

Fatal Aorto-esophageal Fistula Due to Aortic Aneurysm: A Case Report

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Abstract

Aorto-esophageal fistula is a rare and fatal disorder. Ruptured aortic aneurysms often present with sudden death and have varied clinical presentation. Here we are reporting a case of aortic aneurysm with aorto-esophageal fistula and describe the autopsy findings. An aneurysm is a permanent abnormal dilatation of blood vessel occurring due to congenital or acquired weakening or destruction of the vessel wall. Major causes of thoracic aortic aneurysm are hypertension, atherosclerosis, degenerative disease such as medial cystic degeneration and genetic disorders such as Marfan's syndrome and type IV Ehler-Danlos syndrome. Such death may present as sudden death or death with prolonged clinical features and due care should be exercised by forensic pathologist to arrive at a conclusion.

Key words: Death, aortic aneurysm, fistula, forensic, autopsy

Introduction

Aorto-esophageal fistula (AEF) is a rare and fatal disorder and represents a therapeutic challenge owing to high morbidity and mortality. [1,2] The condition was first described by Dubrueli in 1818. In 1914, Chiari described the classical triad of dysphagia, thoracic pain and sentinel haematemesis followed by exsanguinations. Ruptured aortic aneurysms often present with sudden death and have varied clinical presentation depending on the site of rupture and haemorrhage. [3] Majority of aortic aneurysm rupture spontaneously however, traumatic ruptures are also reported. [4,5] Such deaths often incur medico-legal autopsies for varied medico-legal issues. Herein we report a case of aortic aneurysm with AEF and describe the autopsy findings and various issues thereof.

Case report

A 55 year old male was admitted to the surgery ward of Swami Ramanand Tirth Govt. Medical College and Hospital Ambajogai at about 17:00 hours with history of haematemesis and pain in epigastrium since morning. His past history revealed that he was having intermittent haematemesis and melena since few weeks. On examination patient was conscious and cooperative with pulse 77/m, respiratory rate 16/m and blood pressure of 110/70 mmHg. There was pallor. Systemic examination was normal except for some discomfort at epigastric region on palpation. Nasogastric tube aspiration revealed fresh blood. X ray abdomen and ultrasound scan of the abdomen was within normal limit. X ray chest showed displaced trachea to right side with widening of the superior mediastinum with marginal lobulations without calcification with mass margin merging with an arch of aorta (Fig 1). After 8 hours of admission to hospital, the patient had massive haematemesis and he landed in shock and declared dead after 20 hours of admission.

A forensic autopsy was conducted. On external examination there were no injuries except that of resuscitative measures. Internal examination showed pale brain. Lungs were edematous. Heart was enlarged and weighing

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400 gm with mild left ventricular concentric hypertrophy with coronaries showing eccentric atheromatous changes. Arch of aorta showed a fusiform aneurysm measuring 5 cm in diameter with aneurysm mass compressing the oesophagus with fistula formation between the aneurysm and oesophagus draining the blood into the oesophagus (Fig 2). The internal surface of oesophagus surrounding the fistula showed scarring with irregular opening of the fistula with fresh blood found in esophageal cavity and stomach. Other abdominal organs were pale. Microscopic examination showed loss of arterial architecture with atheromatous degeneration and fibrous tissue in the media and adventitia with inflammatory cell infiltrate present.

Fig 1: showing radiological findings of widening of the superior mediastinum



Fig 2: gross examination photograph showing fistula formation between the aneurysm and oesophagus



Discussion

An aneurysm is a permanent abnormal dilatation of blood vessel occurring due to congenital or acquired weakening or destruction of the vessel wall. Degeneration of the medial layer leads to weakening of the arterial wall resulting in progressive dilatation of the wall leading to the formation of an aneurysm. Commonly aneurysms involve large elastic arteries like aorta or its branches. [4,6] Major causes of thoracic aortic aneurysm are hypertension, atherosclerosis, degenerative disease such as medial cystic degeneration and genetic disorders such as Marfan's syndrome and type IV Ehler-Danlos syndrome. [3,4] Thoracic aortic aneurysm is the most common cause of the AEF; other causes include carcinoma, trauma, foreign body ingestion and tuberculous aortitis. [1]

An aneurysm is at constant risk of rupture, either spontaneously or due to trauma. AEF can cause massive upper gastrointestinal haemorrhage that may prove fatal in the absence of treatment. Other ill-effects of such aneurysms are thrombosis and thromboembolism, alteration in the flow of blood, and compression of the neighbouring structures. [6]

Based on pathogenic mechanism, aneurysms can be atherosclerotic aneurysm, syphilitic aneurysm, dissecting aneurysm and mycotic aneurysm. [6] In the present case the gross and microscopic features suggest atherosclerotic aneurysm. Atherosclerotic aneurysms are the most common form of aortic aneurysms. These aneurysms are located most commonly in the abdominal aorta. However, they may also be present in the ascending part and arch of the aorta. At autopsy such type of aneurysm is to be differentiated from a syphilitic and mycotic aneurysm.

Death due to aortic aneurysm may be immediate if the rupture is sudden or precipitated by trivial trauma or death may be delayed with presentation of the days-long gastrointestinal bleeding until death as in the

present case. Such deaths are usually present with a herald bleeding prior to exsanguinations. Herald bleeding is usually minor and self-limiting. Bleeding can be further limited by hypotension and thrombus formation. Consequently, excessive volume therapy and endoscopy may promote fatal exsanguinations. When the patient dies of fatal exsanguinations after going to the hospital due to a herald bleeding, his family may suspect an error in medical treatment. [7] A litigation of negligence may be filed against the doctor for causing death or plea may be taken that due care have not been taken while treating the patient.

If such death is precipitated by trivial trauma then a legally question of culpability of the accused person may arise and it has to be determined by the interaction of trauma and disease. If the injury happens to be of a trivial nature and if trauma, to which the victim was subjected to, appears to be such as would have been insufficient to cause death in an otherwise normal individual then the injury can be categorized as one that is "likely to cause death". [4]

In conclusion, here we have described a fatal case of aortic aneurysm with the AEF. Such death may present as sudden death or death with prolonged clinical features and due care should be exercised by forensic pathologist to arrive at a conclusion. The medico-legal investigations in such death should be based on examination of the clinical history followed by the evaluation of autopsy findings, and microscopic findings.

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