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2 **Hematoma of the Psoas Muscle in a Patient on Anticoagulants: Case** 3 **Report**

4

5 Abstract:

6 Psoas hematoma is one of the most serious complications of anticoagulant therapy. It occurs
7 mainly in patients treated with Heparin or Warfarin, either in cases of overdose or even
8 during properly managed treatment. Clinically, it presents with intense pain, muscle
9 paralysis, and sensorimotor deficits along the course of the femoral nerve, which are
10 difficult to identify in intensive care patients. Treatment is mainly conservative; surgical
11 management has specific indications and requires correction of hemostasis disorders,
12 which justifies the use of percutaneous drainage. Managing anticoagulants or deciding
13 whether to continue them in such situations is a therapeutic challenge.

14 We report the case of a 78-year-old patient admitted for management of a head injury,
15 anticoagulated for a pulmonary embolism, who developed a vitamin K antagonist (VKA)
16 overdose with a psoas hematoma during hospitalization.

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18 Introduction:

19 Anticoagulants are medications used mainly for the preventive or curative treatment of
20 thromboembolic disorders. Their use requires rigorous monitoring because, even when
21 properly supervised, patients on anticoagulants are prone to complications of varying
22 severity. Hemorrhage is the principal complication of this therapy, and it has been reported
23 that each year, approximately 1–7% of patients on anticoagulants experience hemorrhagic
24 complications [1].

25 Psoas hematomas are rare but serious complications that occur not only in anticoagulated
26 patients but particularly in individuals with hemophilia [1]. Clinical manifestations vary
27 depending on the degree of femoral nerve compression. Treatment may be conservative or
28 surgical. In such complications, the decision to stop or maintain anticoagulant therapy
29 represents a major challenge and highlights the importance of balancing risks and benefits.

30 We report the case of a 78-year-old man admitted for management of a head injury,
31 anticoagulated for a pulmonary embolism, who developed a VKA overdose complicated by a
32 psoas hematoma during hospitalization.

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34 Case Report:

35 We report the case of a 78-year-old patient admitted for management of a cranial impact
36 trauma. Initial clinical evaluation found a Glasgow Coma Scale score of 12/15, symmetrical
37 reactive pupils, no sensorimotor deficit, blood pressure of 120/09 mmHg, heart rate of 86
38 bpm, respiratory rate of 30 breaths/min, and oxygen saturation (SpO₂) of 89% on room air.
39 After stabilization, a full-body CT scan revealed a 7 mm subdural hematoma associated with
40 minimal subarachnoid hemorrhage and pulmonary contusion areas, without additional
41 traumatic abnormalities.

42 Three days after trauma, the patient developed neurological deterioration requiring
43 ventilatory support. Control brain CT showed stable lesions; brain MRI revealed diffuse
44 axonal injury. The patient received intensive care support, and low-molecular-weight
45 heparin (LMWH) prophylaxis was initiated on day 7 post-trauma to prevent
46 thromboembolic disease. Neurological improvement followed, and the patient was
47 extubated on day 17 after trauma.

48 During hospitalization, the patient developed increased oxygen requirements without signs
49 of pulmonary infection, along with supraventricular tachycardia. A chest CT angiography
50 revealed a left segmental pulmonary embolism with right heart chamber dilation but no
51 echocardiographic signs of acute cor pulmonale. Therapeutic anticoagulation with
52 enoxaparin 6000 IU every 12 hours was initiated, resulting in good respiratory
53 improvement. On day 7 of anticoagulation, and after stabilization of cerebral lesions, a
54 transition to acenocoumarol was started, with the INR remaining within the therapeutic
55 range for the first five days.

56 On day 5 of the transition, the patient developed anemia, with hemoglobin dropping to 7.5
57 g/dL from 11 g/dL. INR was 9. Clinical examination revealed abdominal compartment
58 syndrome (intravesical pressure of 20 mmHg and oliguria) without external bleeding. After
59 symptomatic treatment (discontinuation of anticoagulants, blood transfusion, vitamin K
60 administration), an abdominopelvic CT scan showed a left psoas muscle hematoma
61 measuring 11×9×25 cm (Figure 1). A drain was placed near the renal fossa, yielding 300 cc
62 of hemorrhagic fluid. The patient improved with cessation of bleeding, normalization of
63 intra-abdominal pressure, and improvement of laboratory parameters (INR, hemoglobin,
64 renal function). Follow-up ultrasound showed a reduction in hematoma size, and iso-
65 coagulant prophylactic anticoagulation was resumed.

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67 Discussion:

68 Psoas hematoma is a rare but potentially severe complication that may occur after trauma,
69 anterior iliac crest bone graft harvesting, hip arthroplasty, but mainly in hemophiliacs and
70 patients on anticoagulants [1]. Heparin and warfarin are the drugs most often implicated
71 [2]. It has also been reported with antiplatelet agents [3]. This complication has previously
72 been described only in isolated case reports and small series, so its incidence remains
73 poorly known [4]. Retroperitoneal hemorrhage incidence, however, has been reported at

74 1.3–6.6% in patients receiving therapeutic anticoagulation, compared with 5.5–10.4% in
75 hemophiliacs [3]. Anticoagulant-related psoas hematomas may occur even without
76 overdose. Although generally unilateral, rare cases of bilateral hematomas have been
77 reported [1].

78 Clinically, psoas hematoma causes intense pain, muscle dysfunction, and sometimes nerve
79 paralysis, most often affecting the femoral nerve due to its anatomical pathway. Symptoms
80 vary from iliac fossa abdominal pain to neuralgic irradiation into the thigh, with variable
81 degrees of motor and/or sensory deficit from femoral nerve compression, or even
82 subischemic presentation in the lower limb. Rapid or voluminous hematomas may result in
83 anemia or hemorrhagic shock [5].

84 The particularity of our case lies in the hematoma's presentation as an abdominal
85 compartment syndrome complicated by anuria and anemia. These conditions are common
86 in intensive care and can delay diagnosis, especially when pain cannot be verbalized due to
87 neurological impairment.

88 In the absence of surgical indications—namely compressive hematoma with neurological
89 signs [5]—treatment is usually conservative, consisting of bed rest, analgesia, and
90 correction of coagulation disorders [6]. Hemorrhagic complications from anticoagulants
91 pose a considerable challenge, especially when discontinuation risks worsening the primary
92 disease. In this case—segmental pulmonary embolism versus major hemorrhage—the
93 decision to stop anticoagulation was debated. However, due to overdose and an INR of 9,
94 temporary discontinuation with blood products and vitamin K was chosen. Many case
95 reports describe clinical improvement after stopping anticoagulants, reversing
96 coagulopathy, and nonsurgical management [1,3,7]. Continuation of anticoagulation has
97 been documented in only one case, under strict clinical and INR monitoring.

98 In our patient, management required surgical intervention due to compartment syndrome
99 and renal impairment. Percutaneous decompression was chosen as the preferred
100 approach—an increasingly attractive alternative to conventional surgery thanks to
101 advances in ultrasound and CT imaging.

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103 Conclusion:

104 Psoas hematoma is a rare complication of anticoagulant therapy and may occur even during
105 well-managed treatment. Our case illustrates the diagnostic difficulty in intensive care
106 settings, where key symptoms may be absent, and highlights the therapeutic challenge of
107 managing anticoagulants in patients who may also present major thromboembolic events.

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109 References:

- 110 [1] Basheer A, Jain R, Anton T, Rock J. Bilateral iliopsoas hematoma: Case report and
111 literature review. Surg Neurol Int 2013;4:121.
- 112 [2] Wada Y, Yanagihara C, Nishimura Y. Bilateral iliopsoas hematomas complicating
113 anticoagulant therapy. Intern Med. 2005 Jun;44(6):641-3.
- 114 [3] Kong WK, Cho KT, Lee HJ, Choi JS. Femoral Neuropathy due to Iliacus Muscle Hematoma
115 in a Patient on Warfarin Therapy. J Korean Neurosurg Soc. 2012 Jan;51(1):51-3.
- 116 [4] Fernandes C, Pereira P, Rodrigues M. Spontaneous iliopsoas muscle haematoma as a
117 complication of anticoagulation in acute cerebral venous thrombosis. BMJ Case Rep. 2015.
- 118 [5] Rarbi M, et al. Unexpected multiple hemorrhages in a patient on anticoagulants. Rev Med
119 Interne. 2016.
- 120 [6] Holscher RS et al. Percutaneous decompression of an iliopsoas hematoma. Abdom
121 Imaging. 1997.
- 122 [7] Parmer SS et al. Femoral neuropathy following retroperitoneal hemorrhage. Ann Vasc
123 Surg. 2006.
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