

A Retro-Peritoneal Hematoma Post Coronarography: A Deadly Complication of Common Practice

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Abstract: The retroperitoneal hematoma occurring after puncture is an uncommon and serious complication. Most incidents related to endovascular procedures are localized at the puncture spot. The possibility of retroperitoneal extension of the hematoma out of the femoral puncture zone is described in cases where it is performed above the inguinal line. The prognosis depends both on early diagnosis and on therapeutic care. We report the case of a 54-year-old woman admitted to the cardiology department for an myocardial infarctus, whose evolution after coronary angiography was marked by the occurrence of a hematoma at the puncture spot complicated by hemodynamic instability. A CT angiography has revealed the extension of the hematoma towards the retroperitoneum. Based on this clinical case, it is possible to focus on the clinical, iconographic and evolutionary aspects of this complication and to debate according to literature data.

Keywords: retroperitoneal hematoma, femoral puncture, myocardial infarctus, angiography.

INTRODUCTION

Despite the rise of non-invasive procedures, coronary angiography remains the gold standard for diagnosing coronary artery disease and often treating the observed lesions.

The miniaturization of the material and the routine practice of this examination do not protect the occurrence of complications. The reported incidence of RPH ranged from 0.15 to 6% [6-9], more studies that are recent report a lower incidence of about 0.5%.

Although the incidence seems low, considering that there are 1.2 million percutaneous coronary intervention (PCI) and 1.3 million diagnostic catheterizations performed in the United States, the absolute number of RPH is in thousands. RPH has a mortality risk of 4-12% [10]. In addition, observational and randomized studies observed a 30-day higher mortality in patients who develop RPH after PCI. RPH is also associated with significant morbidity, up to 5 days of increased length of stay and the need for blood transfusion [6, 8, 10].

We report the case of a hemorrhagic shock on retro-peritoneal hematoma complicating a coronarography.

CASE REPORT

A 54-year-old woman with a history of type 2 diabetes and atrial fibrillation (AF) under Vitamin K

antagonist and digitalis, initially admitted to the cardiology department for the management of an angina pectoris. She underwent coronary angiography which revealed a tight stenosis of IVA and right coronary artery which was successfully dilated. The evolution was marked by the appearance of a hematoma at the point of femoral puncture, a compression dressing was applied, with transfusion of three red blood cells, complicated unfortunately few hours after by hemodynamic instability requiring the introduction of vasopressors.

An abdominopelvic CT scan revealed a false aneurysm of the right common femoral artery with a large right lateral pelvic hematoma, pushing back the femoral vein and uterus, with homolateral pyelocalyceal dilation.

The patient was then admitted to the operating room for hemostasis with surgical repair of the false aneurysm and drainage of the retroperitoneal hematoma, transfusion of 7 red blood cell pellets with 7 fresh frozen plasma was necessary, patient dies by multi-visceral failure.



Fig-1: Cross section showing a retroperitoneal hematoma



Fig-2: Sagittal section showing retroperitoneal hematoma



Fig-3: False aneurysm of the femoral artery of 19 * 15 * 25mm

DISCUSSION

The retroperitoneal hematoma means the presence of blood in the retroperitoneal space, its incidence remains low (<0.15%) but it is life-threatening [1]. the majority of complications associated with endovascular procedures occur at the puncture site, their optimization is essential to reduce complications. They are serious in 0.5% of cases [1].

Hematomas are the most common complications, with the possibility of extension to the retroperitoneum if puncture above the inguinal line.

Female sex is associated with an increased risk of RPH [6,8,9]. The exact mechanism of this increased hemorrhagic predisposition in women undergoing cardiac catheterization is unclear; the women are known to have a smaller diameter and shorter femoral arteries

than men, which can make access more difficult. This anatomical difference may lead to a greater probability of multiple arterial and / or posterior perforations. In addition, the majority of women are post-menopausal.

Patients with low body surface area also have a smaller diameter of the femoral artery, resulting in

arterial access problems, and thus an increased risk of RPH [11,12].

Several risk factors have been identified: anatomical, coagulation disorder, technical and the presence of loco regional pathology.

	risk factors	associated complications
anatomical	small artery high femoral bifurcation obesity site difficult to compress	Thrombosis Thrombosis Bleeding,AF Bleeding,AF
coagulation	Anticoagulation Antiagrégant Thrombolytic renal failure	Bleeding,AF Bleeding,AF Bleeding,AF Bleeding,AF
technical	double artery / vein catheterization insufficient compression antegrade puncture high caliber introducer aberrant puncture radiologist's experience	AVF Thrombosis,Bleeding,AF Thrombosis,Bleeding,AF Thrombosis,Bleeding,AF Thrombosis,Bleeding,AF,AVF All types
locoregional pathology	synthetic bridging obstructive arterial disease calcificiated atheromatosis long-term corticosteroid therapy Ehler_danlos	Infection Thrombosis Thrombosis,Bleeding,AF Bleeding,AF Bleeding,AF,dissection
other	high blood pressure	Bleeding,AF,AVF

The prevention involves the compression that must be performed on the femoral head, the pulse must be perceived during the entire period of compression while allowing the perfusion of the limb, and mechanical compressions are less reliable. Vascular closure tools are used in patients at high risk of bleeding since they allow rapid hemostasis even in the context of coagulation abnormalities. Their limitations are the cost and the possible increase of complications at the access site (hemorrhages, occlusions and infections) can be displaced by patient movements (angio seal, vaso seal, duett, perclose, starclose) [2, 4, 5].

The retroperitoneal hematoma must be suspected in the presence of unexplained hypotension, tachycardia, and abdominal pain with drop in hematocrit.

Abdominal compartment syndrome is a rare but serious complication of RPH often presenting as acute renal failure with distension of severe abdominal pain causing respiratory distress and cardiovascular collapse [14].

Femoral neuropathy is a well-known complication of RPH, usually resulting in weakness of the iliopsoas muscles (hip flexion) and quadriceps (knee

extension) and dysesthesia of the anterior / medial aspect of the thigh and medial calf. The majority of cases resolve with conservative treatment, but severe cases may require surgical decompression. Computed tomography is the gold standard.

There are no randomized trials to guide treatment strategies for RPH and the evidence is based on small series of cohorts or isolated case reports. Conservative management involving intensive care unit (ICU) monitoring, vigorous fluid resuscitation, blood transfusion, and anticoagulation antagonism was used as an effective strategy for majority of patients.

For patients who remain unstable despite aggressive resuscitation, an initial percutaneous approach whereas open surgery should be used only if bleeding cannot be controlled. An interventional approach with angiography to guide specific therapy is being used more and more. In one study, micro coil embolization was able to stop bleeding in all five patients with recurrent bleeding in one patient. In another series, bleeding stopped in all four patients after embolization without recurrence.

Mak et al. describes a common femoral artery balloon technique in a patient with massive RPH who

has undergone diagnostic cardiac catheterization. The patient did not respond to volume resuscitation and had surgical exploration that failed to stop the bleeding. Subsequently, prolonged balloon inflation on the bleeding site of the common femoral artery was able to stop the bleeding [15,16].

Samal and White also described percutaneous approaches for managing access site complications. Balloon catheter administration of intra-arterial thrombin has also been used for RPH [17].

In total

If there is iliac bleeding, the treatment is usually endovascular unless there is a surgical indication (compartment syndrome, vascular compression). The lesion may be temporarily controlled with an occlusion balloon until a covered stent is put in place (1).

If there is common femoral bleeding, surgery is usually performed since common femoral artery is readily available and against indicates the implantation of a covered stent.

During a state of shock, the vascular diameters are narrowed by vasospasm. In this case, it is necessary to dimension the stent-covered thanks to anatomical references or previous examinations in order to prevent a rebleeding later.

CONCLUSION

RPH is a rare but serious complication of Tran's femoral catheterization procedures and is associated with significant morbidity and mortality. Although there has been a decrease in the incidence of major hemorrhages over the last decade, this remains a significant problem. Risk factors for RPH include low body weight, female gender, emergency procedure, pre- and postoperative heparin, Preoperative IIb / IIIa inhibitors and arterial access above the medial femoral head.

The diagnosis is based on the persistence of unexplained hemodynamic instability. The CT angiography remains the reference examination. Prevention mainly involves manual or mechanical compression.

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