

# Spontaneous Iliopsoas Hematoma After Total Hip Arthroplasty In A Patient On Rivaroxaban: A rare case report

Danai Grammatikopoulou<sup>1</sup>, Themistoklis Vampertzis<sup>1</sup>, Eirini Iosifidou<sup>1</sup>, Christina Barmpagianni<sup>2</sup>, Eleni Melikidou<sup>3</sup>, Fotios Girtovitis<sup>4</sup>, Stergios Papastergiou<sup>1</sup>

## Abstract

**Introduction:** Pain in the inguinal region, frequently spreading to the femur, is a common symptom with a variable differential diagnosis. Spontaneous iliopsoas hematoma is a rarely reported adverse effect of anticoagulation therapy that can present with pain in the hip, with or without previous injury or surgery at the region. This case report aims to remind clinicians of this rare condition that can result in major complications.

**Case Presentation:** An 83 year old male patient presented to our Emergency Department with pain at the right hip which within a week expanded to the lower back and anterior femur. During clinical examination restriction of movement due to soreness was noted, the hip joint was kept in slight flexion, while there were no abnormal vascular findings. Medical history included a right-sided total hip replacement 8 years ago, chronic atrial fibrillation, chronic cardiac failure and hypertension. He was on anticoagulant (rivaroxaban) and anti-hypertensive regimen. Laboratory results showed low hematocrit (HTC) and hemoglobin (HB), elevated prothrombin time (PT) and increased international normalized ratio (INR). Imaging showed a large iliopsoas hematoma. Conservative treatment was decided. Subsequently, the hematocrit normalized, the hematoma regressed and the pain receded.

**Conclusion:** Despite being a frequent cause of complain, pain of the hip, lumbar or femur region could be the result of a more complex pathology. Such cases should therefore not be overlooked but examined thoroughly, especially if presenting with suspicious signs or symptoms or in a setting of co morbidities. When complains are with regard to an area that has been operated on, as in our case, clinicians should not attribute all symptoms on the presence of prior surgery.

**Keywords:** Anticoagulation, spontaneous hematoma, iliopsoas, total hip arthroplasty

## Background

Patients on anticoagulation therapy have a 4% probability of a hemorrhagic incident [1]. A rare subcategory of retroperitoneal hemorrhages is iliopsoas hemorrhage [2]. According to literature, spontaneous iliopsoas hemorrhage has been reported in patients with bleeding diathesis due to congenital or acquired pathology of coagulation, such as hemophilia and von Willebrand disease; in patients on anticoagulant or antiplatelet treatment and secondary to diseases that interfere with coagulation (Dengue hemorrhagic fever, Gaucher disease and Waldenström's macroglobulinemia) [3-8]. Hematomas are usually unilateral; never the less bilateral hematomas have been reported in patients on anticoagulant therapy [9-11]. Lastly, one case reports the incidence of a hematoma after hip hemiarthroplasty [12].

Although spontaneous iliopsoas hematoma is an uncommon entity its presentation is usually mild and can therefore be misleading. Misdiagnosis of incidents can result in improper handling, delayed treatment and major complications.

## Case Series

An 83 year old Caucasian male was examined in the Emergency Department of our hospital for pain on the right hip. The patient reported that symptoms presented 10 days ago, in the absence of trauma; however, for the last 3 days the intensity of the pain was increasing and expanding to the lower back and anterior femoral region (possibly due to compression of the femoral nerve) [10, 12]. Medical history included total hip arthroplasty 8 years before the incident,

<sup>1</sup>Orthopaedics Department, Agios Pavlos General Hospital of Thessaloniki, Thessaloniki, Greece;

<sup>2</sup>Aristotle University of Thessaloniki, Faculty of Medicine, Thessaloniki, Greece;

<sup>3</sup>Radiology Department, Agios Pavlos General Hospital of Thessaloniki, Thessaloniki, Greece;

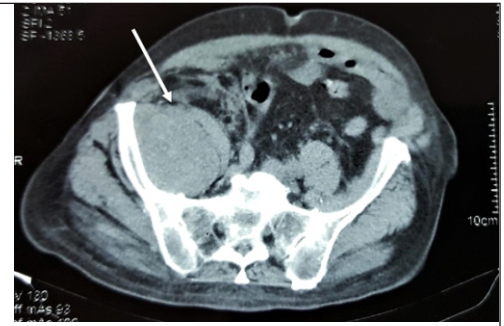
<sup>4</sup>Blood Centre, AHEPA University Hospital, Thessaloniki, Greece

## Address of Correspondence

Dr. Themistoklis Vampertzis,  
Orthopaedic Department, Agios Pavlos General Hospital Thessaloniki, Thessaloniki, Greece.  
E-mail: themisvamper@yahoo.com



Dr. Stergios Papastergiou

**Figure 1****Figure 2****Figure 3**

**Figure 1:** X-ray of the pelvis (anteroposterior) without significant findings.

**Figure 2:** X-ray of the lumbar spine (anteroposterior); iliopsoas shadow not visible due to diffuse intramural intestinal gas.

**Figure 3:** CT scan – section at the level of the iliac wing, revealing a large mass on the right iliopsoas muscle (arrow).

**Figure 4****Figure 5**

**Figure 4:** T2-weighted MRI with contrast, at the level of the iliac wing reveals a large hematoma, seen as a heterogeneous, well defined mass with peripheral infiltration on the right iliopsoas muscle (arrow). **Figure 5:** CT scan performed 12 days later, demonstrating the reduction of the

defined, heterogeneous mass with peripheral infiltration on the right iliopsoas muscle. These findings are consistent with a hematoma.

At this point, a hematologist and a vascular surgeon were included in the medical team. The joint decision was to treat the patient conservatively, discontinuing rivaroxaban and instructing bed rest. The patient was controlled daily and based on laboratory results fresh frozen plasma and blood products were given when needed. Within the next few days the pain

regressed. The patient was clinically

prostate carcinoma in remission, arterial hypertension, chronic heart failure and atrial fibrillation. The patient was chronically treated with carvedilol, furosemide and acenocoumarol (dose adjusted according to International Normalized Ratio measurements); however, acenocoumarol was discontinued 20 days ago and had been replaced with rivaroxaban.

On clinical examination movement of the right hip was restricted due to pain, which according to the patient was excruciating without painkillers. The hip was held in slight flexion, a position that was of some relief. The patient was admitted for further investigation. Differential diagnosis at this point included complications in relation to the previous total hip arthroplasty (inflammation, infection, loosening) and referred pain from the lumbar spine or from the abdomen.

A microbiological blood analysis showed decreased hematocrit 29.3% and low hemoglobin 9 g/dl; leukocytes at  $5.55 \times 10^3$ , iron 29 mg/dl with normal ferritin values; International Normalized Ratio (INR) was 4.74, while activated partial thromboplastin time 53.9 sec. Prostate Specific Antigen was negative. The rest of the analysis was well within physiological ranges.

X-ray of the pelvis and lumbar spine anteroposteriorly (Figure 1, 2) did not give any findings of value for the diagnosis (iliopsoas shadow was not visible due to increased intramural intestinal gas). On Computed Tomography (CT) of the pelvic-abdominal region the presence of a large mass on the right iliopsoas muscle was discovered on the section at the level of the iliac wing (Figure 3). For better localization and visualization of the mass' extend on soft tissues, as well as for a clearer picture of its configuration, Magnetic Resonance (MRI) with contrast was used (Figure 4). This revealed the presence of a sizable, clearly

stable, his hematocrit and hemoglobin normalized, while his INR ranged between 1.5 and 2. A new CT scan performed 12 days later showed the reduction of the hematoma (Figure 5). As transfusions were no longer necessary and clear signs of improvement were evident the patient was discharged. Frequent follow-ups were scheduled and apixaban was prescribed in the place of rivaroxaban. The patient adhered to the regime and had no further complains in the scheduled meetings that followed.

### Discussion

The iliopsoas compartment has a unique anatomy. It is comprised by three muscles, the psoas minor, the psoas major and the iliacus muscle and it extends between the retroperitoneum and the hip joint [13]. Due to its special anatomy a variety of modalities are needed for its visualization (X-ray, CT scan, MRI) as in the presented case. CT is a valuable diagnostic tool for unmasking lesions that have a hemorrhagic etiology, while Magnetic Resonance aids the diagnostic process by clearly localizing the infiltration of hematomas on soft tissues [10, 13, 14].

The spontaneous formation of an iliopsoas hematoma is a rare condition that requires rapid recognition and clinical intervention due to the dangers behind its hemorrhagic etiology. Hemodynamic instability is a dangerous complication of a long-lasting, active but occult hemorrhage that can easily be unrecognized due to the controversial symptomatology. Patients usually complain of lower back pain, pain in the inguinal region and painful hip extension progressing in a matter of a few days. Difficulty with walking and weight-bearing or complete restriction of movement have also been

reported, while it is not uncommon for the patient to display signs of ischemia, hyposensitivity in associated dermatomes or paralysis of the quadriceps femoris muscle [10]. In severe blood loss patients are brought to the emergency room in a state of hypovolemic shock [10, 12]. These presentations comprise a variable differential diagnosis, including acute pancreatitis, aortic dissection, referred pain from the lumbar spine or the abdomen, complications of arthroplasty or they can simply be dismissed as musculoskeletal pain, especially if the patient has undergone hip replacement [10, 12].

Once the diagnosis is made treatment can be invasive or conservative, according to the patient's status. If the patient is hemodynamically stable close monitoring of vitals, hemoglobin and INR, with frequent laboratory controls and conservative treatment are preferable [10]. This includes bed rest; blood-product transfusion as needed; adjustment or cessation of anticoagulation treatment; and administration of prothrombin complex concentrate. Moreover, vitamin K and fresh frozen plasma are administered to reverse the effect of vitamin K antagonists [15]. When invasive treatment is indicated the intervention can be an open surgery or a transcatheter arterial embolization. These are used for hemostasis in cases of no improvement after conservative treatment; when the patient is unstable or in shock due to intensive, uncontrolled bleeding non-responsive to volume expanders; or in cases of neurological

impairment due to nerve compression [10, 14, 15].

### Conclusion

There is an ever increasing number of patients on anticoagulant treatment, either temporary or life-long, preventative or therapeutic. Spontaneous hemorrhagic events are recognized complications of this treatment, estimated at 4%, particularly in relation to Cerebral Vascular Accidents and gastrointestinal hemorrhages [1, 2, 10]. The formation of a spontaneous hematoma on the iliopsoas muscle, however, is an infrequent consequence of anticoagulant treatment-related hemorrhage [1, 2, 10]. Due to its rarity and controversial presentation it can be complicated not only by the hazards of bleeding but also by its misdiagnosis.

### Clinical Message

The increasing use of anticoagulation treatment requires clinicians to be aware and alert about spontaneous hemorrhagic events. From these, not only the commonest ones i.e. CVAs and GI bleeding should be regarded, but also less frequent ones such as spontaneous hematomas on the iliopsoas muscle, particularly in the setting of previous surgery in the area.

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