

# Abdominal Lateral Wall Hematoma Developed Due To Enoxaparin In A Covid-19 Patient

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## Abstract

A 43-year-old male patient without any additional disease, surgery or anticoagulant use admitted to the emergency department. After evaluation with computed tomography (CT), pulmonary findings were consistent with COVID-19 pneumonia. The patient was hospitalized and enoxaparin sodium 60 mg / 0.6 ml (two subcutaneous injections per day) was initiated for prophylactic purpose. In the 16th day after admission, his hemoglobin level decreased to 7.4 g/dL. On CT scan, a right flank hematoma reaching approximately 10 cm in width, starting from the subcostal level and continuing to the inguinal canal level, was seen. Anticoagulant therapy was stopped. Erythrocyte suspension (ES), totally 10 units, were given to keep the hemoglobin level above 7 g/dL. On the 32th day after admission, the patient was discharged because his hemoglobin value, which was 10.2 g/dL at that point, had not decreased, his vital signs were stable, and his treatment for COVID-19 was completed.

**Key Words:** Abdominal lateral wall hematoma, COVID-19, Enoxaparin, Flank, Pneumonia.

## Introduction

Abdominal wall hematomas are clinical situations that may occur due to many etiological factors such as trauma, surgery, and interventional procedures. These types of hematomas can also occur spontaneously, especially in patients receiving anticoagulant or antiplatelet therapy<sup>1</sup>. Abdominal wall hematoma usually results from bleeding inside the muscle layers of the abdominal wall. A known category of this hematoma is rectus sheath hematoma. On the other hand, lateral wall hematomas are less common than other types. In this period of COVID-19 pandemic, it can be predicted that the incidence of abdominal wall hematomas will increase with the prophylactic or therapeutic use of anticoagulant agents such as enoxaparin to prevent further thrombus formation<sup>2</sup>.

In this case report, it is aimed to present a large abdominal lateral wall hematoma case developed in a COVID-19 patient who had not received any anticoagulant or antiplatelet therapy before hospital admission. The diagnosis and treatment process of the patient was explained.

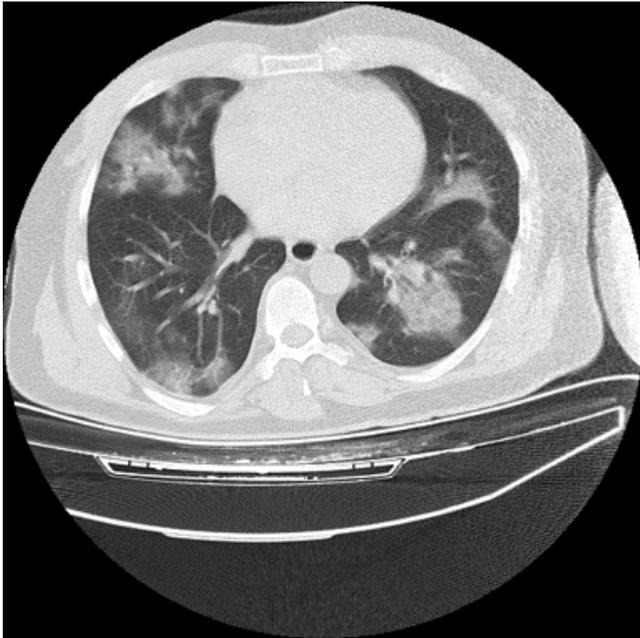
## Case Report

A 43-year-old male patient without any additional disease, surgery or history of anticoagulant therapy admitted to the emergency department of Erzurum Regional Education and

Research Hospital, Erzurum, Turkey in September 2020 with acute cough and shortness of breath lasted for three days. On evaluation at emergency room, vital findings of the patient were as follows: blood pressure: 123/72 mmHg, heartbeat: 114 beats per minute, saturation on room air: 90-92%, respiratory rate: 26 times per minute, and fever: 37.7° Celsius. Auscultation of the lungs revealed only wheezing. An abdominal physical examination was benign.

The patient's levels of C-reactive protein (CRP) (94.1 mg/L), lactate dehydrogenase (541 U/L), creatine level (2.08), creatine kinase (1300 U/L), and fibrinogen (534 mg/dL) were elevated. Other laboratory tests were unremarkable. Hemoglobin level of the patient on admission was 12.9 g/dL. On computed tomography (CT) scan, pulmonary findings were consistent with COVID-19 pneumonia (Figure 1). Therefore, the patient was admitted for follow-up, and treatment was begun using Favipiravir 200-mg tablets (four tablets per day), moxifloxacin 400-mg tablets (one tablet per day), piperacillin tazobactam 4.5 grams intravenous (four vials per day) and enoxaparin sodium (60 mg/0.6 mL subcutaneously every 12 hours).

On the 16th day of patient's follow-up, his hemoglobin levels decreased to 7.4 g/dL. At that point, his blood pressure was arterial 88/55 mmHg, while his heart rate was 120 beats per minute. An abdominal exam revealed a painful mass on right flank. CT scan of the abdomen and pelvis showed a right flank hematoma reaching approximately 10 cm in width, starting from the subcostal level, and continu-



**Figure 1:** A 43-year-old male patient with COVID-19 pneumonia.

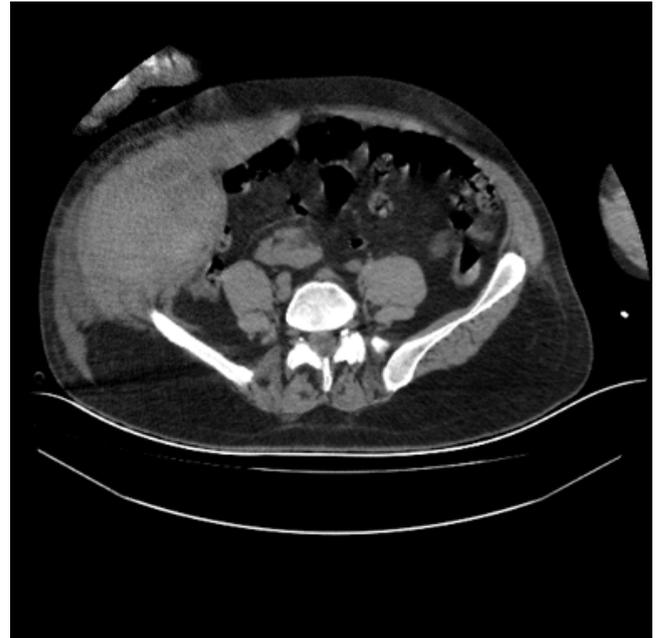
ing to the inguinal canal level (Figure 2 and Figure 3).

Anticoagulant therapy was stopped. Vital signs monitoring and fluid replacement was performed. Also, it was aimed to keep the hemoglobin value above 7 g/dL. To accomplish this, the patient was administered 10 units erythrocyte suspension (ES). Abdominal examination control was done every day. Eight days after the diagnosis of hematoma, a CT of the abdomen and pelvis was performed. There was partially regressed organized hematoma. On the 32th day after admission, the patient was discharged because his hemoglobin value, which was 10.2 g/dL at that point, had not decreased, his vital signs were stable, and his treatment for COVID-19 was completed. From the moment of diagnosis to discharge, the patient required no interventional or surgical procedures.

## Discussion

COVID-19 infection is well known to cause increased coagulopathy, with pulmonary emboli being the most common presentation. Increased levels of D-dimer and fibrinogen degradation products are associated with poor prognosis and are potentially related to the risk of disseminated intravascular coagulation (3, 4). Therefore, treating the hypercoagulable state with antithrombotic agents is appropriate. While prophylactic doses of anticoagulant therapy are recommended for patients who are followed in the service, the use of anticoagulant drugs at therapeutic dose is recommended for patients who are followed up in the intensive care unit<sup>5, 6</sup>.

After the introduction of anticoagulant drugs into clinical practice during the COVID-19 pandemic, the incidence of abdominal wall hematomas has started to increase. These patients are generally consulted in the service where they



**Figure 2:** Abdominal and pelvic CT scan (A right flank hematoma reaching approximately 10 cm in width)

are hospitalized due to abdominal pain, rapid hemoglobin decrease and hemodynamic instability, and the diagnosis is made by imaging tools such as ultrasonography and computed tomography<sup>7-9</sup>.

In this case report, the diagnosis and treatment process of the patient, who had not received any anticoagulant treatment before and who started enoxaparin due to COVID-19 pneumonia, is presented. Careful physical examination is important in diagnosis. On physical examination, ecchymotic areas of the abdominal skin and palpable painful mass can be detected during inspection. Hemodynamic instability can be added to the clinical picture in severe hematoma cases. Imaging tools such as ultrasonography and CT with or without contrast assist in the diagnostic process. CT scan with contrast provides information about contrast extravasation as well as providing information about all intra-abdominal structures. However, in cases where contrast is contraindicated, non-contrast computed tomography is also helpful.

After the diagnosis of abdominal wall hematoma in a patient due to enoxaparin, vital signs should be closely monitored, abdominal examination control should be done every day. In addition, complete blood count should be checked (every 6 hours in the first days of diagnosis) to evaluate the patient's blood need and hemoglobin levels. Hemoglobin level should be tried to be kept above 7 g/dL. In addition, it is recommended discontinuing anticoagulant therapy immediately. In the presented patient, 10 units of erythrocyte suspension (ES) were given to provide hemodynamic stability.

Imaging methods are important for close follow-up and can be repeated if necessary, to assess hematoma width. We recommended non-contrast abdominal and pelvic CT to evaluate whether there was an increase in hematoma size one week after diagnosis in patients who did not have a



**Figure 3:** Abdominal lateral wall hematoma on coronal section, starting from the subcostal level and continuing to the inguinal canal level.

sudden decrease in hemoglobin value during follow-up and whose vital signs were stable. If the hemoglobin value does not decrease after a few days of follow-up in a patient with no increase in hematoma size and if vital signs are stable, the patient can be discharged and called for control on the 3rd day after discharge for control. However, in cases with a moderate increase in hematoma size, the case can be managed with close follow-up until clinical stability is restored.

This is the first case report of an abdominal lateral hematoma reported during COVID-19 era all over the world. In this case report, we contribute to the deficiency in the literature. However, with the publication of new case reports and case series, healthy data will be obtained on the subject.

## Conclusion

A healthcare provider administering subcutaneous anticoagulant therapy should be aware of potential complications, and abdominal lateral wall hematoma should be suspected in the differential diagnosis of any patient complaining of abdominal pain after a subcutaneous enoxaparin injection. Further research and case reports on acute haemorrhage in COVID-19 patients receiving anticoagulation therapy are recommended.

## Patient's Consent

The informed consent is obtained from patient to publish the data concerning this case.

## Conflict Of Interest

The authors declared none of the conflict of interest.

## References

1. Çolakoğlu MK, Özdemir A, Kalcan S, Demir A, Demiral G, Pergel A. Spontaneous abdomen and abdominal wall hematomas due to anticoagulant/antiplatelet use: Surgeons' perspective in a single center. *Turkish Journal of Trauma and Emergency Surgery*. 2020;26(1):50-4.
2. Dennison JJ, Carlson S, Faehling S, Phelan H, Tariq M, Mubarak A. Splenic infarction and spontaneous rectus sheath hematomas in COVID-19 patient. *Radiology Case Reports*. 2021;16(5):999-1004.
3. Yin S, Huang M, Li D, Tang N. Difference of coagulation features between severe pneumonia induced by SARS-CoV2 and non-SARS-CoV2. *Journal of thrombosis and thrombolysis*. 2020:1-4.
4. Han H, Yang L, Liu R, Liu F, Wu K-I, Li J, et al. Prominent changes in blood coagulation of patients with SARS-CoV-2 infection. *Clinical Chemistry and Laboratory Medicine (CCLM)*. 2020;1(ahead-of-print).
5. Barnes GD, Burnett A, Allen A, Blumenstein M, Clark NP, Cuker A, et al. Thromboembolism and anticoagulant therapy during the COVID-19 pandemic: interim clinical guidance from the anticoagulation forum. *Journal of thrombosis and thrombolysis*. 2020;50:72-81.
6. Spyropoulos AC, Levy JH, Ageno W, Connors JM, Hunt BJ, Iba T, et al. Scientific and Standardization Committee communication: Clinical guidance on the diagnosis, prevention, and treatment of venous thromboembolism in hospitalized patients with COVID-19. *Journal of Thrombosis and Haemostasis*. 2020;18(8):1859-65.
7. Risch O, Alfidja A, Mulliez A, Amani AH, Boyer L, Camilleri L, et al. Severe non-traumatic bleeding events detected by computed tomography: do anticoagulants and antiplatelet agents have a role? *Journal of cardiothoracic surgery*. 2014;9(1):1-6.
8. Aktürk OM, Kayılıoğlu SI, Aydoğan İ, Dinç T, Yıldız B, Cete M, et al. Spontaneous rectus sheath hematoma: an overview of 4-year single center experience. *Indian Journal of Surgery*. 2015;77(3):1219-21.
9. Pei M-W, Hu M-R, Chen W-B, Qin C. Surgical Treatment of a Giant Spontaneous Abdominal Wall Hematoma. *Chinese medical journal*. 2017;130(13).