ISSN: 2754-4516

Journal of Medicine and Healthcare

SCIENTIFIC Research and Community

Case Report

Open Access

Stable Descending Thoracic Aortic Aneurysm and Growing Abdominal Aneurysm in A Young Hypertensive Male Refusing Surgery

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Received: March 11, 2020; **Accepted**: March 17, 2020 ; **Published:** March 17, 2020.

Keywords: Thoracic Aortic Aneurysm, Abdominal Aneurysm, Hypertensive, Refusing Surgery

Introduction

Aortic aneurysm, due to degeneration of elastic and muscle tissues, is a silent disease made deadly by dissection, with aneurysm size as the best predictor of rupture. Thoracic aortic aneurysms (TAA) and abdominal aortic aneurysms (AAA) have the same risk factors, although TAA is more likely to be manifestations of genetic abnormalities of connective tissue [1]. For both, the most strongly associated modifiable risk factor is smoking, followed by atherosclerotic disease, hypertension, and obesity. Non-modifiable risk factors include increasing age, male sex, family history, and Caucasian race.

Case History

A 39-year-old obese African American male with a history of hypertension, hyperlipidemia, Stanford type A and type B TAA presents for outpatient management of hypertension and aneurysms. He had a long history of hypertension with blood pressures routinely in 160s/80s and occasional malignant episodes in 200s/100s. Workup for secondary causes including pheochromocytoma and renal artery stenosis was negative. He had a ten-pack-year history of tobacco smoking, and continued to be an active smoker at the time of presentation.

Four years prior at age 35, he underwent emergent surgery for Stanford type A TAA with a dacron graft placement. Surgery was complicated by prolonged intubation, tracheostomy tube placement, and delayed sternal closure. A non-dissecting descending TAA was discovered at this time and then chronically managed with anti-hypertensives, but the patient was unable to maintain good hypertensive control and continued to smoke one pack-per-day. Shortly before being established at our clinic, the patient presented to the emergency department with a dissection of his 5.5 cm aneurysm (Stanford type B dissection). Involvement of the abdominal aorta and 5.2 cm infrarenal aneurysm was discovered. During this hospitalization, the patient was coded for ten minutes with pulseless electrical activity. After this discharge, hypertension continued to be refractory on a regimen of labetolol, hydrochlorothiazide, clonidine, hydralazine and lisinopril. Due to his fear of surgery, he was lost to follow-up for four years. Aneurysms were screened when he returned to care: the AAA grew to 7.1 cm, while the descending TAA had increased to 6.8 cm. Due to growing

concern over the diameter of aneurysms, the patient was referred to vascular surgery. However, he ultimately not to go pursue surgical management, due to surgical risk and past experience with surgical complications. He expressed understanding that inevitable rupture of growing aneurysms could be fatal. After multiple discussions with the patient, it was decided that his internist would proceed with further medical management only.

Another three years later, the patient lost thirty kilograms due to extraordinary patient self-motivation on diet, exercise and smoking cessation. Hypertension was adequately controlled around 130s/70s. Despite this, the AAA grew to 8.4 cm and the TAA remained stable at 5.4 cm, with no dissections since 2006. In 2015, the patient suffered an episode of severe abdominal pain radiating to the back and finally agreed to undergo staged surgical repair of both aneurysms. In the first planned stage, vascular surgery repaired the type IV thoraco-abdominal aortic aneurysm with bilateral common iliac artery reconstruction.

Postoperatively, elevated transaminases and creatinine suggested acute liver and kidney injury. Furthermore, progressive acidosis suggested visceral organ ischemia or abdominal compartment syndrome. In the subsequent two weeks, patient returned to the operating room six times for procedures including exploratory laparotomy for abdominal washout, left hemicolectomy, colostomy, splenectomy, cholecystotomy tube placement, and tracheostomy. Unfortunately in the following months, the patient required continuous renal replacement therapy, needed ventilation support due to respiratory insufficiency, and suffered repeated episodes of leukocytosis and sepsis with several fluid collections and abscesses. Approximately 3.5 months after initial operation, the decision was made by the patient's family to transition to comfort care due to multi-organ failure and the patient passed away shortly after.

Discussion

The patient described in this vignette represents a unique presentation of aortic aneurysm and interesting challenges in management. Despite his young age, African American race, and lack of other signs of connective tissue disease, he presented with multiple aneurysms and dissection history, likely contributed by cigarette smoking and rampant primary hypertension. Definitive management is surgery, which is indicated for aneurysms reaching 5.5 cm in men, 5.0 cm in women, or rapid growth of > 1 cm/year [2]. While the patient clearly meets requirements, his fear of surgical risks were understandable given past history with surgical complications–this presented a challenge in management by his primary care internist. Control of blood pressures was ultimately achieved with multiple anti-hypertensives, smoking cessation and weight-loss. Despite this, serial surveillance with imaging showed continued enlargement of his aneurysms of up to 8.4 cm, which represented a 35-50% annual rupture risk [3]. Consequently, the patient suffered from an AAA dissection, which finally prompted him to undergo surgical repair. Unfortunately, despite young age and relatively good health, he once again suffered a long and complicated post surgical course from which he never recovered.

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