Scholars Journal of Medical Case Reports (SJMCR) **ISSN 2347-6559 (Online)**
Abbreviated Key Title: Sch. J. Med. Case Rep. **ISSN 2347-9507 (Print)**

A United of Scholars Academic and Scientific Society, India

Huge Pelvic Arteriovenous Malformation Revealed By a High Output Heart Failure

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Article History
Received: 04.08.2018
Accepted: 14.08.2018
Published:30.08.2018

DOI:
10.36347/sjmcr.2018.v06i08.014

Abstract: Pelvic arteriovenous malformations (AVMs) are the result of shunting blood from arteries to low resistance veins, and represent a rare challenging lesions especially in male patients. Diagnosis is orientated by clinical findings and confirmed by medical imagery tools, though selective arteriography remains the gold standard tool for diagnosis. Treatment choices differ from surgical to percutaneous procedures, or hybrid intervention with the combination of a preoperative embolization and surgery. We report a case of a 33 years old with an enormous pelvic AVMs revealed by a high output heart failure, which we treated with transarterial embolization using gelatine sponge particles, complicated later on, with rectal ischemia enabling us not to proceed to the second stage of the planned therapeutic strategy by venous approach. AVMs are vascular lesion that is notoriously difficult to diagnose and treat, and it is a clinical dilemma to make the best treatment choice from surgery to embolization in symptomatic patients, with no evidence supporting the superiority of one over the other.

Keywords: arteriovenous malformation; heart failure; pelvic malformation; rectal ischemia.

INTRODUCTION

Pelvic arteriovenous malformations (AVMs) represent rare challenging lesions, especially in male patients. They represent challenging lesions. Due to multiple macro communications and micro communications between the arterial and venous systems with resultant shunting of blood to the low-resistance veins [1, 2] this pathophysiology makes both percutaneous arterial embolization and surgery associated with high recurrence rate[3].

We here present a case of a male patient with congenital pelvic AVMs revealed by a high output heart failure.

CASE REPORT

A 33 years old male patient, with no history of previous trauma or operation, presented to our hospital with a 12month history of exertional dyspnea, and a long history of low back pain being handled with painkillers. On physical examination, the patient was 168cm tall and weighed 65kg, his blood pressure was 135/52 mmHg and heart rate at 84beats/min. the most striking features were indicative of congestive heart failure, including increased jugular venous pressure, a 3/6 systolic murmur at the upper left sternal border, and a massive ascites. Rectal examination on the other hand, revealed a pulsatile painful mass. The EKG showed q sinus rhythm with a right axis deviation and signs of left atrial hypertrophy. Chest X-ray showed cardiomegaly with dilated pulmonary arteries. Echocardiography showed a normal left ejection fraction 63%, an important right ventricular dilatation at 50mm with a significant tricuspid regurgitation by central lack of cooptation with a diastasis estimated at 9 mm and PISA at 0.8cm. an ectasic right atrium 39cm2. A severe pulmonary hypertension at 55mm Hg. Both CT and MRI showed a massive arteriovenous malformation being fed by both hypogastric arteries, responsible of sacrum lysis, with an ectasia of the inferior vena cava. Arteriography has confirmed the diagnosis, and shows that in addition to the hypogastric arteries, the MAV was also fed by the 4th and 5th pairs of lumbar arteries.

The management of this large pelvic AVM did not include surgery for it was huge and the high risk of ischemia, due to its localization, so we perceeded by performing a trans artertial approach and therefore

occluding the feeding arteries using gelatin sponge particles that were dropped in both right and left hypogastric and lumbur arteries; enabling us to decrease the blood flow in theses arteries. The procedure was a success, confirming total occlusion of the feeding arteries using selective arteriography. The venous approach was scheduled 24 to 48 hours later, consisting on inserting an occlusive balloon coda 46mm, via the internal jugular vein, in the inferior vena cava to protect the lungs, then via the femoral vein, inserting coils (Azur pushable35, 10mmx20cm) and injected ethylene vinylalcohol copolymer ONYX®.

However, in the early hours after the Trans arterial embolization, the patient showed signs of rectal ischemia: acute abdominal pain, and rectal bleeding. The colonoscopy has confirmed the diagnosis: cischemic colitis stade 2. Due to these complications the venous approach was postponed. The rectal ischemia was controlled medically: using parenteral nutrition only, 3weeks afterwards the colonoscopy showed a complete resolution of the ischemia. The ascites fluid was removed and the patient was sent home. A follow up at 1 then 3 months; showed a symptom relief; the TTE confirmed a lower cardiac output, reduction of pulmonary hypertention and the size of the vena cava.

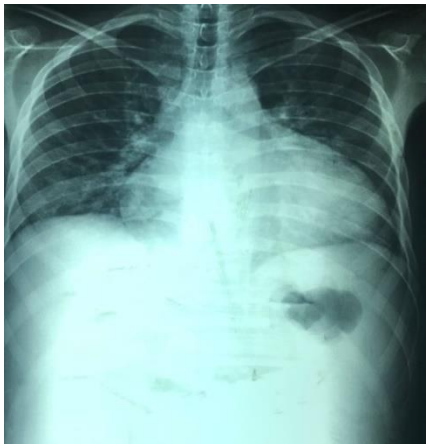

Fig-1: chest radiograph : cardiomegaly

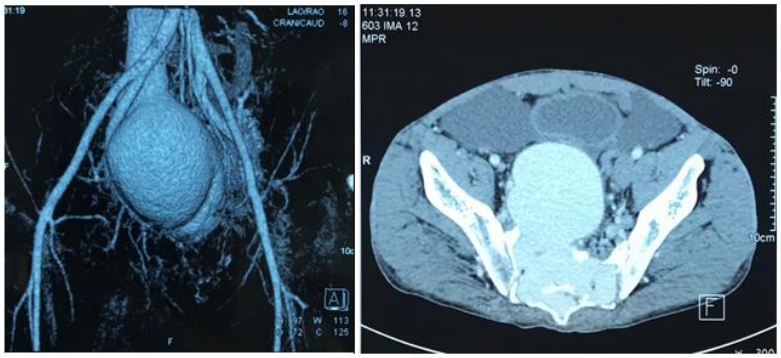

Fig-2 (a,b) : CT scan images of pelvic arteriovenous malformation with sacral invasion

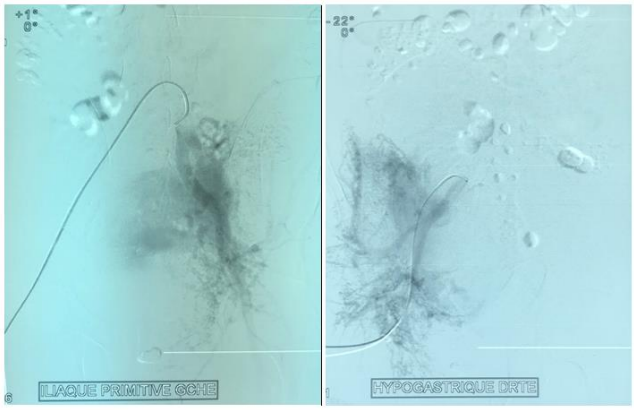

Fig-3 (a,b): Intraoperative arteriography, identification of feeder arteries

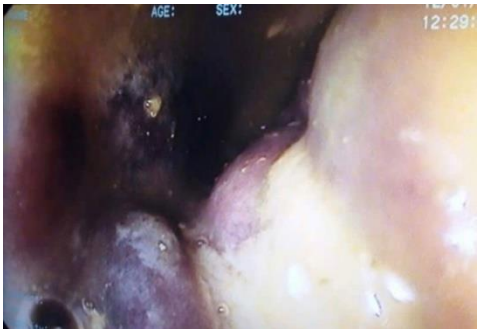

Fig-4: Endoscopic view showing non-necrotic ulcerations of the rectal mucosa

DISCUSSION

The etiology of AVMs can be divided into acquired and congenital. The acquired AVMs are often caused by trauma or surgical complications [4]. Congenital AVMs of the pelvis develop as a result of multitudinous embryonic connections between the arterial and low-resistance venous systems. These lesions are considered to be undifferentiated vascular structures resulting from arrest of embryonic development at various stages [5,6].

There are no particular signs or symptoms that are indicative of pelvic AVMs in the male patients. Symptoms can include abdominal or pelvic discomfort and pain, rectal pain and tenesmus, genitourinary complaints including hematuria, hydronephrosis, hemospermia, impotence, and orchitis[7,8]. In malformations with large arteriovenous shunts, congestive heart failure may ensue. Our patient's pelvic AVM was revealed by a high output heart failure, which is most uncommon and very rare.

Physical examination including hypogastric and rectal examination can find a pulsatile mass and loud or harsh noises can frequently be heard [9,10]

Ultrasonography shows a non-specific hypo echogenic area. However, it cannot differentiate an AVM from a cyst or an abscess.

Both CT and MRI are valuable to demonstrate vascular lesion, with three dimensional reconstructions, the anatomy of AVMs and adjacent organs can be easily recognized which facilitates surgical planning and clinical monitoring [11, 4].

The best diagnosis method remains the selective arteriography of the iliac arteries, to reveal the presence, extent, and multiplicity of these lesions and is necessary before any radiologic or surgical procedures is considered [12,13].

Treatment choices of congenital pelvic AVMs vary from surgical to percutaneous procedures or even the combination of the two.

Surgical treatment consists on the devascularisation of the AVMs by ligaturating the feeding arteries but also the outflow vessels and trying the obliteration of the mass when possible.

For Trans arterial embolization, and embolic agent providing total and permanent vascular occlusion is needed. So any other agent that do not fit the criteria of being permanent, such as coils or detachable balloons are ineffective, unless it is intended for a combined treatment of pre-operative percutaneous embolization[14,15].

Calligaro has proposed that asymptomatic or mildly symptomatic patients should not be treated but monitored with clinical examinations and ultrasound or CT scan studies every 6 to 12 Months.

On the other hand, it is a clinical dilemma to make the best treatment choices from surgery to embolization for symptomatic patients.

Which is especially the case of our patient, where an attempted surgical excision was associated with massive blood loss and high risk of visceral ischemia, so percutaneous embolization seems to be the best method to at least temporarily relieve symptoms and repeat it if necessary.

CONCLUSION

Pelvic AVMs are rare vascular lesions and are notoriously difficult to diagnose and treat. Treatment choices include surgical resection and selective embolization with no sufficient evidence to support the superiority of one over the other.

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