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Acute Aortic Dissection in an Over Octogenarian Patient Treated in a Primary Hospital: Rupture Abdominal Aortic Aneurysm (R-AAA)

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Abstract: *The authors discuss several aspects of the management of ruptured abdominal aortic aneurysm in elderly treated in a primary care hospital about what is the best choice to save patient's life. The objective of these review and case report is to discuss of what is really the best solution for octogenarian patients affected of Ruptured Abdominal Aortic Aneurysm (R-AAA), which technique perform such as an open repair or Endovascular Aneurysm Repair (EVAR), if octogenarians shocked patients should be only palliated and how/when addressed the patients to a tertiary vascular hospital that has all the resources to treat R-AAA correctly.*

Keywords: *Ruptured Abdominal Aortic Aneurysm (R-AAA), elderly, Open Abdominal Aortic Aneurysm (O-AAA) repair, Endovascular Aneurysm Repair (EVAR)*

1. Introduction

Aortic dissection is a disease of the media layer of the vessel. Bleeding into and along the media causes a separation of the layers of the aorta. Spread of the dissection may proceed in an antegrade or retrograde direction, or both. Numerous factors lead to medial degeneration, including atherosclerosis, hypertension, tobacco use, genetic syndromes, and inflammatory aortopathies, age, with the end result of increased wall stress as indicated by the law of La Place. (1-9) Aortic dissection is typically classified according to location. De Bakey's original system (10) based on the site of origin and extent of dissection has largely been supplanted by the Stanford system (11), which classifies according to involvement of the ascending aorta. Stanford type A includes all dissections involving the ascending aorta, regardless of the site of origin. Stanford type B dissections are confined to the descending aorta. the Svensson system assigns acute aortic syndromes to one of five classes. The patient presented here had a Stanford type B, Svensson Class 1 aortic dissection, over octogenarian patient with multiple comorbidities.

Class 1: Classic dissection with intimal flap separating true and false lumens
Class 2: Intramural hematoma
Class 3: Limited intimal tear with eccentric bulge
Class 4: Penetrating atherosclerotic ulcer
Class 5: Iatrogenic dissection

Classification of aortic dissection as outlined by Svensson

2. Case Report

An 88-year-old woman with a medical history of myocardial infarction, diabetes mellitus, hyperlipidaemia and cholelithiasis presented to the emergency department with a history of sudden epigastric and back pain. She has a body Mass Index of 35 and a Glasgow Coma Scale (GCS) 13. She was oriented, she had a blood pressure of 90/60 mm Hg and a heart rate of 100 bpm. Her Arterial Blood Gases (ABG)

demonstrated a lactic acidosis. Laboratory evaluation was notable for potassium of 3.9 mmol/L, creatinine of 2.00 mg/dL, lactic acid of 2.9 mg/dL, white blood cell count of $19.17 \times 10^3/\mu L$, and a mild troponin-T elevation at 0.06 ng/mL, Hemoglobin 7.0 g/dl. The electrocardiogram showed tachycardia sinus rhythm at a rate of 100 beats per minute. There was epigastric tenderness with voluntary guarding and a voluminous palpable abdominal mass in the left part of the abdomen. There was no evidence of critical ischemia of the lower limbs. The radial, dorsalis pedis, and posterior tibialis pulses were full and equal bilaterally. The patient remained neurologically stable and became hemodynamically stable after she was treated with 3 unit of blood red cells transfusion, 2 unit of fresh frozen plasma, jugular vein cannulation with 2 liters of saline infusion in one hour, monitoring blood pressure, heart rate, diuresis with foley catheters. After parameters stabilization, a Computer Tomography (CT) scan of his abdomen and pelvis was performed for persistent abdominal pain, revealing an infrarenal abdominal aortic dissection, Standford A, extending 8.6 cm from the level of renal arteries to the aortic bifurcation. The proximal abdominal aorta showed eccentric thrombus within. (figure 1-2-3-4). Then, we decide to transfer the patient to a tertiary vascular care hospital. The patients was transferred with hemodynamic stability, hemoglobin 10 g/dl, correction of lactic acidosis and neurological and respiratory stability. The patient arrived intubated for acute distress respiratory syndrome during transfer. She was operated with a xifo-pubic incision. Unfortunately, during the operation time she had a cardiac arrest and died.

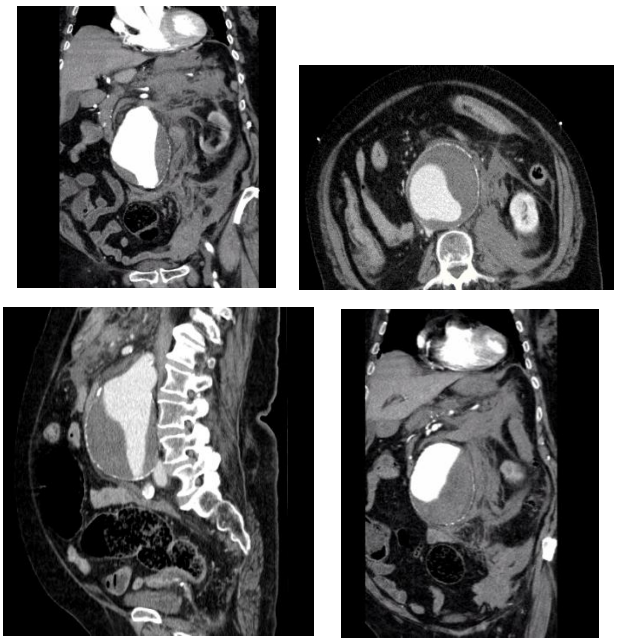

Figure 1-2-3-4

3. DISCUSSION

Ruptured AAA represents one of the major emergency challenges in vascular surgery with significant mortality rates. Especially, it is considered a lethal condition for the elderly. Noel et al., at the Mayo clinic on 413 patients operated for ruptured AAA, published in 2001, revealed that patients older than 80 years with shock or cardiac arrest have the highest mortality rate(12).The elderly with ruptured AAA usually present with one or more life-threatening clinical conditions in addition to a dramatic reduction in organ reserve so the postoperative 30 day-complication rate such as perioperative respiratory failure, myocardial infarction, bowel ischemia, ictus cerebri, renal failure are usually in survivors elderly patients. The important goal in ruptured AAA in the elderly is the management of acute anaemia, hypovolemia and hypotension. To avoid the already high risk of myocardial, cerebral, renal and bowel ischemia. Crawford et al, demonstrated clinical evidence that aggressive fluid resuscitation to restore blood pressure increases the risk of re-bleeding. Only sufficient fluids should be given to maintain a mean pressure lower than 70 mmHg (13). AUNE *et al.* (14) reported a series of ruptured AAA repairs in octogenarians. The rate of renal failure was 15%, cardiac morbidities (17%) and pulmonary complications were 15% confirming that the age was a critical risk factor in octogenarian patients. In conclusion, if open

repair of AAA has a mortality rate in several studies ranges from 30%-50% in non octogenarian population, the 30 day mortality rate after open ruptured AAA repair in patients over 80 years old is high, ranging from 33% to 91%. (15-19). Because of the high major risk factors during open surgery, elderly patients, will most likely be undergoing an alternative operative procedure, such as Endovascular Aneurysm Repair (E.V.A.R.). The technique advantages are a repair strategies without general anaesthesia, without laparotomy, without visceral air exposure and dissection, and without prolonged aortic cross-clamping. MALINA *et al.* (20) described this procedure in patients with circulatory collapse using the insertion and inflation of a balloon catheter in the suprarenal aorta. EVAR approach of ruptured AAA is very appealing but safety, feasibility, cost-effectiveness and follow up of this procedure have to be assessed in the hand of experience vascular surgeons and radiologists team. Chiesa et al (21) analyzed outcome and survival after ruptured AAA open treatment in patients aged 75 years and older and concluded that open surgery for ruptured AAA has predictors of mortality such as those related to the entity of blood loss, association of hypothermia and elderly age. These factors seems to be correlated with high mortality rate. They analyzed too EVAR procedure, underlying the high mortality for octogenarians patients with ruptured AAA particularly in the presence of haemodynamic instability. L.L. Hoornweg et al, have showed a review includes articles ranging from 1970 to 2003, and comprises a considerably higher number of patients (60,822). They demonstrated an overall mortality of 48.5% (95% CI: 48.1-48.9%) not change significantly over the years., noticed that the age increased over the years and that overall mortality a trend was seen in favour of high-volume hospitals. This meta-analysis suggests that mortality of patients with RAAA treated by open surgery has not changed over the past 15 years. This could be explained by increased age of patients undergoing RAAA repair. (22)

4. CONCLUSIONS

Despite improvements in emergency care, diagnostic facilities, anaesthesiology and intensive care, overall mortality of patients undergoing open repair for R-AAA has not changed. Increased age in associations with high body mass index, comorbidities such as renal insufficiency, myocardial infarction and clinical presentation associated with low pressure and shock of octogenarians patients selected for operation may explain this finding. (22)

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