

## Introduction

- We present a case of portal vein thrombosis in a patient following COVID vaccination.

## Case Presentation

- A 44-year-old female with a past medical history of type 2 diabetes mellitus, GERD, tobacco use, asthma, chronic migraines without aura, and COVID infection presents to the emergency department with a one-week history of abdominal pain, back pain, and black stools. She is hemodynamically stable and afebrile.
- Her labs are significant for elevated AST and ALT at 78 and 200 respectively.
- CT abdomen/pelvis with IV contrast is obtained and reveals hepatic infarcts with right portal vein thrombosis. She is subsequently started on a heparin drip for treatment.
- Esophagogastroduodenoscopy reveals gastritis and a 5 mm ulcer in the antrum which is not actively bleeding.
- Antiphospholipid antibody panel and activated protein C resistance lab results are unremarkable.
- On further history, the patient reports that she received her first dose of the Moderna COVID vaccine about three weeks prior to presentation.
- Per gastroenterology, she is able to go home on apixaban 5 mg twice a day for anticoagulation.
- Follow-up CT abdomen/pelvis three weeks after admission displays significantly improved enhancement pattern throughout the liver with minimal residual heterogeneous enhancement.
- The patient reports improvement in her abdominal pain during follow-up appointments, and her liver enzymes are trending back to normal levels.
- She follows up outpatient with hematology/oncology, however her hypercoagulable lab work-up continues to be unremarkable.

## Figures

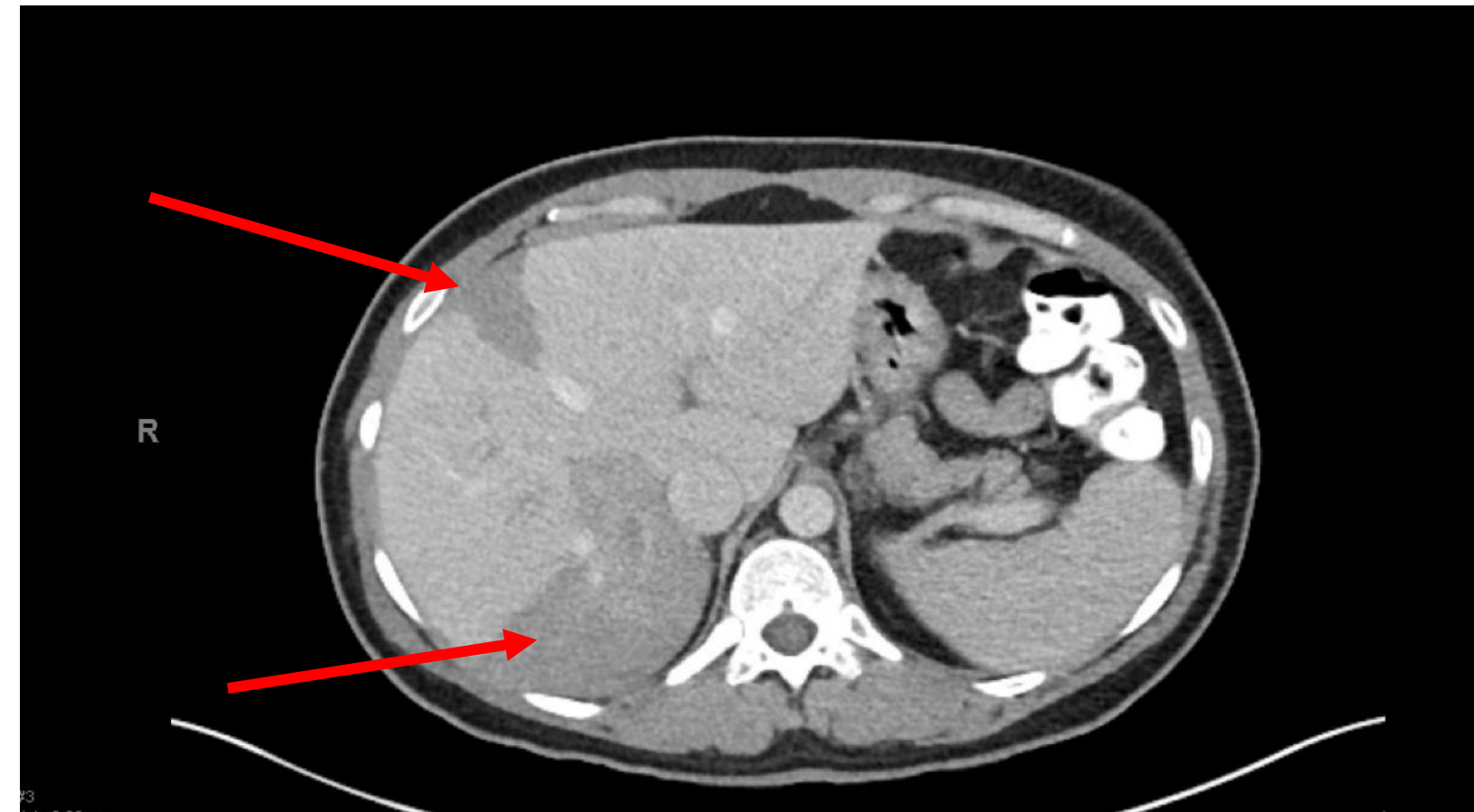


Figure 1: CT scan image displaying large, peripheral, wedge-shaped areas of hypoattenuation and hypoenhancement in the liver.



Figure 2: CT scan image displaying significantly improved enhancement pattern throughout the liver when compared to previous scan done three weeks prior.

## Discussion

- This case demonstrates that portal vein thrombosis may occur following COVID vaccination. The timeline of her developing portal vein thrombosis soon after receiving the COVID vaccination may be suggestive of the vaccine precipitating her condition.
- This patient did have an additional risk factor of tobacco use. This can be a challenging situation for many clinicians to navigate, as COVID remains a significant threat to patients' health.
- Patients with hypercoagulable risk factors may benefit from close monitoring for abdominal pain or other symptoms surrounding COVID vaccination.

## Hypercoagulable Risk Factors

- |                             |   |
|-----------------------------|---|
| • Obesity                   | • Hereditary thrombophilias: Factor V Leiden, Protein C deficiency, Protein S deficiency, Antithrombin III deficiency |
| • Pregnancy                 | • Surgery   |
| • Tobacco use               | • Trauma  |
| • Oral contraceptive use    | • Advanced age  |
| • Diabetes Mellitus         | • Hospitalization   |
| • Malignancy                |   |
| • Inflammation              |   |
| • Antiphospholipid syndrome |   |

## References

- Intagliata NM, Caldwell SH, Tripodi A. Diagnosis, development, and treatment of portal vein thrombosis in patients with and without cirrhosis. *Gastroenterology*. 2019;156(6). doi:10.1053/j.gastro.2019.01.265
- Kheyrandish S, Rastgar A, Arab-Zozani M, Sarab GA. Portal Vein Thrombosis Might Develop by COVID-19 Infection or Vaccination: A Systematic Review of Case-Report Studies. *Frontiers in Medicine*. 2021;8. doi:10.3389/fmed.2021.794599
- Senst B, Tadi P, Basit H, et al. Hypercoagulability. [Updated 2022 Jul 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK538251/>