

## Case Report

# Fatal Cardiac Tamponade following Rupture of Saccular Aneurysm of Ascending Aorta: A Case Report

<sup>1</sup>Kh. Pradipkumar Singh, <sup>2</sup>Th. Meera, <sup>3</sup>Ph. Madhubala Devi

### Abstract

Thoracic aortic aneurysms often go unnoticed as the patients rarely feel any symptoms. There have been many instances where a healthy person without any significant history of illness was found dead at home or at work place and such cases always raise a suspicion of foul play. A 40-year old man was found unconscious on the bank of a river and he was immediately taken to the hospital; however, he was declared brought dead on arrival. Foul play was suspected and his body was brought for autopsy at the Regional Institute of Medical Sciences, Imphal. On examination, massive haemopericardium along with an external rupture of a saccular aneurysm of the ascending aorta was observed. Aortic aneurysm is associated with significant mortality that mandates early identification and management. In India, routine health screening is prevalent only amongst the affluent class. Hence, health screening of the general population is recommended so as to avert such fatal outcomes and at the same time, it would help in reducing needless litigations.

**Key Word:** Ascending aorta, Atherosclerosis, Saccular aneurysm, Cardiac tamponade, Sudden death

### Introduction:

Sudden death is the sudden or unexpected termination of life of an apparently healthy individual, usually from some natural disease. Sudden death invariably arouses suspicion in younger individuals and the purpose of medico-legal autopsy in sudden death cases is to determine whether violence or poisoning has been in any way responsible for the death. [1] It is a known fact that diseases of the cardiovascular system account for about 45-50% of sudden deaths and one such condition is the rupture of the aortic aneurysm. [1, 2]

An aortic aneurysm is an enlargement of a weakened area of the aorta. Aneurysms which involve the ascending aorta, aortic arch and descending thoracic aorta are termed thoracic aortic aneurysms. The incidence of thoracic aortic aneurysms is estimated to be 5.9 cases per 100,000 person-years. [3]Thoracic aortic aneurysms affect approximately 15,000 people in the United States each year and are 13<sup>th</sup> leading cause of death. [4]

### Corresponding Author:

<sup>2</sup>Associate Professor,  
Department of Forensic Medicine,  
RIMS, Imphal -795004

E-mail: meera\_th@yahoo.com

<sup>1</sup>Demonstrator

<sup>3</sup> Assoc. Prof, Dept. of Pathology

DOR: 08.08.2013 DOA: 15.04.2014

### Case Report:

A 40-year old man was found unconscious on the bank of a river at about 4 P.M of 14<sup>th</sup> April 2011 and he was immediately taken to a nearby hospital; however, he was declared brought dead on arrival. Foul play was suspected and his body was brought for autopsy at the Regional Institute of Medical Sciences, Imphal on 15<sup>th</sup> April 2011.

### Autopsy Examination:

On examination, except for congestion of the face and eyes, no external injuries were observed on the body. On internal examination, massive haemopericardium (about 600ml. of clotted blood, Fig. 1) along with an external rupture of a saccular aneurysm of the ascending aorta, 14 mm (approx.) in diameter and 1.2 cm above the level of the semi lunar aortic valves was observed. (Fig. 2 & 3)

Histo-pathological examination of the aortic wall neighboring the rupture site showed atherosclerotic changes with cholesterol clefts.

Infiltration of adventitia by chronic inflammatory cells with angiogenesis and fibrosis extending into the fibrous tissue were also observed. (Fig.4 & 5) Atherosclerotic changes in both left and right coronary arteries without narrowing of the lumen were also observed.

The cause of death was given as to be due to **Cardiac tamponade following rupture of aortic aneurysm.**

### Discussion:

Some of the causes of aortic aneurysms include atherosclerosis, syphilis, trauma, bacterial infection, arteritis, connective tissue disorders, neoplasm, etc.

Atherosclerosis is the predominant etiology of aneurysms of the descending thoracic aorta. Conversely, atherosclerosis is an infrequent cause of ascending thoracic aortic aneurysms. [5]

Most of aortic aneurysms are fusiform, although up to 20 percent may be saccular. [6] Saccular aneurysms are spherical in shape and involve only a portion of the vessel wall.

If a saccular aneurysm is present in the ascending aorta, surgery is recommended when it reaches a size of about two inches (5 cm). [7]

Interestingly, in the present case, the rupture occurred in a small saccular aneurysm, which measured only 14 mm (approx.) in diameter. Aortic dissection and rupture are the main complications of thoracic aortic aneurysm and a ruptured aortic aneurysm can lead to life-threatening internal bleeding.

Thoracic aortic aneurysms often go unnoticed as the patients rarely feel any symptoms. Hypertension usually intensifies the force of blood on the walls of an aneurysm contributing to rupture.

In the present case, no medical records were available and as per the history given by the members of his family, he had no complaints and was absolutely symptom free before the occurrence of the fatal episode.

Nevertheless, hypertension could have been a predisposing factor in this case in presence of the evidence of atherosclerosis in the arteries. Supravalvular aortic aneurysms are less common, and predominantly affect male patients; the mean age at the time of diagnosis ranges from 59–69 years. [8]

However, the present case was relatively young and apparently healthy, and the circumstances surrounding his death were pointing towards possibility of a foul play.

There have been many instances where a healthy person without any significant history of illness was found dead at home or at work place and such cases always raise a suspicion of foul play.

Hence, aortic aneurysm is associated with significant mortality that mandates early identification and management. It is a known fact that there has been increased efficiency in diagnosing this condition and when detected in time, many patients have been treated in tertiary health care centres in India.

### Conclusion:

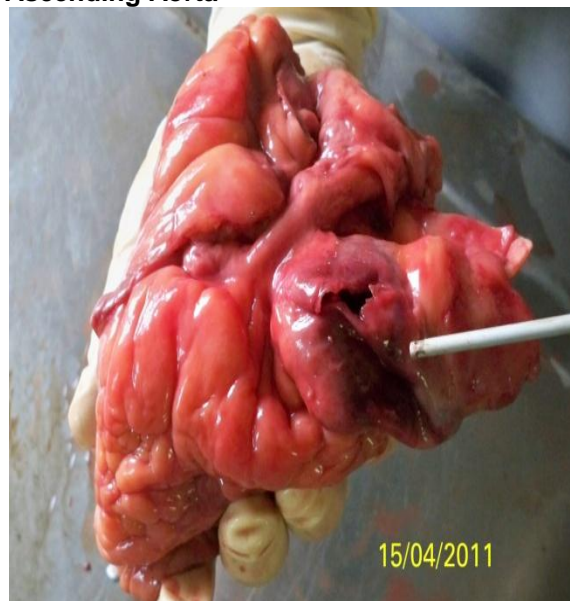
This case has been reported in view of the fact that the rupture occurred in a small atherosclerotic saccular aneurysm of the ascending aorta, that too in a relatively young individual who showed no signs of illness before the fatal episode.

Hence, a routine health screening, which is prevalent only amongst the affluent class in India, is recommended for the general population so as to avert such fatal outcomes and at the same time, it would help in reducing needless litigations.

**Fig. 1: Partly Clotted Blood (600ml.) Collected from the Pericardium**



**Fig. 2: Ruptured Saccular Aneurysm of Ascending Aorta**



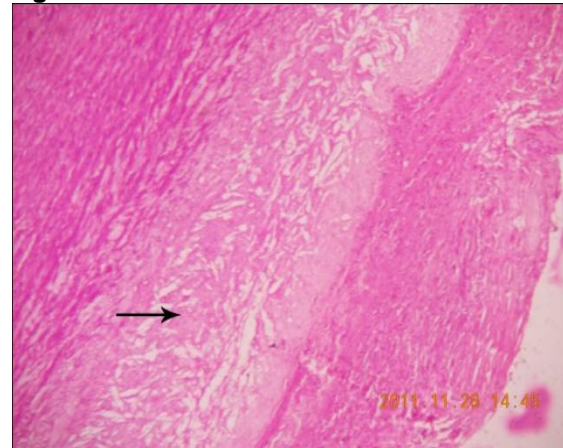
**Fig. 3: Inner Aspect of the Aorta showing the Opening of Saccular Aneurysm**



**Fig. 4: Atherosclerotic Ascending Aorta**



**Fig. 5: Cholesterol clefts**



**References:**

1. Pillay VV. Sudden death. Textbook of Forensic Medicine & Toxicology. Paras Medical Publisher. 15<sup>th</sup> Edn, 2010:268.
2. Reddy KSN. Sudden deaths. The essentials of Forensic Medicine and Toxicology. Suguna Devi. 21<sup>st</sup> Edn 2002:125.
3. Bickerstaff LK, Pairolero PC, Hollier LH, et al. Thoracic aortic aneurysms: a population-based study. *Surgery* 1982; 92:1103
4. Majumder PP, St Jean PL, Ferrell RE, et al. On the inheritance of abdominal aortic aneurysm. *Am J Hum Genet* 1991; 48:164.
5. Isselbacher EM. Thoracic and abdominal aortic aneurysms *Circulation*. 2005; 111: 816-828
6. Ozler A, Tarhan IA, Kehlibar T, Yilmaz M, Arslan Y, Dumantepe M, Pancaroglu C. True saccular aneurysm of the ascending aorta. <http://www.ispub.com/journal/the-internet-journal-of-thoracic-and-cardio-vascular-surgery/volume-11-number-2/true-saccular-aneurysm-of-the-ascending-aorta.html> accessed on 25th Nov 2011
7. What Is a saccular aneurysm? [www.wisegeek.com/what-is-a-saccular-aneurysm.htm](http://www.wisegeek.com/what-is-a-saccular-aneurysm.htm) accessed on 23rd Nov 2011.
8. Nataf P, Lansac E. Dilatation of the thoracic aorta: medical and surgical management. *Heart* 2006; 92:1345-1352