COVID-19 in A Liver Cirrhosis Patient

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ABSTRACT

The COVID-19 pandemic is a novel disease and posed a great challenge in the current healthcare system. The exact impact of the COVID-19 virus on the liver is still unknown. However, in a patient with chronic liver disease, most COVID-19 infections will affect the survival rate and initiate liver decompensation. This study reported a 50-years-old man who complained about bloody vomit and black tarry stool with COVID-19 infection. Physical examination findings included hematemesis, pale conjunctiva, ascites, collateral vein; and from the rectal toucher, there was melena. There was no fever, cough, or shortness of breath. The laboratory and radiological examinations showed that there were normochromic normocytic anemia, hypoalbuminemia, slightly increased ALT/AST, HBsAg (+), and abdominal ultrasound findings were liver cirrhosis with ascites. The patient was screened for the COVID-19 antigen swab test (+), further confirmed by the COVID-19 PCR swab test (+). The treatment given for hematemesis and melena was Gastric Cooling; the patient was fasted, then received somatostatin PPI drip, Vitamin K injection, PRC transfusion, lactulose, ceftriaxone, ascites fluid puncture, and albumin transfusion. After the bleeding resolved, the patient received spironolactone and propranolol. The treatments for COVID-19 were Azithromycin, Favivirapir, Vitamin D, Vitamin K, and Zinc. The patient was hospitalized for 11 days and then improved.

Conclusion: *This study reported a case of a 50 years-old man with ruptured esophageal varices due to liver cirrhosis with concomitant COVID-19 infection and improved with comprehensive therapy despite the limited facilities at the hospital.*

Keywords: *COVID-19, liver cirrhosis, ruptured esophageal varices*

ABSTRAK

Pandemi COVID-19 merupakan penyakit baru dan menjadi tantangan serius dalam dunia kesehatan saat ini. Dampak virus COVID-19 pada organ hati sampai saat ini belum diketahui secara pasti, akan tetapi pada pasien dengan penyakit hati kronis, sebagian besar infeksi COVID-19 dapat membahayakan kelangsungan hidup dan memicu dekompensasi hati. Dilaporkan sebuah kasus pasien laki-laki, 50 tahun dengan keluhan muntah darah dan BAB hitam disertai dengan COVID-19. Pemeriksaan fisik ditemukan hematemesis, conjungtiva pucat, asites, vena kolateral, dan dari pemeriksaan Rectal toucher (+) melena, tidak ada gejala demam, batuk maupun sesak nafas. Pemeriksaan penunjang ditemukan anemia normokromik normositair, hypoalbuminemia, peningkatan ringan ALT/AST, HbSAg (+) serta dilakukan pemeriksaan skrining swab antigen COVID-19 (+) kemudian

dikonfirmasi swab PCR COVID-19 (+), USG abdomen sirosis hepatis dengan asites. Terapi yang diberikan untuk hematemesis dan melena adalah Gastric Cooling, pasien dipuasakan, drip somatostatin,PPI, injeksi Vit K, transfusi PRC, Lactulosa, ceftriaxone, pungsi cairan asites dan transfusi albumin, setelah perdarahan teratasi diberikan spironolactone dan propranolol. Terapi COVID-19 diberikan Azitromisin, Favipiravir, Vit D, Vit K dan zink. Pasien menjalani perawatan selama 11 hari dan mengalami perbaikan.

Kesimpulan dilaporkan sebuah kasus laki-laki, 50 tahun dengan rupture varises esofagus karena sirosis hepatis disertai infeksi COVID-19 dan membaik dengan terapi yang komprehensif meskipun dalam keterbatasan fasilitas pemeriksaan di rumah sakit.

Kata kunci: *COVID-19, sirosis hepatis, ruptur varises esofagus*

INTRODUCTION

COVID-19 is a novel disease that caused a high morbidity and mortality rate and is also identified in patients with comorbidity, including liver cirrhosis. The virus that caused COVID-19 disease is SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2).[1] Patients infected with COVID-19 mostly come with complaints of fever, and with respiratory symptoms including pneumonia and acute respiratory distress syndrome (ARDS) which increase deaths from COVID-19.[2]

Over time, the symptoms and manifestations of COVID-19 infection are increasingly varied and develop into extrapulmonary manifestations, one of which is gastrointestinal and hepatobiliary manifestations.[2] Several studies have linked the expression of the angiotensin-converting enzyme 2 (ACE2) receptor found on hepatocytes and cholangiocytes with the ability to directly infect the SARS-CoV-2 virus.[3]

Patients with liver cirrhosis are highly vulnerable to SARS-CoV-2 infection due to decreased immune system.[1] Preliminary studies reported that 2-11% of patients infected with COVID-19 have pre-existing liver disease.[4] Nevertheless, the actual prevalence rate from liver cirrhosis patient that infected with Covid-19 is not yet known.[5]

This case report aimed to report a rare case, namely a patient with liver cirrhosis who was infected with COVID-19 and to examine the involvement of the virus in the occurrence of liver decompensation.

CASE ILLUSTRATION

A 50-years-old man came to the emergency room with bloody vomit 10 times and a black tarry stool one time. The patient also complained of abdominal pain. In 2019, he had been diagnosed with liver disease and undergone a procedure to remove fluid from his abdomen, but he never received routine treatment. It was the first time the patient had experienced bloody vomit and black tarry stool. The patient had no previous complaints of fever, cough, shortness of breath. The history of consuming alcohol and traveling was denied. From the general condition and vital signs, it was found that the consciousness was compos mentis, the patient was looked moderately ill, Glasgow Coma Scale 4-5-6, blood pressure 152/80 mmHg, heart rate 60 beats/minute, respiratory rate 24 times/minute, temperature 37.1^{0}C, SpO_2 97% without oxygen supplementation. Physical examination findings included anemic conjunctiva, collateral vein at the abdomen, ascites, and positive rectal toucher (RT) test for melena. Laboratory examination found normochromic normocytic anemia (Hb 6 gr/dL, MCV/MCH 83 pg/26.3 pg), thrombocytopenia (89,000/uL), leucopenia (3,700/ul), positive HBsAg, hypoalbuminemia (2.3 g/dL), AST/ALT (56/44 U/L). The patient was screened for COVID-19 infection with COVID-19 antigen swab test (+), further confirmed with PCR swab test showed a positive result (+3) (FAM 32.387; HEX 34.2017; Cys 25.012). The results of laboratory tests after undergoing treatment and therapy showed improvement, namely Hb 8.6 g/dL, MCV/MCH 83.1 pg/27.4pg, platelets 108.000/uL, after undergoing albumin transfusion to 2.5 g/dL, PCR evaluation was carried out on day 10 treatment showed negative results (FAM -; HEX -; 31105)

Ascites fluid analysis showed a conclusion that contained transudate ascites fluid. USG examination showed a liver cirrhosis appearance with ascites. The plain chest radiograph was normal. From the history taking and physical examination, and additional testing, the patient was diagnosed with liver cirrhosis child-pugh classification B with ruptured esophageal varices and confirmed COVID-19 infection. The patient was treated in the COVID-19 isolation ward and was fasted. The patient was given oxygen supplementation with

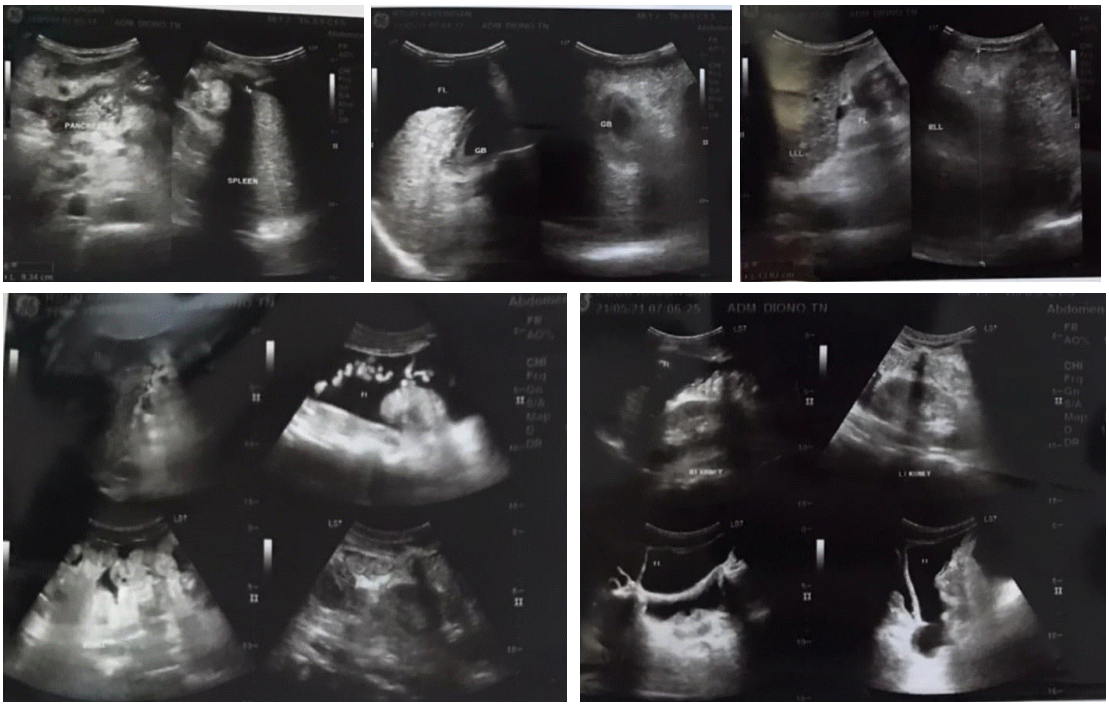

Figure 1. Abdominal USG examination results showed liver cirrhosis appearance with ascites

nasal canule 2 lpm, NGT installation, gastric cooling per 8 hours until the bleeding stop; if it was clean for three times, it could be continued with a liquid diet six times 200cc. A urinary catheter was placed to monitor the patient's fluid balance. In addition, the patient was treated with Pantoprazole injection 2 x 40 mg, somatostatin drip for one day (because this drug was not available), Ceftriaxone injection 1 x 1 g for prophylaxis of hepatic encephalopathy, Vitamin K injection 3 x 1 ampoule, Tranexamic Acid injection 3 x 1 ampoule, Sucralfate syrup 3 x C2, and Lactulose 3 x C1. A paracentesis was carried out as much as 4,5 L. The treatments given for COVID-19 in this patient were Azithromycin 1 x 500 mg, Favivirapir loading dose 1600 mg/12 hours/oral for the first day, then continued with 2 x 600 mg until the fifth day, Vitamin D 1 x 400 mg, Zinc 1 x 1 tablet, Vitamin C 3 x 500 mg.

Seven days after received antiviral drugs, a PCR swab test for evaluation was performed. After undergoing treatment in the isolation ward for ten days, the patient was transferred and observed in the regular ward. The patient was also given medicines to prevent portal hypertension, including spironolactone 1 x 200 mg and beta-blocker propranolol 3 x 10 mg. During the evaluation, there was no bloody vomit, black tarry stool, and ascites; then, the patient was allowed to be discharged from the hospital and continued self-isolation at home.

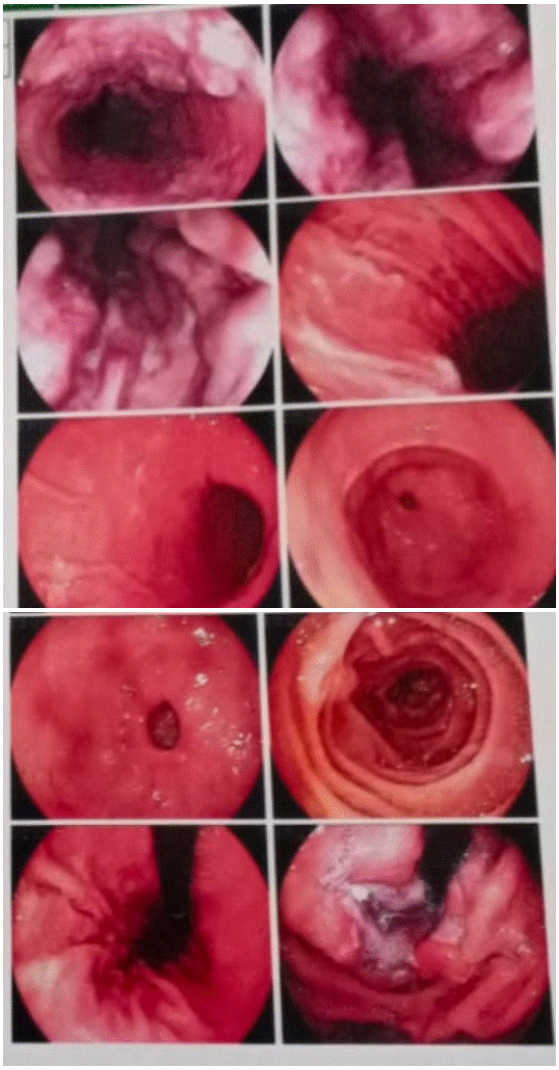

Figure 2. Endoscopic results showed esophageal varices grade III-IV, gastric varices, gastric erosion, and portal hypertension gastropathy

The occurrence of bloody vomit, black tarry stool, ascites, and collateral vein might be aggravated due to COVID-19 infection or portal hypertension because of liver failure itself; to date, it was still unknown.

Jin et al reported that gastrointestinal manifestation was found in 11.4% of patients with COVID-19 infection, and 28% of these patients did not have any feature of respiratory system, this study is in accordance with the current case report where the patient did not show any features or symptoms regarding the respiratory system.[10] Cheung et al revealed that the cumulative prevalence of gastrointestinal manifestation was around 17.6%, whereas Pan et al reported a higher percentage of 20.5%.[11] Clinical symptoms of COVID-19 associated with the gastrointestinal system include anorexia, diarrhea, nausea and vomiting, abdominal pain, and gastrointestinal bleeding. Pan et al revealed that anorexia was the most reported symptom (76.8%), followed by diarrhea (34%), vomiting (3.9%), and abdominal pain (1.9%).[12] Upper and lower gastrointestinal were rare gastrointestinal symptoms but could potentially be severe. Gastrointestinal bleeding prevalence in COVID-19 patients was unclear. Gastrointestinal bleeding could occur without features of the respiratory system.[9]

The impact of SARS-CoV-2 infection on patients with a history of chronic liver diseases, such as hepatitis B or C virus infection, is still not clearly understood. Patients with hepatic cancer or liver cirrhosis are more vulnerable to SARS-CoV-2 infection due to immunocompromised conditions.[9] Exposure of SARS-CoV-2 to the liver was based on ACE2 receptors distribution in hepatocytes and cholangiocytes.[7] Study conducted by Chai et al reported that ACE2 receptor more expressed in cholangiocytes (59.7%) than in hepatocytes (2.6%).[13] The presence of ACE2 receptors in cholangiocytes supports evidence regarding retrograde liver damage due to viral entry into the biliary tree cells.[14,15] SARS-CoV-2 infection probably binds directly to cholangiocytes and induces cytopathic effects. Disorder in cholangiocyte's function causes damage in hepatobiliary cells. Covid-19 infection can aggravate comorbid conditions, such as chronic liver disease, which can progress to liver decompensation and acute liver failure and increase patient mortality rate.[16,17]

In this study, the patient was given treatments for COVID-19 infection as well as ongoing acute bleeding. The COVID-19 treatments provided included vitamin C, vitamin D, Zinc, Azithromycin for five days, and antiviral, specifically Favivirapir, for five days. For the treatments of gastrointestinal bleeding, namely hematemesis-melena, the patient received somatostatin only for one day due to limited drug supply; and high doses of PPI and PRC transfusion were also given. Hematemesis was resolved after five days of treatment. After the bleeding stopped, spironolactone and propranolol treatment were started. The patient was evaluated with a PCR swab test on the seventh day of treatment and gained negative PCR results after received treatments for COVID-19. The patient was then transferred to the regular ward for observation and evaluated for three days, then the patient was discharged and was advised to be referred for endoscopic examination.

As a conclusion, this study reported a case, a 50 years-old man presenting with bloody vomit and black tarry stool with confirmed mild COVID-19 infection and hematemesis-melena due to ruptured esophageal varices because of liver cirrhosis child-pugh classification B post necrotic hepatitis B.

The COVID-19 disease can exacerbate the comorbid condition, such as chronic liver disease, which can progress to liver decompensation and acute liver failure along with high mortality. In this case, the possibility of liver decompensation in the form of hematemesis-melena and ascites may be aggravated by the presence of the COVID-19 virus infection; therefore, comprehensive management and further studies regarding involvement of the COVID-19 infection in liver disease are needed.

REFERENCES

1. Beraldo RF, Marcondes MB, Santos MN, Grillo TG, Pirres GB, Oliveira CV. COVID-19 in a patient with liver cirrhosis. Am J Case Rep 2021;22:e929948.
2. Helmy YA, Fawzy M, Elaswad A, Sobieh A, Kenney SP, Shehata AA. The COVID-19 pandemic: a comprehensive review of taxonomy, genetic, epidemiology, diagnosis, treatment, and control. J Clind Med 2020;9;1225
3. Chai X, Hu L, Zhang Y, Han W, Lu Z, Ke A, et al. Spesific ACE2 expression in cholangiocyte may cause liver damage after 2019-nCov infection. BioRxiv 2020.
4. Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. Lancet Gastroenterol Hepatol 2020;5:428-30.
5. Rosenblatt R, Verna EC. COVID 19: management of decompensated cirrhosis and liver transplant recipients. Clin Liver Dis 2020;15:200-3.
6. Guan WJ, Ni ZY, Hu Y, Liang W, Ou C, He J, et al. China Medical Treatment Expert Group for COVID-19. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med 2020;382:1708-20.
7. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with

COVID-19 in Wuhan, China: A retrospective cohort study. Lancet 2020;395:1054-62.
8. Kunutsor SK, Laukkanen JA. Markers of liver injury and clinical outcomes in COVID-19 patients: a systematic review and meta-analysis. J Infect 2020;28:159-9.
9. Firdaus FA, Fatoni AZ, Fitrianingsih AA, Seswanto B, Nissa C, Yudhantara DS, et al. The Covidpedia Opini-Refleksi-Review-Prakti-Baik. Malang: Media Nusa Creative,2021.
10. Jin X, Lian J, Hu J, Gao J, Zheng L, Zhang Y, et al. Epidemiological, clinical and virological characteristics of 74 cases of coronavirus- infected disease 2019 (COVID-19) with gastrointestinal symptoms. Gut 2020;69:1002-9.
11. Heung KS, Hung IF, Chan PP, Lung KC, Tso E, Liu R, et al. Gastrointestinal manifestations of SARS-CoV-2 infection and virus load in fecal samples from the Hong Kong cohort and systematic review and meta-analysis. Gastroenterology 2020;158:S0016-5085.
12. Pan L, Mu MI, Yang P, Sun Y, Wang R, Yan J, et al. Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: A descriptive, cross-sectional, multicenter study. Am J Gastroenterol 2020;115:766-73.
13. Chai X, Hu L, Zhang Y, Han W, Lu Z, Ke A, et al. Specific ACE2 expression in cholangiocytes may cause liver damage after 2019-nCoV infection. BioRxiv 2020
14. Alanopoulos M, Gkeros F, Doukatas A, Karianakis G, Pontas C, Tsoukalas N, et al. COVID- 19 pandemic: pathophysiology and manifestations from the gastrointestinal tract. World J Gastroenterol 2020;26:4579-88.
15. Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. Lancet Gastroenterol Hepatol 2020;5:428-30.
16. Alqahtani SA, Schattenberg JM. Liver injury in COVID-19: the current evidence. United Eur Gastroenterol J 2020;8:509-19.
17. Brito CA, Barros FM, Lopes EP. Mechanisms and consequences of COVID-19 associated liver injury: What can we affirm? World J Hepatol 2020;12:1-9.