



# Spontaneous atypical muscle bleeding of the anterior abdominal wall in patient with COVID-19 – case report

Spontana atipična mišična krvavitev sprednje trebušne stene pri bolniku s covidom-19 – opis primera

Džemail Smail Detanac,<sup>1</sup> Dzenana Avdo Detanac,<sup>2</sup> Mehmed Mujdragic,<sup>1</sup> Krstina Dokleštic,<sup>3</sup> Dzemil Bihorac,<sup>4</sup> Jelena Pavlovic,<sup>5</sup> Lejla Ceranic,<sup>6</sup> Kemal Alihodžic<sup>1</sup>

## Abstract

COVID-19 is an unpredictable disease that can lead to multiorgan dysfunctions. There is a high frequency of venous and arterial thrombosis, among other symptoms. Spontaneous bleeding in COVID-19 patients has also been described, but rarely, whether or not they are on anticoagulant therapy. We report a case of a 65-year-old female COVID-19 patient treated in our hospital. During the hospitalisation, she experienced sudden, severe pain in the lower part of the abdomen and had signs of hemorrhagic shock. CT of the abdomen and pelvis revealed a spontaneous giant haematoma of the anterior abdominal wall. A surgical procedure was done. We identified spontaneous bleeding in the muscles of the anterior abdominal wall. The patient recovered well. Rapid diagnosis and timely intervention are crucial to ensure a good patient outcome.

## Izvleček

Covid-19 je nepredvidljiva bolezen, ki lahko povzroči motnje v delovanju več organov. Med drugimi simptomi je pogosta venska in arterijska tromboza, redkeje pa so bile opisane tudi spontane krvavitve pri bolnikih s covidom-19, ne glede na to, ali so ti prejeli antikoagulantno terapijo ali ne. Poročamo o primeru 65-letne bolnice s covidom-19, ki smo jo zdravili v naši bolnišnici. Med hospitalizacijo je doživela nenadno hudo bolečino v spodnjem delu trebuha in je kazala znake hemoragičnega šoka. CT trebuha in medenice je razkril spontan orjaški hematoma sprednje trebušne stene. Opravljen je bil kirurški poseg. Ugotovili smo spontano krvavitev v mišicah sprednje trebušne stene. Bolnica je dobro okrevala. Hitra diagnoza in pravočasno posredovanje sta ključnega pomena za zagotovitev dobrega izida.

<sup>1</sup> Department of Surgery, General Hospital Novi Pazar, Novi Pazar, Serbia

<sup>2</sup> Department of Ophthalmology, General Hospital Novi Pazar, Novi Pazar, Serbia

<sup>3</sup> University Clinical Center of Serbia, Clinic for Emergency Surgery, Belgrade, Serbia

<sup>4</sup> Department of Radiology, General Hospital Novi Pazar, Novi Pazar, Serbia

<sup>5</sup> Department of Phthysiology, General Hospital Novi Pazar, Novi Pazar, Serbia

<sup>6</sup> Department of Infectology, General Hospital Novi Pazar, Novi Pazar, Serbia

**Correspondence / Korespondenca:** Džemail Smail Detanac, e: [dzemail.detanac@gmail.com](mailto:dzemail.detanac@gmail.com)

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## 1 Introduction

Even though much is known about severe acute respiratory syndrome coronavirus 2 (SARS CoV-2 and coronavirus disease (COVID-19) at this stage of the pandemic, e.g., the fact that the genome of the virus has not changed much during the pandemic, and potential risk factors have been identified for the eventual development into severe diseases, the course of the disease itself stays unpredictable. COVID-19 can manifest through a wide range of symptoms from asymptomatic and very mild to severe and life-threatening disease (1,2).

The lungs are the target organ for SARS CoV-2; however, this virus can be detected in multiple organs and lead to significant multiorgan dysfunction, and disruption of normal haemostasis suggests an unpredictable multisystem disease (3). The various symptoms of COVID-19, which in addition to pulmonary symptoms include thrombosis and ischemic complications, stroke, kidney and heart damage, and circulatory disorders, suggest that the pathology of COVID-19 has a strong vascular component and can be considered a systemic vascular disease (3,4). Anticoagulant prophylaxis in COVID-19 patients has been the topic of many studies. Spontaneous haemorrhagic events during COVID-19 infections have been described in the literature in patients on anticoagulant therapy as well as in patients who are not on anticoagulant therapy.

## 2 Case presentation

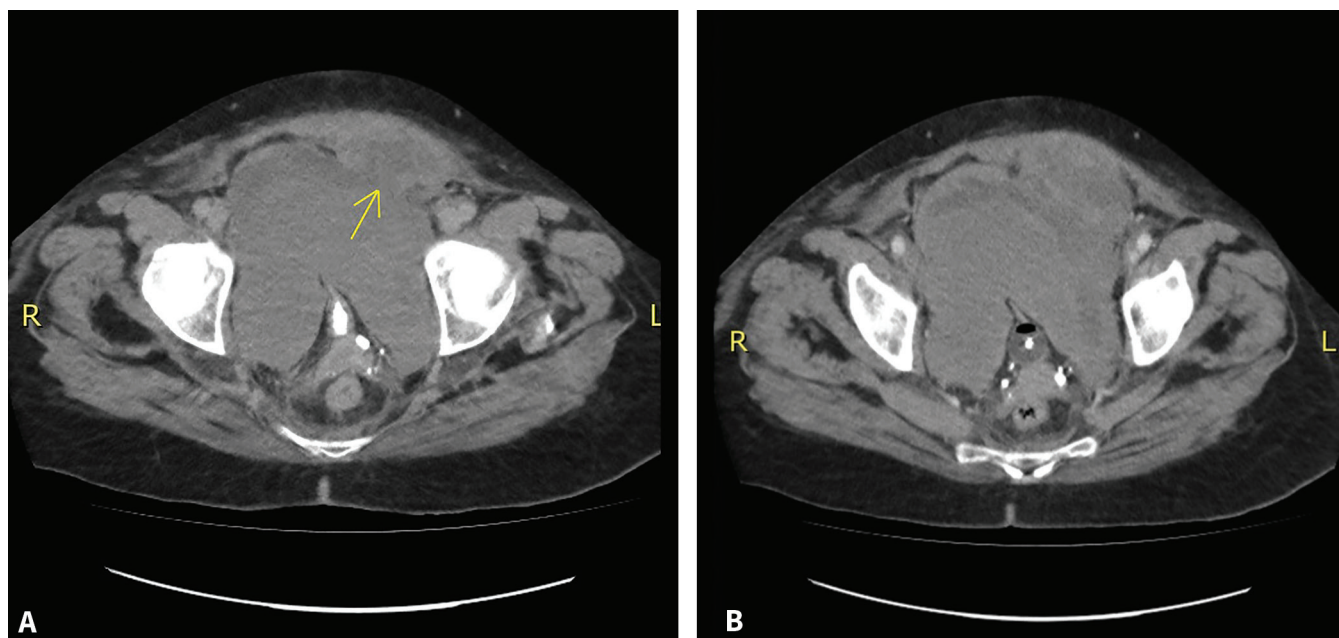
A 65-year-old female patient was admitted to the Covid department at the General Hospital of Novi Pazar, Serbia, due to general weakness, high fever, productive cough, and malaise. Considering comorbidities, the patient had mild and therapeutically controlled arterial hypertension. At the time of admission, the patient had bilateral interstitial pneumonia in the lower lung lobes, indicating COVID-19 with oxygen saturation of 90%. Laboratory findings are shown in Table 1. The real-time polymerase chain reaction (PCR) for SARS-CoV-2 performed for a nasopharyngeal swab was positive. Upon admission, treatment was initiated according to the COVID-19 treatment guidelines (5).

The patient was on oxygen therapy with up to 10 l / min of oxygen provided by nasal cannula and a prophylactic dose of low-molecular-weight heparin (LMWH) (Nadroparin (Fraxiparine) 0.3ml / 24h). During hospitalization, a deterioration of the medical state and

**Table 1:** Laboratory findings.

	Days of hospitalisation		
	1 <sup>st</sup> day	6 <sup>th</sup> day	7 <sup>th</sup> day
RBC (x10 <sup>12</sup> /L)	4.65	4.46	2.2
WBC (x 10 <sup>9</sup> /L)	2.8	3.7	4.1
PLT (x 10 <sup>9</sup> /L)	198	182	157
HgB (g/L)	132	127	84
D dimer (mg/L)	2.3	1.7	1.9
INR	-	-	1
Fibrinogen (g/L)	4.1	3.6	3.1
CRP (mg/L)	35	28	44
Urea (mmol/L)	5.1	3.8	4.4
AST (U/L)	22	16	23
ALT (U/L)	50	54	62
Creatinine (µmol/L)	109	121	119
K+ (mmol/L)	4.8	3.9	4.1
Na+ (mmol/L)	142	144	140
Ca2+ (mmol/L)	2.3	2.2	2.1
Ferritin (ng/ml)	810	-	-
Fe (µmol/L)	3.1	4.0	-
Procalcitonin (µg/L)	-	0.02	-

some laboratory parameters with stationary radiographic indicators of lung changes occurred. There were no indications of kidney or liver damage. On the 7<sup>th</sup> day of hospitalization, there was a sudden, severe pain in the lower part of the abdomen, from the suprapubic region, which spread laterally to the left towards the lumbar region, with a decrease of erythrocytes and haemoglobin levels, hypotension, oliguria, and signs of haemorrhagic shock (Table 1). There was no history or evidence suggestive of traumatic injury. A computerized tomography (CT) of the abdomen and pelvis was performed. The small pelvic scan was dominated by a large, partially organized formation (organized haematoma) of heterogeneous structure, which corresponds to being formed at different times. Due to the large area of the haematoma verified by the abdominal and the small pelvic CT, there is a possibility that there was less bleeding the day before, but not enough intensity to cause any symptoms. On the



**Figure 1:** Computerized tomography (CT) of abdomen and pelvis (A and B).

7<sup>th</sup> day of hospitalization, the patient's general condition suddenly deteriorated and she developed hemorrhagic shock, which was indicative of sudden more significant bleeding. The described formation was localized posteriorly in front of the bladder and uterus, transversely taking up most of the small pelvis and along the abdominal wall itself from which (*m. rectus abdominis*) it could not be sharply differentiated, possibly corresponding to the origin of haemorrhage (Figure 1), which indicated surgical treatment. The abdomen was cut open using the midline laparotomy incision. A small amount of serohaemorrhagic content was present in the abdominal cavity without a detectable bleeding site. Further, we noticed a haematoma in the anterior abdominal wall that permeated all layers of soft tissue, and extended from the suprapubic region, spreading laterally to the left through the anterior abdominal wall towards the lumbar region, and left to the paracolic region. After evacuating the haematoma, we identified active bleeding from 2 smaller arterial blood vessels in the abdominal wall muscles. Surgical haemostasis was performed. Drains were placed in the anterior abdominal wall, and the surgical wound was reconstructed according to anatomical layers.

There were no signs of bleeding in the postoperative period. We continued with conservative treatment. The patient recovered completely and was discharged from the ward on the 14<sup>th</sup> postoperative day.

There were no signs of coagulation parameter disorders during the postoperative 3-month follow-up period.

### 3 Discussion

COVID-19 has been identified as a thrombogenic and hypercoagulable disease characterized by a high incidence of venous and arterial thrombotic events (2). Damage to the respiratory tract by the SARS CoV-2 virus leads to vascular inflammation with endothelial damage, leading to uncontrolled coagulation system activation with consequent thromboembolic complications). Data from the literature show that up to 30% of patients with severe symptoms develop thrombotic complications, primarily pulmonary embolism, and deep vein thrombosis, in addition to the applied thromboprophylaxis (2,3,6,7). Jimenez et al. (8) cite in their meta-analysis the high incidences of venous thromboembolism events, mainly for critically ill COVID-19 patients, and Planquette et al. reported a prevalence of pulmonary embolism in COVID-19 patients up to 5% in the whole population and up to 20% of the clinically suspected population (9).

In COVID-19, the coagulation activation pattern is not the same as in septic patients. Sepsis-induced disseminated intravascular coagulation (DIC) is generally characterized by prolonged prothrombin time, low platelet count, and decreased antithrombin. In COVID-19 patients, increased fibrinogen levels and D-dimers, and minor changes in prothrombin time, platelet count, and antithrombin are observed (2). Higher fibrinogen and D-dimer are often found in COVID-19 patients, so following their kinetics and other inflammatory markers

can help in better thromboprophylaxis (2). Because of everything mentioned above, LMWH has become part of the therapeutic protocol for hospitalized COVID-19 patients, although there is still no harmonized evidence of the correct prophylactic dose.

Literature data have shown results of anticoagulation treatment of patients with COVID-19 and found no association with better outcomes in coagulation prophylaxis in the general population. Also, patients on invasive ventilation and respiratory failure had benefits (10,11).

Al-Samkari et al. reported a 9.5% rate of thrombotic complications in COVID-19 patients on the prophylactic anticoagulation dose. The overall proportion of patients with bleeding complications ranged from 4.8% to 8%, of which approximately 3.5% had severe bleeding (12). Fraisse et al. have reported an incidence of bleeding accidents in patients admitted to intensive care units of 21% (13). Literature data report spontaneous bleeding in COVID-19 patients, whether on anticoagulant therapy or not. Cases of intramural haematoma of the aorta, spontaneous liver subcapsular haematoma, haemorrhagic cardiac tamponade, intracerebral haemorrhage, retroperitoneal haemorrhage, etc., have been reported (13-19).

Some studies indicate that cardiac and renal insufficiency, hypertension, arteriosclerosis, diabetes mellitus, and coagulation disorders, even when anticoagulants are used, can be risk factors for spontaneous muscular haematoma (SMH). Microtrauma of capillaries and muscles caused by cough or patient mobilization to a prone position and early rehabilitation can lead to SMH development, too (14,15). SARS CoV-2 is known to have an affinity for angiotensin-converting enzyme 2 receptors on endothelial cells, which can cause inflammatory cell infiltration along the vessel surface, leading to vasculitis and direct damage to the vessel wall, which can lead to rupture and spontaneous arterial bleeding (16,17). Disseminated intravascular coagulation (DIC) in patients

with severe COVID-19 is associated with severe bleeding. In patients with COVID-19, thrombocytopenia is sometimes observed and can indicate possible bleeding complications (15). Erdinc et al. reported a COVID-19 patient who developed SMH without anticoagulants (18). SMH can be an emergency based on its size and location, which is difficult to control and can lead to haemorrhagic shock and death. It is necessary to recognize the symptoms early, and the doctor must react quickly to stop the bleeding. What happened in our case was a spontaneous haemorrhage in the muscles of the anterior abdominal wall.

Our patient had a moderate form of COVID-19 on a prophylactic dose of low-molecular-weight heparin and had no signs of bacterial superinfection, DIC, thrombocytopenia, or low fibrinogen value that could explain spontaneous muscle bleeding.

## 4 Conclusion

When treating COVID-19 patients, doctors, in addition to hypercoagulable disorders, must consider the possibility of spontaneous bleeding as well. In case of severe pain, anaemia, and signs of hypovolemia, it is necessary to perform a CT for early detection of SMH. Rapid diagnosis and timely intervention are crucial to ensure a good patient outcome. Information and knowledge about COVID-19 are changing rapidly, and clinicians should be up to date constantly to follow the news and better understand this disease and its development.

## Conflict of interest

None declared.

## Inform consent of the patient

The patient gave informed consent for the publication of her case.

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