

中文題目：COVID 19 感染重症於一位亨丁頓舞蹈症女性併發多重器官衰竭、多處血栓及出血

英文題目：Severe COVID 19 infection in a Huntington's Disease Woman Complicated with Multiple Organ Failure, Thrombosis, and Bleeding

作者：張晉維<sup>1</sup>、鄭孟瑜<sup>1,2</sup>、周家卉<sup>1,2</sup>、陳韋成<sup>1,3</sup>、陳永芳<sup>4</sup>、黃駿麟<sup>4</sup>、連銘渝<sup>1,4</sup>、楊依倩<sup>6</sup>、陳怡儒<sup>1,7</sup>

服務單位：<sup>1</sup>中國醫藥大學附設醫院內科部，<sup>2</sup>中國醫藥大學附設醫院內科部感染科，<sup>3</sup>中國醫藥大學附設醫院內科部胸腔科，<sup>4</sup>中國醫藥大學附設醫院內科部血液腫瘤科，<sup>5</sup>中國醫藥大學附設醫院影像醫學部，<sup>6</sup>中國醫藥大學附設醫院神經部癲癇科，<sup>7</sup>中國醫藥大學附設醫院內科部腎臟系腎臟移植科

## Introduction

SARS-CoV-2(Severe Acute Respiratory Syndrome Coronavirus 2) infection became a pandemic disease over the whole world since 2019. As of September 25<sup>th</sup>,2022, the COVID 19 pandemic had caused over 611million confirmed cases and >6.5 million death worldwide<sup>1</sup>. Infected patient with SARS-CoV-2 experience variable disease severity from non-symptomatic, respiratory failure, multiple organ failure to death. Thromboembolism risk increased after COVID 19 infection which include pulmonary embolism<sup>2</sup>, cerebral venous thrombosis<sup>3</sup>, acute limb ischemia, deep vein thrombosis, acute mesenteric ischemia, aortic thrombosis<sup>4,5</sup> and renal infarction<sup>6,7,8,9,10</sup>. Besides, the severity of COVID 19 infection also corelated to cytokine storm which anti-viral treatment may not enough to stop the COVID 19 induced multiple organ failure<sup>11</sup>. However, under COVID 19 vaccination, many infections with the omicron variant became mild. Huntington's disease is a neurodegenerative rare disease with declined respiratory function during disease progression<sup>12</sup>. There is no COVID 19 vaccination study enroll Huntington's disease case. There is also no report that Huntington's disease as a risk comorbidity for COVID 19 infection. Here, we report a 36-year-old woman with Hunting's disease who had 2 dose COVID 19 vaccination and had severe COVID 19 complicated with multiple organ failure, multiple thrombosis, and spontaneous bleeding.

## Case report

A 36-year-old woman is a case of Huntington disease who had 2 dose of COVID 19 vaccination (AZ vaccine) was admitted via emergency department because of consciousness disturbance for one day.

Three days before admission, she confirmed with COVID 19 infection through rapid test positive who presented with low grade fever, rhinorrhea, and dry cough. Three days later, she was brought to the hospital immediately because of acute onset of limbs convulsion with consciousness disturbance. At the emergent department, pneumonia with desaturation, acute kidney injury (serum creatinine: 0.86→3.43mg/dL), hypernatremia, rhabdomyolysis, acute myocarditis, acute pancreatitis, and acute hepatitis were noted (computed tomography revealed no pulmonary embolism or brain abnormal lesion). Under impression of critical disease of COVID-19, Remdesivir and dexamethasone were prescribed. During the first 2 days of hospitalization, the renal function rapid progression to anuria and both rhabdomyolysis, pancreatitis totally without response to hydration accompany with acute hepatitis progression and D-dimer elevated from 4138.2 to 21174.3ng/mL. We gave Tocilizumab to stop the cytokine storm and low dose heparin for controlling the risk of thromboembolism. Emergent dialysis was also started for fluid status balance. She was transferred to ordinary ward at the day 9 of hospitalization. At the day 10 of

hospitalization, pale appearance with acute dyspnea was noted and her hemoglobin level dropped to 6.8g/dL without thrombocytopenia (platelet count 313000/ul) but mild APTT prolong (40.8 secs with low dose heparin). Emergent computed tomography was repeated and revealed right hemothorax, right kidney infarction with active bleeding accompanies with right lobe of liver infarction, hematoma in right retroperitoneum, left iliopsoas muscle and pelvis were found. After immediately correct the APTT and stop heparin, the renal angiography revealed no visible active bleeding in the right renal artery. The patient discharged after 2 months hospitalization with normal renal function (serum creatinine: 0.62mg/dL) and totally recover from multiple organ failure.

## **Discussion**

This patient had mild pulmonary symptoms of COVID-19 infection but complicated with multi-system dysfunction rapidly. Numerous studies support increased thrombotic incidents related to SARS-CoV-2 virus and anticoagulant therapy appears to be associated with better prognosis in severe COVID-19 patients<sup>13</sup>. Our patient received anticoagulant therapy with low dose heparin initially. However, the infarction of multiple organ included liver and unilateral kidney still occurred and even complicated with multiple bleeding event. For critically ill patients of COVID-19, heparin 7,500 units subcutaneous three times daily or low-intensity heparin infusion are recommended based on expert opinion<sup>14,15</sup>. Anticoagulant therapy was recommended after discharging up to 45 days for patients with moderate or severe COVID-19<sup>14</sup>. It seems not suitable to every cases while our case only under very low dose heparin and still complicated with multiple bleeding event.

In some COVID-19 infection patients with thrombotic events were because of antiphospholipid syndrome<sup>16,17</sup>. We already excluded our patient without antiphospholipid antibody, autoimmune disease, thrombotic microangiopathy, nor arrhythmia related thromboembolism.

## **Conclusion**

This is the first case report for Huntington's disease patient with severe COVID 19 infection. Huntington's disease patient with decline respiratory function during their disease progression and if this became an important comorbidity for severe COVID 19 complication need furthermore study. Mild COVID 19 infection in Huntington's disease needs more monitoring closely. On that time in Taiwan, there were several sudden death living along cases were reported from the social media. We speculated some of those sudden death cases maybe like our patient who initially with milder infection and not required admission but got worse suddenly because of the multiple thrombosis with the cytokine storm.

## **References :**

1. <https://covid19.who.int/>
2. Lax, S.F., et al., Pulmonary Arterial Thrombosis in COVID-19 With Fatal Outcome : Results From a Prospective, Single-Center, Clinicopathologic Case Series. *Ann Intern Med*, 2020. 173(5): p. 350-361.
3. Cavalcanti, D.D., et al., Cerebral Venous Thrombosis Associated with COVID-19. *AJNR Am J Neuroradiol*, 2020. 41(8): p. 1370-1376.
4. Gomez-Arbelaes, D., et al., COVID-19-Related Aortic Thrombosis: A Report of Four Cases. *Ann Vasc Surg*,

2020. 67: p. 10-13.
5. Le Berre, A., et al., Concomitant acute aortic thrombosis and pulmonary embolism complicating COVID-19 pneumonia. *Diagn Interv Imaging*, 2020. 101(5): p. 321-322.
  6. Jana, K., et al., Bilateral renal infarction with COVID-19 pneumonia: a case report. *Oxf Med Case Reports*, 2021. 2021(11-12): p. omab121.
  7. Kow, C.S. and S.S. Hasan, Revascularization in COVID-19 patients with renal infarction. *Am J Transplant*, 2021. 21(3): p. 1345.
  8. Mantica, G. and A.F. De Rose, Renal infarction in a COVID-19 patient. *Pan Afr Med J*, 2020. 37: p. 182.
  9. Mukherjee, A., R. Ghosh, and M.M. Furment, Case Report: COVID-19 Associated Renal Infarction and Ascending Aortic Thrombosis. *Am J Trop Med Hyg*, 2020. 103(5): p. 1989-1992.
  10. Takamatsu, C., P. Devis, and R. Tolouian, COVID-19 and renal infarct: To be or not to be on anticoagulation. *Clin Nephrol Case Stud*, 2021. 9: p. 117-122.
  11. Soy, M., Keser, G., Atagündüz, P. et al. Cytokine storm in COVID-19: pathogenesis and overview of anti-inflammatory agents used in treatment. *Clin Rheumatol* 39, 2085–2094 (2020).
  12. Una Jones, Monica Busse, Stephanie Enright and Anne E. Rosser, Respiratory decline is integral to disease progression in Huntington's disease *Eur Respir J* . 2016 Aug;48(2):585-8.
  13. Tang, N., et al., Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. *Journal of Thrombosis and Haemostasis*, 2020. 18(5): p. 1094-1099.
  14. Barnes, G.D., et al., Thromboembolism and anticoagulant therapy during the COVID-19 pandemic: interim clinical guidance from the anticoagulation forum. *J Thromb Thrombolysis*, 2020. 50(1): p. 72-81.
  16. Bikdeli, B., et al., COVID-19 and Thrombotic or Thromboembolic Disease: Implications for Prevention, Antithrombotic Therapy, and Follow-Up: JACC State-of-the-Art Review. *J Am Coll Cardiol*, 2020. 75(23): p. 2950-2973.
  17. Zhang, Y., et al., Coagulopathy and Antiphospholipid Antibodies in Patients with Covid-19. *N Engl J Med*, 2020. 382(17): p. e38.