

# Massive pulmonary embolism as a rare complication of a stab in the inguinal region in a HIV-positive patient: a case report

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**Abstract. – OBJECTIVE:** Venous thromboembolism (VTE) is a severe preventable disease; HIV-infection represents a prothrombotic condition, because of specific factors due to the virus itself, the host response and the antiretroviral therapy. Our aim is to raise awareness of thromboembolic risk when dealing with HIV-positive patients presenting to the Emergency Department for treatment of injuries, even though small.

**CASE REPORT:** We present a case of a 33-year-old woman suffering from HIV-infection who presented to the Emergency Department with two small stab wounds. Laboratory tests and radiologic examinations were normal. About 8 hours after admission the patient developed a syncopal attack: a CT scan performed after hemodynamic stabilization revealed a massive pulmonary embolism (PE); the patient was then transferred to the Intensive Care Unit and treated with systemic thrombolysis.

**CONCLUSIONS:** This case confirms that HIV-positive patients carry a higher risk for VTE and PE compared to general population, similarly to patients suffering from cancer: emergency physicians must be aware even in case of minor wounds.

*Key Words:*

HIV, Venous thromboembolism, Pulmonary embolism, Minor wounds, Inguinal stab.

## Introduction

Venous thromboembolism (VTE) is a severe but potentially preventable disease, with an incidence rate of 1 per 1000 person-year of observation in the general population. HIV-infection has been widely recognized as a prothrombotic condition, with a VTE frequency ranging from 0.19% to 7.63%/year. This raised incidence is due to specific factors associated with HIV infection, regarding the host response, the virus itself and the antiretroviral therapy. We describe the

case of a HIV-positive patient who developed a massive pulmonary embolism following a superficial wound in the groin region. Emergency physicians must be aware about thromboembolism risk when dealing with HIV-positive patients.

## Case Report

A 33 year-old woman presented to the Emergency Department (ED) with two stab wounds, one in the right flank and one in the right inguinal region, within the Scarpa triangle. Both of the wounds were very small in length (about 2 cm) and apparently not deep. There was no external bleeding at time of admission.

Her past medical history was significant for HIV-infection (contracted 10 years before for intravenous drug abuse) and she was on antiretroviral therapy. Family history was non-contributory. She worked as a waiter in a restaurant. She lived at home with her husband and had a 14 year-old son.

Vital signs included: temperature 36.5°C, pulse 95 beats/min, respiratory rate 14 breaths/min, blood pressure 140/70 mm Hg, and a pulse oximetry 99% on ambient air. Chest and abdominal examinations were normal. Arterial pulses from the groin downwards were present and symmetrical.

Laboratory tests were significant for a hematocrit of 27.2 and a hemoglobin of 9.3 g/dL, with a mean corpuscular volume of 88 fl. White blood cell count was  $5.80 \times 10^3/\text{ul}$ . Hemogas and EKG were substantially normal. A CT scan of the abdomen was negative for parenchymal damages, active hemorrhage or vascular injuries; it showed a right inguinal hematoma involving the proximal border of the abductor brevis and of the obturator externus.

The patient was hospitalized in the ED for a 12-hours observation; 3 hours later, while the pa-

tient was still asymptomatic, a Focused Assessment with Sonography in Trauma (FAST) ultrasonography and a further blood count were performed: no changes were observed.

About 8 hours after admission, just when she stood up from bed, the patient complained chest pain and developed a syncopal attack. Systolic blood pressure dropped to 60 mm Hg. A FAST ultrasonography revealed: no active abdominal hemorrhage; fully distension of the inferior vena cava through the entire phase of inspiration and expiration; severe right ventricular hypokinesis and jugular turgescence; no signs of pneumothorax.

After stabilization and improvement in hemodynamic response, the patient underwent a chest computed tomography (CT) which revealed a massive pulmonary embolism (PE) with presence of thrombi in bilateral pulmonary arteries (Figure 1) and deep vein thrombosis extending from the right common femoral vein up to the inferior vena cava (Figures 2 and 3).

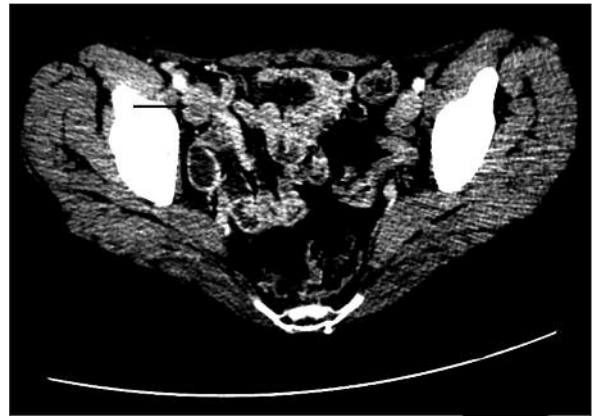
The patient was then transferred to the Intensive Care Unit (ICU) and treated with systemic thrombolysis. At present she is on oral anticoagulant therapy.

## Discussion

The estimated incidence rate for (VTE) in the general population is 1 per 1000 person-year of observation<sup>1</sup>. Although quite common and fre-



**Figure 1.** Contrast-enhanced computed tomography scan showing massive pulmonary embolism; thrombi are visible in both pulmonary arteries (*arrows*).



**Figure 2.** Contrast-enhanced computed tomography scan showing a deep vein thrombosis: a blood clot is visible in the right iliac vein (*arrow*).

quently fatal, VTE is a potentially preventable disease: many studies have tried to identify high risk population who may benefit from primary thromboprophylaxis<sup>2</sup>.

HIV infection has been recognized as a prothrombotic condition and this association has been proved by a large number of studies with a reported VTE frequency among HIV-infected patients ranging from 0.19% to 7.63%/year. HIV infection is associated with a two to tenfold increased risk of venous thrombosis in comparison with a general population of the same age. In a recent review, Bibas et al<sup>3</sup> have identified three categories of specific factors associated with VTE in HIV-infected patients:



**Figure 3.** Contrast-enhanced computed tomography scan showing a deep vein thrombosis: a blood clot is visible in the right femoral vein (*arrow*).

**Host Risk Factors:** age (HIV-infected patients are older than their chronological age), intravenous drug use (likely due to the drug itself), hypercoagulable state (due to Protein S Deficiency, Protein C Deficiency, Antithrombin Deficiency, Antiphospholipid and Lupus Anticoagulant Antibodies, Hyperhomocysteinemia).

**Viral Risk Factors:** CD4+ cell count (HIV progression seems to be related to an increasing hypercoagulable state), opportunistic infections (such as Cytomegalovirus) and HIV-associated malignancy.

**Drugs Risk Factors:** Treatment with highly active antiretroviral therapy and protease inhibitors would increase the risk of thrombotic events, maybe due to their interference with P450 metabolism.

We refer to that interesting review<sup>3</sup> for a further analysis.

Reviewing the world literature, we could find only one case reporting pulmonary embolism as a complication of a contusion in the inguinal region: in that case<sup>4</sup>, however, patient's history was negative for HIV-infection and the thromboembolic event developed one year after a blunt injury in the right inguinal area. This suggests that in our case HIV infection played a leading role, probably because of the reasons described above. We suppose that after the stab a deep vein thrombosis quickly developed and that the embolic event was provoked by passing from clinostatism to orthostatism. Furthermore, our patient had no history of previous venous thrombosis, leg pain or chronic venous insufficiency and the medical examination at admission was unremarkable.

## Conclusions

This article describes the case of a young HIV-positive female who quickly developed a massive pulmonary embolism after being stabbed in the right inguinal region.

Our decision to keep the patient in hospital for a 12 hours observation was suggested by the abdominal wound rather than the inguinal one. This choice, although substantially wrong, has probably avoided the death of patient.

Emergency physicians (and physicians in general) who take care of HIV-positive patients must be aware that this population has a high risk for VTE and PE, similarly to patients suffering from cancer and that also an apparently minor injury can lead to fatal consequences.

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## Conflict of Interest

The Authors declare that there are no conflicts of interest.

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