

Case Report

Sudden death due to aortic rupture while swimming - A case report

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Abstract

An eleven year old, healthy boy with no past history of illness suddenly felt acute excruciating chest pain which was radiating to back, while he was swimming in a private swimming pool. He was immediately transferred to a hospital where he was declared dead on arrival. Autopsy and histopathological findings were suggestive of death was due to extensive advential haemorrhage due to inherent weakness in aortic wall.

Key words: *Swimming pool, Advential haemorrhage, Cystic medionecrosis*

Case report

An eleven year old apparently healthy boy of average build and nourishment, belonging to a middle socio-economic class, complained of sudden onset of severe excruciating chest pain, radiating to back while swimming in a swimming pool. He was immediately rushed to a private hospital nearby, but was declared brought dead on arrival. There was no history illness in the past, or trauma to the chest wall. All his family members including his elder brother were healthy. The case drew a lot of attention due to speculation by media and people as to the cause of death, which the media thought to be accidental drowning due to lack of adequate safety measures in private pools.

Autopsy report

The body was that of a eleven year old young boy, with rigor mortis present all over the body. Faint post mortem lividity was present on the back and dependant part of the body except pressure points. No signs of decomposition were

present. Conjunctivae of eyes were congested. Multiple small petechial haemorrhage were present over the upper part of the chest on the left side. There were no external injuries on the body. On internal examination a haematoma was present in an area of (3 x 3) cm in the substernal region which was due to the resuscitative effort at the pool side. Stomach had about 100 gms of partially digested food material. Mucosa of the stomach was healthy. All organs were pale. Extensive advential haemorrhage was present in ascending aorta, arch of aorta and descending aorta with extravasations of blood in left paravertebral region and thoracic cavity (Fig.no.1). On histopathology, part of the aorta showed, curvilinear eosinophilic elastic tissue with breach in continuity at places in media with mucinous material (Fig no.2). The cause of death was extensive advential haemorrhage due to inherent weakness in aortic wall, which is an uncommon congenital cause.

Discussion

Aorta is the largest artery in the human body that carries oxygenated blood from the left ventricle of heart to the rest of the body. Anatomically it is divided into the ascending aorta, the aortic arch, and the descending aorta. The descending aorta is further subdivided into the thoracic aorta (that part above diaphragm) and the abdominal aorta (that part below diaphragm). There are three layers of aortic wall, namely advential, medial and intimal layer. Rupture of aorta can be traumatic or non

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traumatic. A blow to the aorta can cause a tear with subsequent bleeding and dissection. Aortic dissection occurs when there is a defect in intima of aorta resulting blood tracking into the aortic tissues creating a false lumen. The exact cause of aortic dissection isn't known, however atherosclerosis and hypertension are the predisposing factors. Certain genetic connective tissue disorders like Marfan and Ehlers-Danlos syndromes¹ are also associated with aortic dissection. Cases of this nature are not uncommon. In a study by Vock R² a 19-year-old school boy was suffering from fluctuating uncharacteristic chest pain in the last 20 h before his death. He died unexpectedly within a few minutes of a hemopericardium, which resulted from an aneurysmal rupture of the ascending aorta. The patient's past history as well as the autopsy and ultrastructural findings led to the diagnosis of Marfan's syndrome

Bratzke H et.al.³ have reported forty two cases of "spontaneous rupture of the aorta". The cause of changes in blood vessels was arteriosclerosis (53.6%) and medionecrosis (31.7%). In 57.1% of cases, ruptures were in the ascending part, in 11.9% in the arch, in 7.1% in the thoracic descending part and in 21.4% in the abdominal descending part. With the exception of 3 cases with incomplete rupture and death due to circulation failure, the commonest causes of death were pericardial tamponade or hemorrhage into the thoracic or abdominal cavity.

Aoyagi S et.al⁴ has reported a case of spontaneous non-traumatic rupture of the thoracic aorta in a hypertensive patient. The clinical findings suggested acute aortic dissection, and a large pericardial effusion was detected by echocardiography. Autopsy revealed a longitudinal intimal tear and a rupture in the postero-lateral aspect of the ascending aorta. Dettmeyer R et.al⁵. in their study have presented two rare cases of sudden death of a 31- and a 44-year-old woman. Autopsy and morphological examination in these cases revealed a dissection of the aorta. In both cases mucoid deposits in all layers of the media and rarefaction of the elastic fibers were found, rendering cystic medionecrosis as the cause of the aortic dissection. Fête R et.al⁶ have reported four cases of sudden death in children and adolescence due to unsuspected

cystic medionecrosis of the aorta.

In the present case there was no past history of any illness or any history suggestive of genetic disorder in the deceased and his family members. There was no history of trauma to chest wall. He was a regular swimmer felt chest pain while he was swimming. Swimming is a strenuous exercise resulting in substantial increase in cardiac output. This increased blood flow had resulted in rise in arterial pressure resulting in which means more blood flows through the arterial systems causing substantial damage to the intima of aorta with substantial loss of blood.

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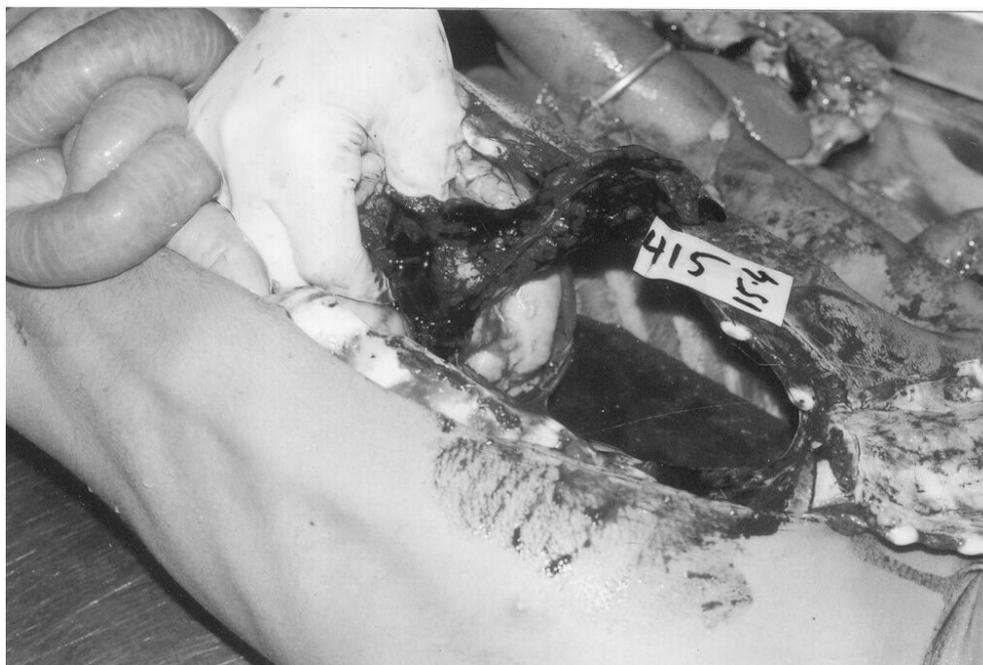


Fig. no.1

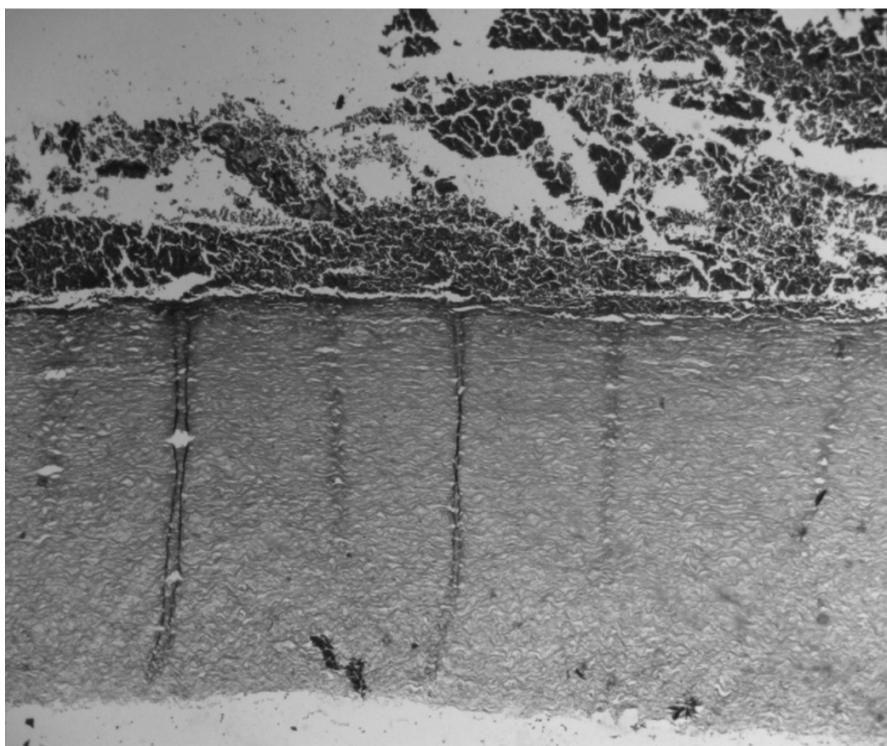


Fig. no.2