of the aortic arch system are also rare [9]. The purpose of this report is to describe an unusual case involving acute ischemia of the right upper extremity due to extensive thrombosis of a retroesophageal right subclavian artery (RSA) in a 59-year-old woman, that was in a causal relationship with a direct cause of death. ARSA was run between the spinal column and the esophagus, as in majoriti of all cases [2, 3, 4, 5]. In literature was described clinical presentation left hemiparesis caused by right subclavian artery thrombosis and retrograde embolization of thrombus via the common carotid artery to the right middle cerebral artery distribution [10]. In our case, right subclavian artery thrombosis was co-existing with acute encephalomalation of the left cerebellar hemisphere. This may be result of retrograde embolization of thrombus via the left vertebral artery or hypercoagulability of blood [11] with co-existing thrombosis of this two arteries. In literature, if associated aneurysmal dilation exists of ARSA, it can present as localized pain in the shoulders, neck, and thorax. Ischemia of the upper left extremity secondary to thromboembolic events has also been described; this can cause rupture of the diverticulum, with fatal

Figure 1. Schematic drawing of the aortic arch, the ARSA, the trachea and the esophagus with a retroesophageal course of the ARSA.

Figure 1. Acute thrombosis of ARSA - autopsy finding.
consequences[12]. At autopsy we excluded existence of paradoxal thrombosis via atrial or ventricular septal defect or arterio-venous fistula. Autopsy also excluded existence of a thrombosis od left atrial auricula as a posible cause of dissemaned thrombosis of arteries.

References
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