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CLINICAL CASE

Endovascular treatment of an abdominal aortic aneurysm in the ''Dr. Eduardo Liceaga'' General Hospital of Mexico

M.E. Lacayo-Valenzuela[a,*], N.E. Lecuona-Huet[b], P.M. Códova-Quintal[c], S.R. Flores-Aguilar[a], Á.M. Cárdenas-Sánchez[a]

[a] *Resident in Angiology and Vascular Surgery, ''Dr. Eduardo Liceaga'' General Hospital of Mexico, Mexico*
[b] *Physician in the Department of Angiology and Vascular Surgery, ''Dr. Eduardo Liceaga'' General Hospital of Mexico, Mexico*
[c] *Head of the Department of Angiology and Vascular Surgery ''Dr. Eduardo Liceaga'' General Hospital of Mexico, Mexico*

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KEYWORDS
Aneurysm;
Endovascular repair;
Outcomes

Abstract
Introduction: Abdominal aortic aneurysms have a varied aetiology, and the main causes include cigarette smoking and atherosclerosis, mainly affecting men in their seventh decade of life. It is complex to treat, with high rates of morbidity and mortality which have been reduced with minimally invasive techniques.
Case report: 73-year old female seen in the emergency room for lumbar pain lasting one week, she was later diagnosed with an aneurysm of the infrarenal aorta, which was treated with endovascular techniques.
Discussion: The attending physician should accurately evaluate the treatment type. Endovascular repair shows lower mortality and morbidity in the short term, which is suitable for treating elderly patients.

PALABRAS CLAVE
Aneurisma;
Reparación endovascular;
Resultados

Tratamiento endovascular de Aneurisma de Aorta abdominal en el Hospital general de México ''Dr. Eduardo Liceaga''

Resumen
Introducción: El aneurisma de aorta abdominal es una patología de variable etiología, dentro de las causas más importantes el tabaquismo y la aterosclerosis, afecta principalmente al sexo

* Corresponding author at: Dr. Balmis 148, Col. Doctores, delegación Cuauhtémoc, C.P. 06720, Mexico City, Mexico. Tel.: +55 27 89 2000.
E-mail address: marlon_elv@hotmail.com (M.E. Lacayo-Valenzuela).

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masculino en la séptima década de la vida. Su tratamiento es complejo, con altas tasas de morbilidad y mortalidad, que se han reducido con técnicas de mínima invasión.
Caso clínico: Femenino de 73 años que acuda a urgencias por dolor lumbar de una semana de evolución, a quién se la diagnostica un aneurisma de aorta infrarrenal, resolviéndose con tratamiento endovascular.
Discusión: Se debe evaluar el tipo de tratamiento a elegir, la reparación endovascular muestra menor mortalidad y a corto plazo y disminuye la morbilidad perioperatoria, beneficiando principalmente a pacientes de edad avanzada.

Introduction

Aneurysms are defined as a focal dilation of an artery. Aortic aneurysms are defined as a 1.5-fold increase in the normal diameter at the level of the renal arteries.[1] They are a degenerative process in a segment of the aortic wall, varying in length. This condition affects 1.5–2% of the general adult population, and increases to 6–7% among those over 60 years old.[2,3]

The most important risk factors for developing it are tobacco use, followed by high blood pressure, atherosclerosis, and being male.[4,5] The prevalence in the United States is 55.00 new aneurysms per year, of which 17% are detected due to rupture. The average age is 67 years; 10–15% of patients die and only 10% survive the acute phase; 90% die within 10 weeks if it is not treated.[6]

A declaration by the Joint Council of the American Association for Vascular Surgery and the Society for Vascular Surgery estimates the annual risk of rupture according to the diameter of the sack: under 40 mm in diameter – 0%; 40–49 mm in diameter – 0.5–5%; 50–59 mm in diameter – 3–15%; 60–69 mm in diameter – 10–20%; 70–79 mm in diameter – 20–40%; 80 mm in diameter of larger – 30–50%.[7]

The most pronounced histological characteristic of AAA is the destruction of the tunica media and intima. Excessive proteolytic enzyme activity (especially metalloproteinases 2 and 9) in the aorta wall causes deterioration in the elastin and collagen protein matrix structure. There is also an increase in the migration of smooth muscle cells related to the overproduction of metalloproteinases, which leads to remodelling and disruption of the tunica media, which in turn causes the abdominal aortic aneurysm (AAA) to form and expand.[8] There is also an aetiology related to Marfan and Ehlers–Danlos syndromes, and inflammatory aneurysms of infectious origin.

Endovascular techniques have revolutionised the treatment of both thoracic and abdominal aortic aneurysms. Initially their use was limited to a group of patients with certain clinical and anatomical characteristics, but over the years many of the limitations of the original systems have been overcome, with designs emerging that expand patient eligibility and provide a wider safety margin when placed. The first endoprosthesis inserted in humans by Dr. Parodi in 1990 had a rigid delivery system that was 27 Fr in diameter, requiring the access vessels to be dissected.

There is a large number of devices to choose from on the market. This is why it is essential to analyse the patient's individual characteristics to make an appropriate choice for the procedure, whether open or endovascular surgery, and to choose the most appropriate type of endoprosthesis for the AAA morphology.

Case report

73-year old female patient who came to the Emergency Room, referred by a satellite clinic with infrarenal abdominal aortic aneurysm and back pain lasting one week. Using CT angiography, an aneurysm with a diameter greater than 48 mm was observed. The suprarenal aorta diameter was 19 mm, the infrarenal aorta diameter 22 mm, neck 24 mm, length of the sack 109 mm, anterior mural thrombus with an irregular lumen wall near the neck, and tortuous common and external iliac arteries, common femoral artery 5 mm (access vessel) (Fig. 1).

The case was analysed using CT angiography reconstructions and endovascular repair was scheduled. It was decided to use the Ovation trimodular endoprosthesis (Trivascular Inc.), due to its low introduction profile and navigability. Once the protocol was completed, the procedure was performed under sedation and local anaesthesia injection (lidocaine 2%) at the access sites. A percutaneous approach was used with an 18G needle puncture in both femoral arteries and right brachial access with micropuncture equipment and a 4 Fr introducer. Then initial aortography was performed to locate the renal arteries. Once located, the image was fixed and the main body of the endoprosthesis was inserted through the right femoral access, releasing the suprarenal mount. Next the acrylic was applied via injection to the endoprosthesis body which sealed the proximal neck of the aneurysm sack. Afterwards the guide wire was introduced through the humeral access to place the left iliac prosthesis module, the right iliac module was deployed. In the final aortography, complete exclusion of the aneurysm sack was observed with no evidence of endoleaks (Fig. 2). The femoral accesses were closed with percutaneous closure systems (Angioseal®) and the humeral access with compression. Two days after the placement, the patient was progressing favourably, tolerating oral intake, walking without pain, with no signs of bruising in the access vessels.