

## Is Warfarin Safe in Elderly Patients? Iliopsoas Hematoma Leading to Abdominal Compartment Syndrome Caused by Warfarin

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### Abstract

In the recent years, the increase of global life expectancy and atrial fibrillation has caused an growth in the number of elderly patients under anticoagulant therapy. The use of warfarin in elderly individuals is motive for concern because of the high risk of bleeding. Bleeding consequences can cause death. In addition, the patients with higher risk of bleeding are those that will benefit the most from anticoagulant therapy. We report a case of iliopsoas hematoma that caused an abdominal compartment syndrome and finally death. We report a 83-year-old male who was under anticoagulant therapy and suffered from bleeding causing an iliopsoas hematoma that eventually produced an abdominal compartment syndrome. He underwent surgery because of abdominal compartment syndrome but, finally, passed away because of pulmonary and renal complications.

The use of anticoagulant in elderly can lead to death. A careful monitoring of dose is mandatory in order to avoid fatal consequences. For this purpose, different scores have been reported to help the physician to estimate benefits and risks. On this paper we also report a case of abdominal compartment syndrome caused by retroperitoneal hematoma. The treatment of iliopsoas hematomas is based on discontinuation of anticoagulant and restoration of the circulating volume. In some occasions embolization could be required. However, retroperitoneal hematomas can cause other complications as abdominal compartment syndrome that also could need surgery. The physician must be take into account the fatal consequences of anticoagulant therapy in elderly patients. There are different scores designed to help to evaluate benefit and risk of bleeding. Bleeding can produce retroperitoneal hematoma that can lead to death because of bleeding, abdominal compartment syndrome and other underlying circumstances

**Keywords:** Iliopsoas; Warfarin; Retroperitoneal; Bleeding; Abdominal compartment syndrome

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### Introduction

Warfarin is widely used for the prevention of thromboembolic events and also for treatment of processes as atrial fibrillation. Atrial fibrillation constitutes a significant problem in elderly. The increase of expectancy of life and the growing incidence of atrial fibrillation have caused a high number of patients in their 70s, 80s and even 90s taking warfarin. It is estimated that 0.5% of the world population suffers from atrial fibrillation [1]. The right use of warfarin implies to achieve an international normalized ratio

(INR) of 2.0 to 3.0 [2]. Bleeding is a serious complication in patients under anticoagulant therapy. Moreover, elderly individuals are a high risk group for bleeding. Bleeding consequences can produce death when they affect retroperitoneal or intracranial structures.

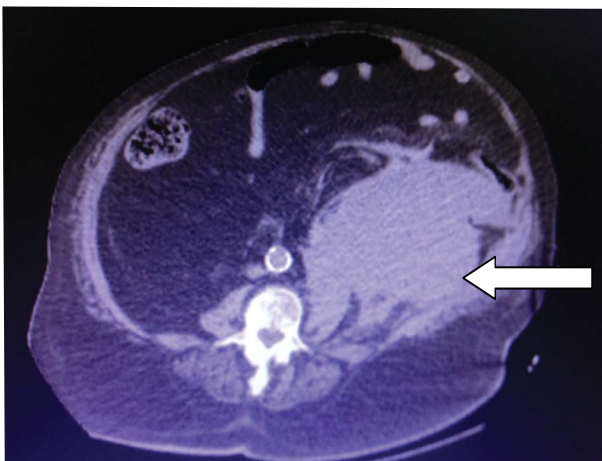
Again the mortality rate on this situation is higher in elderly individuals because of comorbidity and pathophysiological considerations [3]. As a result, the use of anticoagulant therapy in elderly patients is challenging and requires a comprehensive analysis of benefits and risks as well as to avoid over or under treatment. Retroperitoneal hematoma affecting psoas and iliacus muscle is a serious complication of warfarin therapy. We report a case of iliopsoas hematoma occurring in an elderly patient under warfarin therapy that caused an abdominal compartment syndrome and needed surgery to decompress the abdomen. We also discuss the risk of bleeding in elderly patient under anticoagulant therapy.

## Case Presentation

An 83-year-old Caucasian man patient was admitted to Emergency Department with abdominal pain and diaphoresis. He had suffered from pneumonia 2 weeks ago. His past medical history revealed atrial fibrillation, arterial hypertension chronic obstructive pulmonary disease and stroke. He was receiving 1.5 mg of warfarin per day, diltiazem 120 mg twice per day, ranitidine 300 mg per day, amiodarone 200 mg per day, tiotropium bromide and budesonide and formoterol inhaler. Also he needed oxygen therapy at home. The compliance was good.

On admission, he was anxious and pale. Blood pressure was 108 bpm, blood pressure 105/80 and oxygen saturation 92%. He presented tenderness and palpable mass in the lower left side of the abdomen. Blood tests showed: hemoglobin 8.0 g/dL, hematocrit 32%, platelet 140.000/UL and INR 5.93.

Intravenous fluid replacement, correction of INR with octaplex and blood cell transfusion were started. The patient was moved to Intensive Care Unit where he was stabilized and then a completed tomography (CT) with intravenous contrast was performed. It revealed a 16 × 15 cm left iliopsoas hematoma with signs of venous bleeding (**Figure 1**). The patient remained stable after restoring of circulating volume and correction of INR (INR after octaplex 1.5). After 72 hours, he presented significant



**Figure 1** CT shows a left iliopsoas of 16 × 15 cm without signs of active bleeding.



**Figure 2** On surgery, a preperitoneal absorbable mesh was placed between the fascia to decrease intrabdominal pressure.

abdominal pain with increase of abdominal diameter and acute renal failure. Blood test showed hemoglobin 10.5 g/dL, INR 1.4 and creatinine 1.8 mg/dL. Intra-abdominal pressure of 18 mmHg that peaked 23 mmHg. A CT was performed and it showed a left iliopsoas hematoma without signs of active bleeding. Despite of decompression of abdomen with nasogastric and rectal tubes, the intra-abdominal pressure remained 23 mmHg and the patient underwent surgery.

The goal of the surgery was abdominal decompression. For this purpose, we performed a middle laparotomy and incised lineal Alba from xifoid appendix to pubis and placed a preperitoneal absorbable mesh as a bridge between both fascias (**Figure 2**). None action was done on the hematoma. Intra-abdominal pressure returned to normal values. Renal function improved and the patient remained in Intensive Care Unit because of his pulmonary and renal situation. Eventually, he passed away.

## Discussion

It is estimated that 4-10% of patients under anticoagulant therapy will present hemorrhage [4-7]. Age itself is considered a risk factor of bleeding. Palareti et al. reported an increased incidence of bleeding in patients over 75 years when compared to those below 70 years [5]. Different bleeding scores have been developed (RIETE, HEMORR2HAGES scores), they estimate the risk of bleeding based on different variables: age, creatinine level, hemoglobin, platelet counts, obesity, hepatic disease, genetic factors etc. [3,6]. Our patient had a Riette score of 4. Furthermore, risk of bleeding peaks exponentially with INR values above 4.5, regardless age. This supports the important role of careful monitoring in order to avoid hemorrhage [3]. This is not easy in elderly patients because of co-morbid factors, co-treatments and

the peculiar pharmacokinetic and pharmacodynamic on these patients.

It must be taken in mind that individuals at highest risk of bleeding are often those that would have the most benefit from anticoagulant therapy. On the other hand, it is estimated that in USA only two thirds of all patients with atrial fibrillation have a INR in therapeutic range, so other factors may influence for bleeding complications [2]. Recently, it has been reported that the new oral anticoagulants have a lower risk of bleeding when compared to warfarin [8,9]. Iliopsoas hematoma is a rare complication of anticoagulant therapy, only isolated cases or small series have been published. Iliopsoas hematoma can produce symptoms of compression of femoral nerve or lumbar plexus leading to neurological symptoms. This situation requires surgery. Abdominal compartment syndrome is also other consequence of iliopsoas hematoma that could need surgery. This presentation is rare and very few cases have been reported. Treatment of iliopsoas hematoma includes initially restoration of

the circulating volumen, bed rest, anticoagulant discontinuation and correction of INR. When patient is hemodynamically unstable, embolization of arterial vessels or surgery must be considered.

## Conclusion

Anticoagulant therapy in elderly is a challenge and can cause bleeding with fatal consequences. Many scores have been developed to help the physician to determine risks and benefits of oral anticoagulant therapy. It must be taken in mind that individuals at highest risk of bleeding are often those that would have the most benefit from anticoagulant therapy. A careful monitoring of INR is mandatory in these patients. New oral anticoagulants could be an option for those patients with a high risk of bleeding.

## Conflicts of Interest

All authors declare no conflict of interest.

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