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Surgical management of bacterial ruptured abdominal aorta aneurysm at JRA Antananarivo university hospital

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ABSTRACT: We report four cases of ruptured infectious aneurysm of the infrarenal portion of the abdominal aorta, observed at Joseph Ravoahangy Andrianavalona Antananarivo Madagascar CHU. This is a case of listeria monocytogenes, 2 cases of salmonella and 1 case of yersinia enterocolitica. On the basis of these observations we will try to study all possibles clinicals tables for an optimum diagnosis and treatment -of a rupture of an infectious aneurism of the abdominal

Keywords: Rupture, infectious aneurysms, laparotomy, antibiotherapy

Introduction

Ruptured infectious aneurysms constitute a particular entity and deserves to be individualized for multiple reasons.
The rupture of infectious aneurysms is dreadful because it is most frequently frank.
The problem of diagnosis and treatment of ruptured infectious nature aneurysm is often known only afterwards.

Observation

CASE 1: A 64-year-old man, smoker of 40 packages- year, with an operated T1, N0, M0 lung cancer, was admitted to the emergency department of the university hospital/ JRA Antananarivo for a predominant abdominal pain syndrome in the left flank, hyperthermia at 38.5 °C and cardiovascular collapse, strained abdomen without palpable mass. At the emergency care unit, the patient has cardiac arrest requiring intensive resuscitation with cardiac massage for 3 minutes.
Ultrasound examination found ruptured abdominal aorta aneurysm.
The blood work done urgently showed anemia of 4.2 g/l of hemoglobin, 15 000 white blood cells and a sedimentation rate accelerated up 90 minutes in the first hour. The patient was transferred to the operating room in very precarious hemodynamic conditions. We performed a medial xipho-pubic laparotomy, we evacuated about 2.5 liters of blood from abdominal cavity. The posterior parietal peritoneum is completely blown forward by a very large hematoma. Dissection and clamping of the aneurysmal neck just above the renal vein, then control of the iliac arteries.
The aneurysm is bulky with thick wall and more or less shredded requiring complete resection after ligation of the lumbar arteries.

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A tube graft interposition is performed in aorto-biliac, on normal and healthy tissues, leaving in circuit the inferior mesenteric and the hypogastric artery. Then, careful washing of the abdominal cavity with saline followed by spotting was done. It should be noted that the patient was particularly hemodynamically unstable during the surgical procedure.
The postoperative phase was drived in the intensive care unit and was mainly marked by a multi-organ failure syndrome (circulatory, respiratory with right pneumopathy, renal requiring dialysis.
The culture of the resected fluid specimen is conclusive for yersinia enterocolitica serotype 0:9.
In contrast, blood cultures are negative.
The germ was sensitive to the antibiotherapy intra-operative that had been preserved postoperatively for 3 weeks after apyrexia. The outecomes was suceful and at the 47th day after the surgical treatment the patient was discharged from the hospital.
CASE 2: A 61 year- old man, without any particular midical history apart from an unquantified smoking, admitted to emergency department of CHU / JRA Antananarivo, for acute abdominal pain accompanied by nausea and vomiting, a hypotensive shock as well as sweating, visual disturbances and cutanal mucous .
The initial examination found a systolic blood pressure of 60 mmhg, a painful abdomen with a huge subenal flinging mass (De Bakey sign positive) and a fever of 38.5 ° C.
Abdominal ultrasound shows a ruptured abdominal aneurysm.
A median laparotomy was performed in order to open the peritoneal cavity. About 1700 cc of blood was extracted. We also note a drop in blood pressure to 40 mmHg hardly regulated that after control and aortic clamping and common iliac arteries.
The aneurysmal wall is fragile, of inflammatory aspect and more or less thin with presence of the peri-aortic ganglia.
The resection of the hull iwas then enlarged to the peri-aortic tissues. Placement of a tubular prosthesis in healthy tissue after closure of the lumbar arteries.
The culture of the aneurysmal hull is positive for salmonella para-typhi B. Histopathological examination of the ganglia found non-specific inflammation. Another antibiotic is added in addition to the initial antibiotherapy. Despite an apparent improvement, the outecomes was punctuated by numerous complications: cardiovascular, respiratory, renal and septic relapse that caused the death of the patient at the 75th postoperative day.
CASE 3: 70-year-old man, was urgently referred to the university hospital / JRA Antananarivo for a suspicion of ruptured aneurysm in a state of hemorrhagic shock. Recently feverish, the patient complained of lumbosacral pain for 2 weeks. Former smoker, obese and hypertensive, the patient the patient is suffering for one year from an aneurysm of about 8 centimeters for which he refuses surgical management. On admission her vital signs were as follows: temperature: 38.5°C, arterial blood pressure: 70mmHg. On clinical examination, there is a belly bloated and painful with no palpable mass. The emergency ultrasound shows a large ruptured aortic aneurysm. The biology tests shows an accelerated sedimentation rate of 60 the first hour, a leukocytosis of 16 000, anemia of 5.8 g / l of hemoglobin. During the surgical procedure, we visualize a large hemoperitoneum and retroperitoneum evaluated of 2.5 liters. After aortic cross-clamping, blood transfusion and positive inotropic drugs, the patient's condition improves and allows a resection of the shell (friable, thick and inflammatory) with aortic revascularization on healthy tissue. Closing is carried out after washing and setting up a drain. The postoperative period was marked by unstable respiratory and hemodynamic insufficiency. In contrast, renal function was always satisfactory.
The difficult recovery of digestive transit requires a parenteral diet of about ten days. Despite these problems, the outecomes was simple and the patient was able to discharge after 30 days and returns at home on day 45.
Finaly it will be noted that blood cultures was negative and the presence of a listeria monocytogenes type 1 sensitive to the combination of cephalosporin 3rd generation and aminoglycoside on the aneurysmal specimen was objectified. The cephalosporin alone was retained for 3 weeks

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CASE 4: A 62-year-old man, smoke 60 pack years, weaned for 5 years, suffering from post-hepatitis cirrhosis, has acute abdominal pain with posterior irradiation, fever of 38 ° C, hemorrhagic shock with tension Systolic blood pressure of 70 mmHg was urgently transferred to CHU / JRA Antananarivo.
Approximately one week before his hospitalization, the patient presented acute gastroenteritis that was rapidly regressive using sulfamethoxazole-trimethoprim.
The physical examination on the admission shows abdominal defense, umbilical impaction, beating abdominal mass and meteorism.
Ultrasound shows rupture of sub-renal abdominal aneurysm, retroperitoneal hematoma and presence of medium-abundance blood in the abdominal cavity.
In the operating room, after median laparotomy, the surgical gest was marked by haemodynamic disorders difficult to stabilize.
Stability was achieved through control of the aorta because of the hematoma of about 2 liters in total. The resection of the shell was realized because it is very friable and inflammatory.
Vascular continuity restoration was performed on healthy tissue, with a prosthesis, at the bottom of the 2 common iliac arteries and at the top of the infrarenal aortic neck.
The immediate evolution in the surgical resuscitation department was marked by an infectious and hemodynamic problem for at least 2 weeks.
The patient then stays one week in the cardiovascular surgery department before returning to discharge.
The bacteriological culture result of the hull and the intraluminal thrombus found the presence of non-typhoidal Salmonella and another germ of contamination.
The triple association of antibiotic, at the beginning is changed by association cephalosporine and fluoroquinolone during some weeks after apyretic.

Discussion

Infectious aneurysms are aneurysms that evolve in an infectious context.
Currently, infectious aneurysms are becoming increasingly rare (1). Infectious aneurysms occur after sepsis or bacteremia with or without endocarditis or other patent intravascular infection (2). The infectious source is often unknown, as in the cases we report in this study.
The abdominal aortic aneurysm of atheromatous origin is by far the most common cause (2,3).
In our study, only 4 patients were considered infectious aneurysms. In our studie patients are all male over 60 years old which is in line with the data of the literature. In all cases, rupture is the mode of revelation of the disease.
In our studie all 4 cases were operated in emergency without prior infectious diagnosis. It is emphasized that the initial prognosis was very pejorative. The clinical symptomatology is caracterized by an abdominal pain, hemorrhagic shock and infectious syndrome.
A palpable mass arterial, was observed in only half of the cases. Abdominal ultrasound, performed in emergency context, allows the diagnosis of ruptured abdominal aorta aneurysm (4,5). Hyper leukocytosis and accelerated sedimentation rate are guiding elements for infectious diagnosis.
Bacteriological examination and anatomo-pathological examination, of the aneurismal shell and thrombi, are 2 very important elements for the diagnosis (5) indeed they constitute a routine practice in our department, The isolated organisms were: one case of Yersinia enterocolitica, two cases of Salmonella and one case of Listeria Monocytogenes. It is important to note that Yersinia enterocolitica and Listeria Monocytogenes are rarely responsible for infectious aneurysms (6,7, 8).
Infectious aneurysms to Yersinia enterocolitica, often develops in a context of immunodeficiency as in the case that we describe.

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The characteristic lesion, called a "listerian nodule" consisting of central necrosis and a histiocytic crown at the level of the aneurysmal shell, during histological examination (7,9), for Listeria monocytogenes, is not observed for our case.
The macroscopic appearance of the aneurismal wall was difficult to assess because the wall was more or less destroyed, but we can see its inflammatory nature.
Interventions were made urgently in "catastrophic situation" in order to resolve the rupture of a sub-renal abdominal aneurysm.
Preoperative care should not waste time.
Resuscitation is therefore mostly per and post-operative.
Aortic clamping is the only effective way to stabilize the hemodynamic state in a sustainable way.
An easy and quick way to get started is the elective approach (10).
Local sterilization of the infection by wide and complete resection of the aneurysm and infected peri-aortic tissues should be done thoroughly.
In principle extra-anatomic revascularization, away from the infected region, is the preferred mode of revascularization.
In our case, we opted for in situ revascularization because the aneurysm is well circumscribed and the resection leaves no macroscopically visible periarteric focal point. The anastomosis was made of healthy tissue.
Postoperative follow-up is important and should be prolonged due to persistence of infection and tearing of the aortic stump for up to 6 months.
Antibiotic therapy was started intraoperatively.
It was adapted according to the antibiogram after the results of the samples.
The duration varies according to the authors .
In our studie, the treatment duration was not 3 weeks after the disappearance of fever.
The outecomes was favorable for our three patients.
One death was recorded because of a sepsis difficult to regulate.

Conclusion

The diagnosis of ruptured infectious aneurysm is often difficult.
The bacteriological and pathological examination of the operative piece is essential.
Indeed it confirms the existence of the infection and make the diagnosis of certainty.
The abdominal ultrasound allowed to make the diagnosis of the rupture of the aneurism.
Therapeutically, we recognize that only a diagnosis established preoperatively allows appropriate medical and surgical treatment.

Conflict Of Interest

There is no conflict of interest for this manuscript.

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