



Research Article

POST COVID-19 PRESENTED WITH DEEP VEIN THROMBOSIS: A CASE REPORT

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ABSTRACT

As it is the case for so many aspect of the COVID -19 pandemic, information on clinical complication caused by novel corona virus continues to emerge and evolve in real time. The majority of patients who have tested positive for COVID-19 presents with symptoms of an acute respiratory illness including fever, malaise, myalgia, dry cough and breathing difficulty. However, it appears that novel coronavirus may impact more than just the lungs. In this report, we present a case of a post COVID patient with erythematous plaque and unilateral pitting edema over the left leg. Doppler study showed features of Deep vein thrombosis. The purpose of this paper is to present the case which aims to rise the clinician's awareness of deep vein thrombosis as a post COVID-19 sequelae even if the patient has no risk factor for developing deep vein thrombosis.

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INTRODUCTION

On December 31, 2019, the World Health Organization was informed of a cluster of cases of pneumonia of unknown cause and was detected in Wuhan City, Hubei Province, China. The pneumonia caused by a virus called severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), which was later named as coronavirus infectious disease 2019 (COVID-19). Symptoms are similar to that of the common cold, most notably fever and dyspnea.1,2

The disease is highly contagious, and the World Health Organization's 51st situational report on March 11, 2020, announced a total of 118 319 people affected and 4292 deaths.3

It is possible that SARS-CoV-2 enters host cells through the binding of spike glycoprotein to the enzyme 2 angiotensin-converting enzyme (ACE2), sialic acid receptor, transmembrane 2 serine proteinase (TMPRSS2), and extracellular slow cell matrix metalloproteinase (CD147). This condition, which causes endothelial dysfunction, is exacerbated by hypoxia and causes thrombosis by increasing blood viscosity as well as the signalling pathway associated with the hypoxia transcription factor.4 In this report, we present a patient who developed deep vein thrombosis (DVT) as a post COVID sequelae and was resolved with therapeutic low molecular weight heparin .

Case Report: 76years old eglycemic and normotensive male came to our Dermatology Department with complaints of dark itchy raised lesions over left leg since 2 years and itching was

aggravated since 1 month associated with swelling, pain and redness not associated with oozing. Swelling was gradual in onset and progressive in nature. Previously patient has been diagnosed as chronic eczema and on treatment. Patient had no history of comorbid illness, insect bite, trauma and surgery. Patient had a history of COVID-19 infection in August 2020 and was diagnosed by nasal swabs and SARS-CoV-2 nucleic acid was detected by reverse transcription polymerase chain reaction (RT-PCR), computed tomography chest revealed bilateral multiple ground-glass opacities, and CT severity was found to be 23/25. more than 90% of the lung is involved for which he had been treated for a week then discharged following which the patient was on siddha treatment. Later on he developed subcutaneous edema over the left leg.

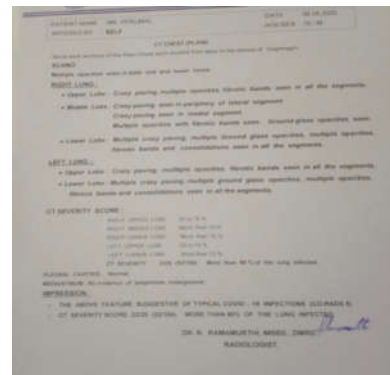


Figure 1

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Figure 2

Figure 1& 2 CT report suggestive of COVID 19 infection



Figure 3



Figure 4

Figure 3 & 4 Doppler study of left lower limb for deep vein thrombosis detection

**Clinical Examination**

On examination patient was conscious coherent well oriented to time place and person. Well built and well nourished, no pallor, no icterus, no clubbing, no lymphadenopathy and unilateral pitting pedal edema present over the left foot. His vitals were stable with no significant changes on ECG and echo revealed good LV function. Respiratory system examination showed decreased bilateral air entry present and bilateral bronchial breath sounds heard and his other systemic examinations are within normal limits

On local examination of the left lower limb: pitting pedal edema present, local warmth and tenderness present, diffuse skin coloured to erythematous large macule present with few hyperpigmented plaques present

**Management**

Venous Doppler ultrasound revealed complete thrombosis of leg veins popliteal vein, superficial femoral vein and partial thrombosis of common femoral vein and external iliac vein. No evidence of varicose veins.. His blood investigation showed elevated D-dimer. In the view of above findings, patient was diagnosed to have Deep Vein Thrombosis (DVT) and patient was treated with anticoagulants , antibiotics, PPI and other supportive measures. Considering to DVT and COVID 19 therapeutic dose of lower molecular weight heparin 1.5 mg/kg/day SC for a course of 5 days was given. Patient condition has improved with above medications his swelling and tenderness has been disappeared gradually over a period of 15 days



Figure 5



Figure 6



Figure 7

Figure 5,6 and 7 Clinical image showing erythematous macules, hyper pigmented plaques and leg swelling due to deep vein thrombosis



Figure 8



Figure 9

**Figure 8 and 9** Hyperpigmented macules with scaling and resolved redness and swelling of deep vein thrombosis with lower molecular weight heparin.

## DISCUSSION

The symptoms most commonly reported by patients affected by COVID-19 include fever, dry cough, and shortness of breath<sup>1</sup> and the patient presented with typical symptoms of DVT, such as swelling, redness, and tenderness. While he had no risk factor for DVT, laboratory tests and chest X-ray tests showed resolving COVID-19. The most stable homeostatic abnormalities with COVID-19 include increased D-dimer levels.<sup>6</sup> There have been reports of thrombotic disorders with organ dysfunction in patients with COVID-19 resulting in higher mortality<sup>7</sup> but there are few reports of DVT in patients with COVID-19. In a study by Zhou et al, a patient with COVID-19 presented with symptoms of acute cerebral infarction. After CT angiography, acute cerebral infarction and DVT in both lower limbs were confirmed.<sup>8</sup> In our case, DVT was suspected due to redness, pain, and tenderness at the leg veins, which was seen by colour Doppler ultrasound in complete thrombosis of leg veins popliteal vein, superficial femoral vein and partial thrombosis of common femoral vein and external iliac vein. No evidence of varicose veins. Seeing this lesion on the leg, our patient was initially suspected of having thromboembolism, which, after a CT scan, revealed a person with resolving COVID-19, with no evidence of pulmonary thromboembolism. However, in some studies, respiratory deterioration with other clinical evidence of venous thrombosis should lead to suspected pulmonary embolism (PE).<sup>9,10</sup> In a study by Fu et al, 2 middle-aged patients with a history of acute ischemic stroke in middle age developed COVID-19 with neurological symptoms of acute ischemic stroke, including paralysis of the tongue, dysarthria, and weakness of the limb muscles. Despite high levels of D-dimer, they showed no signs of DVT.<sup>11</sup> In recent studies it was also found that thrombotic disorders occur as a complication of COVID 19 with a higher incidence of Pulmonary embolism followed by arterial thrombotic events and DVT is a rare complication. These disorders occurred after the diagnosis of COVID-19 in patients due to hospitalisation.<sup>12</sup> Also in some patients with COVID-19, nonspecific myocardial damage, renal dysfunction (leading to troponin accumulation), myocarditis, PE, and myocardial infarction type I and II due to hospitalisation and, as a result, coagulation disorders were observed.<sup>7</sup>

The initial assumption is that DVT is a secondary lesion after COVID-19. The possible mechanism may be that coronavirus attacks the human body through the enzyme 2-angiotensin-converting enzyme,<sup>13</sup> which is distributed over blood vessels and various organs. The virus then causes cytokine waterfalls, which can increase blood clotting problems and damage.<sup>4</sup> Finally the blood clots of DVT can be caused by anything that prevents blood from circulating or clotting normally, such as injury to a vein, surgery, certain medications, and limited movement,<sup>5,14</sup> but the exact cause of DVT caused by COVID-19 is still unknown.

## CONCLUSION

The exact mechanism of DVT formation due to COVID-19 is unknown despite D-dimer and improved with anticoagulants. Although COVID-19 presented with DVT is a rare condition, in people with sudden onset of manifestations, we should recognize DVT from other thrombotic complication as an important and treatable complication for COVID-19. Rapid diagnostic assays, efficient treatment, and prudent use of CT scan Venous colour doppler are important for early detection of post COVID sequelae.

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**Conflict of Interest:** None.

## References

1. Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*. 2020; 395:809-815. doi:10.1016/S0140-6736(20)30360-3 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
2. Shen K, Yang Y, Wang T, et al. Diagnosis, treatment, and prevention of 2019 novel coronavirus infection in children: experts' consensus statement [published online February 7, 2020]. *World J Pediatr*. doi:10.1007/s12519-020-00343-7 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. World Health Organization. Coronavirus disease (COVID-19) pandemic. Accessed May 16, 2020 [https://www.who.int/emergencies/diseases/novel-coronavirus2019?gclid=EAIaIqobChMiktL68LO46QIVmHwrCh3qVghpEAAAYASAAEgLVfvD\\_BwE](https://www.who.int/emergencies/diseases/novel-coronavirus2019?gclid=EAIaIqobChMiktL68LO46QIVmHwrCh3qVghpEAAAYASAAEgLVfvD_BwE)
4. Zheng YY, Ma YT, Zhang JY, Xie X. COVID-19 and the cardiovascular system. *Nat Rev Cardiol*. 2020; 17:259-260. [PMC free article] [PubMed] [Google Scholar]
5. Lippi G, Plebani M, Henry BM. Thrombocytopenia is associated with severe coronavirus disease 2019 (COVID-19) infections: a meta-analysis. *Clin Chim Acta*. 2020; 506:145-148. [PMC free article] [PubMed] [Google Scholar]
6. Terpos E, Ntanasis-Stathopoulos I, Elalamy I, et al. Hematological findings and complications of COVID-19 [published online April 13, 2020]. *Am J Hematol*. doi:10.1002/ajh.25829 [PMC free article] [PubMed] [CrossRef] [Google Scholar]

7. Bikdeli B, Madhavan MV, Jimenez D, et al. COVID-19 and thrombotic or thromboembolic disease: implications for prevention, antithrombotic therapy, and follow-up [published online April 15, 2020]. *J Am Coll Cardiol*. doi:10.1016/j.jacc.2020.04.031 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
8. Zhou B, She J, Wang Y, Ma X A case of coronavirus disease 2019 with concomitant acute cerebral infarction and deep vein thrombosis. *Front Neurol*. 2020; 11:296. [PMC free article] [PubMed] [Google Scholar]
9. Xie Y, Wang X, Yang P, Zhang S. COVID-19 complicated by acute pulmonary embolism. *Radiology*. 2020; 2:e200067. doi:10.1148/ryct.2020200067 [CrossRef] [Google Scholar]
10. Danzi GB, Loffi M, Galeazzi G, Gherbesi E. Acute pulmonary embolism and COVID-19 pneumonia: a random association? *Eur Heart J*. 2020; 41:1858. [PMC free article] [PubMed] [Google Scholar]
11. Fu B, Chen Y, Li P. The 2019 novel coronavirus disease with secondary ischemic stroke: two cases report [published online April 2, 2020]. *BMC Neurol*. doi:10.21203/rs.3.rs-20943/v1 [CrossRef] [Google Scholar]
12. Klok FA, Kruip MJHA, van der Meer NJM, et al. Incidence of thrombotic complications in critically ill ICU patients with COVID-19 [published online April 10, 2020]. *ThrombRes*. doi:10.1016/j.thromres.2020.04.013 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
13. Zhang H, Penninger JM, Li Y, Zhong N, Slutsky AS. Angiotensin-converting enzyme 2 (ACE2) as a SARS-CoV-2 receptor: molecular mechanisms and potential therapeutic target. *Intensive Care Med*. 2020;46:586-590. doi:10.1007/s00134-020-05985-9 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
14. Tarannum N, Azam MS, Premchand RK. May-Thurner syndrome and recurrent DVT: a case report. *Indian J ClinCardiol*. 2020; 1:13-16. [Google Scholar]

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