

Aortic Aneurysm

K S Neelakandhan

Department of Cardiovascular and Thoracic Surgery, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram.*

ABSTRACT

Published on 27th September 2013

Aortic aneurysm is a lethal disease. Awareness of such a condition should prompt the physician to investigate further in suspected cases. X-rays, Doppler ultrasound, CT angiogram, MR angiogram and digital subtraction angiogram are all useful in making the diagnosis. A multi slice CT angiogram is the best investigation for confirming the diagnosis and planning the intervention. The details we need to know from the CT angiogram are the site of involvement, the extent of involvement, the diameter of the aneurysm, involvement of major branches in the aneurysm and the condition of the rest of the arterial tree.

Unless treated on time most of them die of aneurysm rupture. In young, fit patients, open repair is the choice of intervention. In elderly patients with co-morbidities endovascular repair is a viable option.

Keywords: Aortic aneurysms, Surgical repair

*See End Note for complete author details

DEFINITION

An aneurysm is a localized dilatation of an artery. When the dilatation exceeds one and a half times the normal diameter of that segment of the artery, it is called an aneurysm.

Aetiology

Most of the aneurysms are secondary to atherosclerosis. Some genetic weakness in the arterial wall as in Marfan's syndrome and cystic medial necrosis also predisposes for aneurysm formation. Inflammatory conditions like Non-specific aorto arteritis and rheumatoid arthritis also can produce aneurysm. Infections like syphilis and septic emboli are another cause of aneurysm. Traumatic aneurysms, accidental or iatrogenic are encountered more frequently nowadays.

CLASSIFICATION

According to their shape, aneurysms are classified into saccular and fusiform. Depending on the presence or absence of the arterial wall, aneurysms are divided into true and false. Anatomical classification is according to the site of the aneurysm: ascending aortic, aortic arch, descending thoracic aortic, thoracic-abdominal aortic, abdominal aortic and peripheral arterial.

CLINICAL PRESENTATION

Majority of the aneurysms are asymptomatic and

are detected when the patient undergoes evaluation for some other unrelated problem. An abdominal aortic aneurysm can usually be palpated. Pressure on adjacent structures can produce various symptoms like hoarseness of voice (recurrent laryngeal nerve paralysis), dysphagia, inspiratory stridor, phrenic nerve palsy and early satiety. Pain is not a constant symptom; chronic intractable pain is an indication of bone erosion, especially of the vertebral bodies. Acute pain with collapse is an ominous sign- it indicates rupture of the aneurysm.

DIAGNOSIS

Awareness of such a condition should prompt the physician to investigate further in suspected cases. X-rays, Doppler ultrasound, CT angiogram, MR angiogram and digital subtraction angiogram are all useful in making the diagnosis. A multi slice CT angiogram is the best investigation for confirming the diagnosis and planning the intervention. The details we need to know from the CT angiogram are the site of involvement, the extent of involvement, the diameter of the aneurysm, involvement of major branches in the aneurysm and the condition of the rest of the arterial tree.

TREATMENT

The most catastrophic sequel of an aneurysm is rupture and death. Once the aneurysm ruptures, almost 90%

Corresponding Author:

Dr. K S Neelakandhan, MS MCh FAMS, Former Professor & Head, Department of Cardiovascular and Thoracic Surgery, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. E-mail: imaksb@yahoo.co.in

of the patients die immediately due to exsanguination. Hence the objective of any treatment for the aneurysm is to prevent rupture. As the diameter of the aneurysm goes on increasing, the chance of rupture also increases. It is generally agreed that any aneurysm more five cms in diameter should be operated if the patient's general condition permits. Only in the case of patients with serious co-morbidities, intervention is withheld. Two types of interventions are available: Open surgical repair and Endovascular Aneurysm Repair (EVAR).

Open Surgical Repair

The first successful aortic aneurysm repair was done in 1952. The procedure involves exposing the diseased aorta with appropriate incision and replacing the involved aorta using a prosthetic graft. In the abdomen it can be done by cross clamping the aorta. In the thoracic aorta, most of the cases require the use of cardiopulmonary bypass. In some cases, especially involving the aortic arch, the blood circulation has to be stopped after cooling the patient to 18 degree celsius.

The mortality and morbidity associated with open repair of aortic aneurysms are relatively high. The common complications are uncontrollable bleeding, renal failure, paraplegia, cerebral damage and cardiac failure. The mortality ranges from about 5% in abdominal aortic aneurysm to about 20% in thoraco-abdominal aneurysms.

Endovascular Aneurysm Repair

The first endovascular repair of an abdominal aortic aneurysm was done in 1992.² In this procedure, through a femoral artery cut-down, a stent-graft is deployed at the involved segment of aorta. The graft is held in place at the proximal and distal normal aorta by the self expanding stent. When major branches are involved, modification of the procedure by hybrid repair or

using fenestrated grafts will be required.¹

The mortality and morbidity associated with EVAR are significantly low compared to open repair. Because of this, many patients who are unfit for an open repair, can be safely subjected to endovascular repair. A major drawback is the high cost of the stent-graft

CONCLUSION

Aortic aneurysm is a lethal disease. Unless treated on time most of them die of aneurysm rupture. In young, fit patients, open repair is the choice of intervention.^{1,2} In elderly patient s with co-morbidities endovascular repair is a viable option.^{1,2}

END NOTE

Author Information

Dr. K S Neelakandhan, MS MCh FAMS,
Former Professor & Head,
Department of Cardiovascular and Thoracic Surgery,
Sree Chitra Thirunal Institute for Medical Sciences
and Technology, Thiruvananthapuram.
E-mail: imaksb@yahoo.co.in

Conflict of Interest: None declared

Cite this article as: K S Neelakandhan. Aortic Aneurysm. Kerala Medical Journal. 2013 Sep 27;6(3):63-64

REFERENCES

1. Langer S, Franzen EL, Haiduk M, Seidl-Franzen S, Jacobs MJ, Greiner A. [Aortic aneurysm 2012: open, hybrid or total endovascular repair?]. *Zentralbl Chir.* 2012 Oct;137(5):418-24.
2. Brozzi NA, Roselli EE. Endovascular therapy for thoracic aortic aneurysms: state of the art in 2012. *Curr Treat Options Cardiovasc Med.* 2012 Apr;14(2):149-63