ORIGINAL ARTICLE

INITIAL EXPERIENCE IN THE TREATMENT OF ACUTE AORTIC SYNDROME OF THE DESCENDING AORTA

ABSTRACT

Introduction: It is a process of the aortic wall which includes aortic dissection, intramural hematoma and penetrating ulcer. It should be noted that, while traumatic aortic transection is considered part of the syndrome, it is not included here since traumas are not addressed.

Objetive: To conduct a survey of demographic characteristics, diagnosis and treatment in our working group.

Materials and methods: Age, gender, comorbidities, clinical picture and laboratory tests upon admittance, imaging diagnosis methods, treatment, and length of hospital stay were evaluated.

Results: Seven patients presented type B aortic dissection; two patients had intramural hematomas: one with an aortic ulcer and another one with type B chronic dissection; and one presented symptomatic double thoracic aorta ulcer associated with abdominal aortic aneurysm. Eighty percent of patients were male with an average age of 64.7 years. The average length of hospital stay was 19.8 days. Pain was present in nine patients. Computed angiotomography was performed in all patients. All patients were treated by means of aortic endoprosthesis.

Conclusions: 1- Acute aortic syndrome is a high mortality disease whose diagnosis can be reached quickly through basic evaluation with imaging support. 2- We believe that CAT is the method that provides more precise details about morphological and diagnostic characteristics and for measurements for endovascular treatment. 3- Endovascular treatment is the most effective option that reduces mortality, hospital stay and complications.

Keywords: Aortic pathology, High complexity, Acute aortic syndrome.

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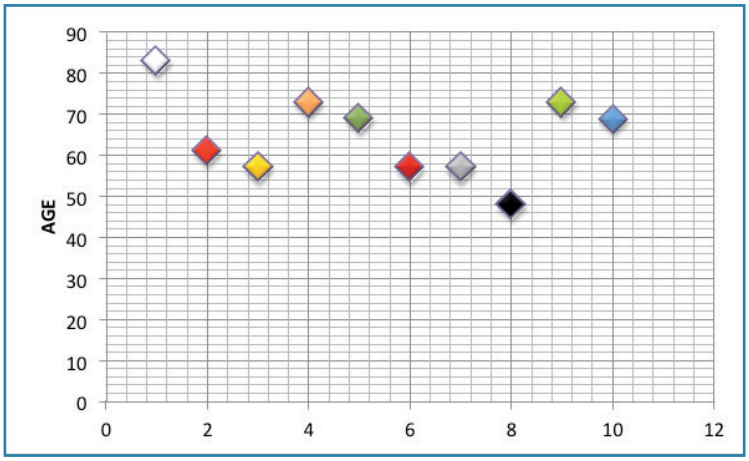

Figure 1. Age range of patients

INTRODUCTION

Acute aortic syndrome (AAS) is defined by an acute process of the aortic wall that develops with the weakening of the middle layer, involving a risk of aortic rupture and other complications. It consists of three entities: aortic dissection, intramural hematoma and penetrating ulcer. Its incidence is about 30 cases every one million inhabitants per year, out of which 80% are dissections, 15% intramural hematomas and 5% penetrating ulcers. It should be mentioned that traumatic aortic transection could be considered part of it but is not included in this paper since our center is not a trauma reference center. The ascending aorta is affected in 60% of cases (type A) and not affected in 40% (type B). It mainly affects men (70%) with an average age of 60 years. In the last decade, advances in imaging techniques have facilitated AAS diagnosis significantly and have provided fundamental information to learn about the evolution of this disease. On the other hand, the development of new surgical techniques and the appearance of endovascular treatment have changed the therapeutic strategy and, probably, the prognosis.

MATERIALS AND METHODS

Through the search and retrieval of information from the computer database of medical records of a high-complexity health center and the image digitilization system (DICOM), the medical records of 10 patients have been analyzed retrospectively in a period from October 2009 to June 2015. Data evaluated were age, gender, comorbidities, clinical picture and laboratory tests upon admittance, imaging diagnosis methods, treatment used, and length of hospital stay. They were entered and analyzed in an Excel table, including all those cases in which a diagnosis was reached based on clinical data collected from medical records or on the findings of imaging studies of aortic dissections, intramural hematomas and penetrating ulcers of the aortic wall. The Stanford (Svenson) classification was used considering that these entities may evolve into dissections, becoming real dissection subtypes. Qualitative variables were expressed as percentages and quantitative variables were stated as averages and medians.

RESULTS

Ten patients who may be included as AAS carriers were registered. Out of all the patients, seven (70%) presented Stanford type B aortic dissection associated or not with aneurysms of the same segment, two had intramural hematomas (one with an aortic ulcer and another one with type B chronic dissection), and one presented pure double thoracic aorta ulcer associated with abdominal aortic aneurysm.

Eighty percent of patients (n = 8) were male and two (2) were female, with an average age of 64.7 years (between 61 and 83 years old) and a median of 65 years (Figure 1). The average length of hospital stay was 19.8 days (between 5 and 60 days) and the median was 16.5 days. All patients had comorbidities, with hypertension present in 100% of patients (Table 1).

COMORBIDITIES	NUMBER OF PATIENTS	PERCENTAGE (%)
AHT	10	100
Sedentary behavior	9	90
Former smokers	9	90
Obesity	4	40
Coronary disease	2	20
RA	2	20
Hypothyroidism	1	10
Bronchial pathology / Spontaneous pneumothorax	1	10
Diabetes	1	10
BPH	1	10
Hiatal hernia	1	10

References: AHT = Arterial hypertension; RA = rheumatoid arthritis; BPH = benign prostatic hyperplasia

Table 1. Associated comorbidities

Pain was present in nine (9) patients (90%). It should be noted that one patient did not experience pain because acute aortic syndrome was found in a context of control of spontaneous pneumothorax. Fifty percent (n = 5) referred to highly intense, excruciating pain located in the precordial region, 30% (n = 3) located pain in the interscapular region and one (10%) located it in the abdomen. Table 2 shows the other symptoms and signs mentioned.

SIGNS AND SYMPTOMS	NUMBER OF PATIENTS	AVERAGE
Dyspnea	3	30%
Diarrhea	2	20%
Orthostatic hypotension	1	10%
Absent/Decreased pulse	2	20%

Table 2. Other signs and symptoms associated with acute aortic syndrome.

Two patients presented fever: one upon admittance and the other one during the postoperative period, whose picture got complicated due to a surgical wound abscess. A patient was admitted with a picture of hypotension, functional class II-III dyspnea and pulse asymmetry (absence of right dorsalis pedis pulse). In our series, two patients were admitted with hypertension and were referred to the coronary care unit for endovenous management of hypertension.

Computed tomography (CT) with intravenous contrast was performed in all patients as an imaging diagnosis method, and the second method most used was transesophageal echocardiography (TEE), which allowed to define the entry tears of dissections and the intramural hematoma. Two patients underwent angiographies – one of them to rule out postoperative complications, finding no evidence of them. An aortogram was performed in the context of a coronary cineangiography, in which access through the femoral artery failed and it was accessed via the right radial artery. One patient underwent transthoracic Doppler echocardiography to determine the cause of heart failure, finding pericardial effusion. The use of nuclear magnetic resonance (NMR) was registered for a patient due to diagnostic doubt. Two patients required soft-tissue ultrasound for

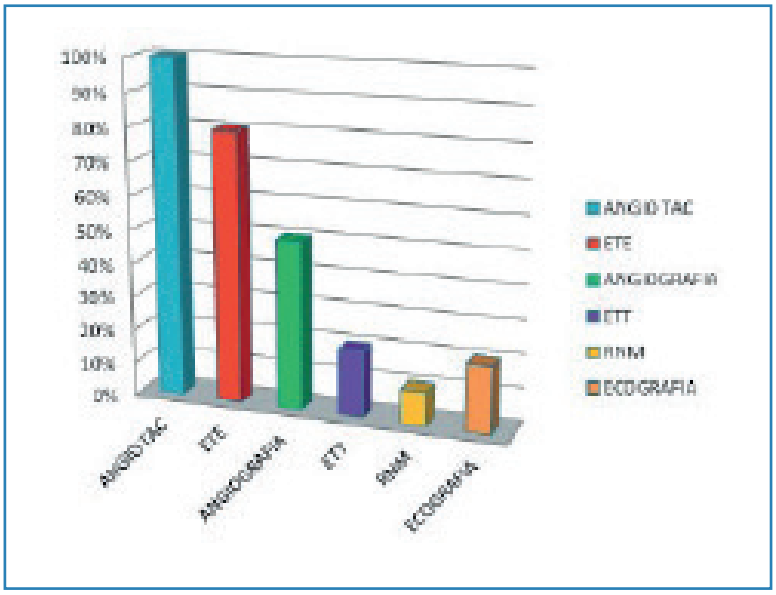

Figure 2. Percentage of studies conducted.

diagnosis of collection in surgical site and a patient needed cerebral NMR because of the development of a transient ischemic attack during hospital stay (Figure 2).

Ninety percent of patients were treated with aortic endoprostheses, either thoracic or abdominal, using endovascular techniques in a hybrid operating room. Debranching from the right carotid artery to the left carotid artery + left subclavian-carotid was performed in one patient due to the presence of pathology in zone 1-2, with subsequent retrograde thoracic aorta stenting. The intentional coverage of the left subclavian artery was performed in another patient, who lost strength in the left upper limb as a postoperative complication and recovered it with physiotherapy and the oral administration of cilostazol.

Mortality was 25% (n = 1). Death occurred early in the postoperative period due to a retrograde type A dissection with involvement of the right sinus of Valsalva. This patient was the only one who was admitted with a picture of hypotension/shock and pulse asymmetry. A wound abscess at the femoral artery dissection site was registered as a postoperative complication, and another complication not associated with the surgery occurred in a context of drug reaction to an antibiotic.

DISCUSSION

From the first descriptions of this disease made by Nicholls and Morgagni, through the first surgical intervention performed by Gurin in 1935 and the open repair of a type B dissection carried out by De Bakey and Cooley in 1953, to the advent of endovascular treatment and the use of this technique by Dake for the treatment of aortic dissection in 1999, this pathology has aroused the particular interest of the different research groups. However, it remains a disease with a high mortality rate, even with the implementation of new imaging diagnosis techniques.

When comparing our records, it is observed that patients showed an older age average (64.7 years) as compared to others: 58 in RADAR, 60.9 in IRAD and 63.1 in RESA. The prevailing gender was male, and the most associated pathology was hypertension, with pain present as a cardinal symptom. In our records, the patient admitted with a picture of hypovolemic shock, 83 years of age and

pulse asymmetry was the one who died early in the postoperative period due to a retrograde type A dissection; these are precisely the variables listed as predictors of hospital mortality in the bibliography consulted. Computed tomography was the imaging diagnosis method used in 100% of cases to establish a diagnosis and also provided the means to make measurements for the selection of the type of endoprosthesis. Transesophageal echocardiography (TEE) and transthoracic echocardiography (TTE) allowed to determine the entry tears, intramural hematoma and pericardial effusion, which makes them important complements for decision making.

The initial treatment was medical. Most patients were admitted to the coronary care unit (CCU) for pain management, reduction/stabilization of blood pressure, maintaining an approximate mean of 80, and continuous cardiac monitoring. Pain was managed with NSAIDs and the use of opiates was not required. NTG with continuous infusion pump was used in the case of hypertension and inotropes were used for hypovolemic shock. Only one patient was not admitted to CCU, since he was admitted for the performance of CT for postoperative control of pleural drainage due to spontaneous pneumothorax, with no pain and hemodynamically stable, with daily interdisciplinary monitoring by the clinical medicine service and the peripheral vascular surgery service.

The total number of patients underwent surgery with 100% intraoperative success. In one patient, an arteriography was performed via the radial artery the day after surgery due to diagnostic doubt in the face of hematocrit decrease and abdominal pain, which could not be defined with abdominal CT. All patients were treated by means of endovascular techniques with aortic endoprosthesis. No patients required conversion or had renal function alteration early or late in the postoperative period.

CONCLUSIONS

- Considering that acute aortic syndrome is defined as a set of pathologies with high mortality, it is possible to reach the diagnosis quickly and accurately through basic evaluation with appropriate imaging support, allowing to establish a therapeutic option without delaying intervention.

- We believe that tomography is one of the imaging methods that provides more precise details about the morphological characteristics, allowing not only to reach a diagnosis but also to take decisions for a possible endovascular treatment.

- In our working group, we believe that endovascular treatment is an effective option that reduces mortality, hospital stay and complications within a group of clinically complex patients. ■

We believe that endovascular treatment is an effective option that reduces mortality, hospital stay and complications within a group of clinically complex patients.

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