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Original article

Endovascular Repair Versus Open Surgery in the Treatment of the Ruptured of Aneurysms Abdominal☆,☆☆

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ABSTRACT

Introduction: Rupture of abdominal aortic aneurysm is still a difficult challenge for the vascular surgeon due to the high perioperative mortality. The aim of our study is to describe the characteristics of the population as well as to compare morbidity and mortality in patients undergoing open surgery or endovascular repair in our center.

Methods: Database with 82 rAAA between January 2002 and December 2014, studying two cohorts, open surgery and endovascular repair. Epidemiologic, clinical, surgical techniques, perioperative mortality and complications are analyzed.

Results: Eighty-two rAAA cases were operated (men: 80, women: 2). Mean age 72±9.6 years. 76.8% (63 cases) was performed by open surgery.

Background: smokers 59, 7%, alcoholism 19.5%, DM 10.9%, AHT: 53.6%, dyslipidemia 30.5%. The most frequent clinical presentation was abdominal pain with lumbar irradiation: 50 cases (20.7% associating syncope). Overall hospital mortality was 58.5%. Hemodynamic shock prior to intervention was associated with increased mortality ($P<.001$). Anemia, leukocytosis, aneurysm size, sex and age did not show a statistically significant difference with respect to mortality ($P>.05$). The presence of iliac aneurysms was associated with increased mortality ($P<.0045$). Perioperative mortality in endovascular repair was 42%, and in open surgery was 63.5% ($P>.05$). Hospital stay was lower in the endovascular group ($P=.3859$).

Conclusions: Hemodynamic shock and the presence of concomitant iliac aneurysms have a statistically significant association with perioperative mortality in both groups. We found clinically significant differences in mortality, complications and hospital stay when comparing both groups with better results for EVAR, without statistically significant differences.

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Reparación endovascular versus cirugía abierta en el tratamiento de la rotura de aneurisma abdominal

Palabras clave:
Aneurisma de aorta abdominal roto
Cirugía abierta
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Shock hemodinámico

RESUMEN

Introducción: La rotura del aneurisma aórtico (AAAr) continúa siendo un reto para el cirujano, presentando una alta mortalidad perioperatoria. El objetivo de nuestro estudio es describir el tipo de población afectada comparando mortalidad y complicaciones en pacientes intervenidos mediante cirugía abierta y reparación endovascular (REVAr) en nuestro centro.

Métodos: Base de datos con 82 AAAr intervenidos entre enero de 2002-diciembre de 2014, estudiándose 2 cohortes, una intervenida mediante cirugía abierta y otra con REVAr. Se analizan variables demográficas, clínicas, técnicas quirúrgicas, complicaciones y mortalidad perioperatorias.

Resultados: Ochenta y dos casos de AAAr intervenidos (varones: 80, mujeres: 2). Edad media 72 ± 9,6 años. El 76,8% se realizó mediante cirugía abierta. Antecedentes: tabaco: 59,7%, alcoholismo: 19,5%, DM: 10,9%, HTA: 53,6%, dislipemia 30,5%. La clínica de presentación más frecuente fue dolor abdominal con irradiación lumbar: 71,9% (asociando síncope 20,7%). Mortalidad intrahospitalaria global 58,5%. El shock hemodinámico previo a intervención se asocia a una mayor mortalidad ($p < 0,001$). La anemia, leucocitosis, antecedentes médicos, tamaño aneurismático, sexo y edad no muestran asociación significativa con respecto a la mortalidad ($p > 0,05$). La presencia de aneurismas iliacos se asocia a mayor mortalidad ($p = 0,0045$). Mortalidad perioperatoria para REVAr: 42%, y en cirugía: 63,5% ($p > 0,05$). Estancia media menor en el grupo de REVAr ($p > 0,05$).

Conclusiones: El shock hemodinámico y la presencia de aneurismas iliacos parecen asociarse a una mayor mortalidad en ambos grupos. Encontramos diferencias clínicamente significativas en cuanto a mortalidad, complicaciones y estancia hospitalaria al comparar ambos grupos con mejores resultados para EVAR, sin embargo no son estadísticamente significativas.

Introduction

Ruptured infrarenal abdominal aortic aneurysm (AAAr) continues to be a challenge for vascular surgeons in the emergency setting. Open surgery (OS) has been the treatment of choice for decades,[1,2] with associated mortality rates of 32%–70% according to different publications. However, these results have not improved over the years.[3–5] Furthermore, this procedure entails a large number of perioperative complications, most importantly total ischemia caused by hemodynamic shock, which later leads to multiple organ failure.[6,7]

The introduction of endovascular aneurysm repair (EVAR) by Yusuf in 1994 for the treatment of AAAr was an important innovation that gave rise to several studies showing better results and supporting the use of this technique, with reported perioperative mortality rates from 5% to 35%.[8] In recent years, EVAR has become the treatment of choice, and the current trend is to use this method whenever possible.[1,3,5]

Endovascular therapy has many advantages over OS, such as the possibility to perform the procedure under local anesthesia, the absence of aortic clamping and therefore reperfusion syndrome, less blood loss and reduced hypothermia.[9]

Nonetheless, EVAR also has several disadvantages when compared to open surgery. First is the need for a CT scan with contrast for the anatomical evaluation of the aneurysm, its relationship with the renal arteries and the iliac morphology. Patients must be hemodynamically stable to withstand the time required for the imaging test and preoperative preparation for the procedure, which is longer in endovascular therapy.[1,6] It is also necessary to have a trained multidisciplinary team available that includes surgeons, radiologists, nurses, anesthesiologists, radiology technicians, etc., as well as the adequate materials for each case and a properly equipped operating room.[4] Likewise, EVAR requires closer long-term patient follow-up because late complications are more frequent, such as endoleaks (with aneurysmal sac growth) and migration.[5]

The aortic morphology must also meet the appropriate anatomical conditions to perform the endovascular procedure, which is defined in its instructions for use. The proportion of infrarenal abdominal aortic aneurysms (AAA) that are treatable by EVAR is 47%–67%. If the intervention is conducted outside the defined instructions, there is a high risk of early type I endoleaks, migrations and reoperations.[2] Patients who have undergone open surgery have much more serious immediate complications, such as bleeding, sigmoid ischemia and cardiopulmonary disease, while the development of late complications is exceptional.[7]

Our objective is to describe the global sample of patients treated at our hospital with AAAr, their demographic and medical characteristics, factors that may be involved in a poorer prognosis, and overall morbidity and mortality. In addition, we will compare the prognoses between the EVAR