Case Report

Fifty Shades of COVID-19 – Immune Thrombocytopenic Purpura in HIV-TB-COVID Co-Infection

Rohit Kumar[1], Saurav Sekhar Paul[1], Ved Prakash Meena[1], Pavan Tiwari[2], Sushma Bhatnagar[3], Anant Mohan[2]

[1]Departments of Medicine, [2]Pulmonary Medicine and Sleep Disorders and [3]Oncoanesthesia and Palliative Medicine, AIIMS, New Delhi, India

Abstract

SARS CoV-2 infection is associated with various hematological manifestations, including leucopenia, thrombocytopenia, thrombocytopenia. Severe thrombocytopenia is, however, rare and is associated with severe COVID-19. ITP remains an important differential among other causes. We report a case of HIV-TB-COVID-19 co-infection, without any feature of severe COVID, presenting with severe thrombocytopenia which resolved on its own; cause was attributed to immune-mediated effect of SARS CoV-2 virus.

Keywords: COVID-19, HIV-TB coinfection, immune mediated, ITP, SARS CoV-2

Introduction

SARS CoV-2 virus is the causative agent of severe acute respiratory illness (SARI), termed as COVID-19.[1] The ongoing pandemic started as an outbreak of pneumonia due to an unknown virus in late December 2019. However, despite being in the seventh month into the pandemic when the virus is no longer novel, many aspects of the virus's pathological consequences remain mysterious, and knowledge on these aspects continues to evolve. Besides respiratory tract infections, it also has a myriad of extrapulmonary manifestations.[2] We report a case of PLHIV, diagnosed with TB and SARS CoV-2 coinfection, presenting with pancytopenia with severe thrombocytopenia with bleeding manifestations, recovering on its own; presentation being most likely related to acute secondary immune thrombocytopenic purpura (ITP) due to COVID-19.

Case Report

A 15-year-old female, known case of retroviral disease (RVD) (for three months; antiretroviral therapy [ART] naive) had complaints of low-grade fever along with anorexia and loss of weight for two months for which she was evaluated and found to have HIV-1 infection. Baseline pre-ART evaluation was done; however, the patient was lost to follow up during the national lockdown imposed due to the management of the pandemic, and ART could not be started.

She now presented with complaints of persisting low-grade fever, diffuse, poorly localized, abdominal pain with occasional episodes of non-projectile vomiting for two weeks; she also had anorexia and significant loss of weight. On first healthcare contact, she

Address for correspondence: Dr. Ved Prakash Meena, Department of Medicine, Medicine Office, 3rd Floor, Teaching Block, AIIMS, New Delhi - 110029, India.
E-mail: vpmahar05@gmail.com

Received: 19-09-2020 **Revised:** 02-12-2020
Accepted: 12-01-2021 **Published:** 30-07-2021

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_1939_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Kumar R, Paul SS, Meena VP, Tiwari P, Bhatnagar S, Mohan A. Fifty Shades of COVID-19 – Immune Thrombocytopenic Purpura in HIV-TB-COVID Co-Infection. J Family Med Prim Care 2021;10:2703-5.

was screened for SARS CoV-2 infection and was referred to our center (dedicated COVID hospital) after testing positive. She was categorized to have mild COVID-19 with HIV-1 co-infection. On admission, she was lean (BMI-14.8), conscious and oriented, her vitals were: PR-98.min, BP-90/64 mmHg, RR-18/min, SpO2-98% on room air.

Further, pallor and cutaneous petechial lesions were noted on general examination, and diffuse superficial tenderness was noted on per-abdominal examination; other systemic examination within normal limits. Initial blood investigations revealed pancytopenia, including severe thrombocytopenia, deranged liver, and kidney function tests, raised inflammatory markers (CRP). The chest radiograph was normal; abdominal ultrasonography revealed multiple necrotic abdominal lymph-nodes, findings suggestive of abdominal tuberculosis (TB).

She was started on weight base anti-tubercular therapy along with symptomatic management. Further, she had 1 episode of epistaxis and menorrhagia, which were managed conservatively; however, requiring multiple platelet transfusions (2 random donor platelets [RDPs] on day two and day 4). Evaluation for the cause of severe thrombocytopenia was over all-inclusive- normocytic normochromic type anemia in the peripheral picture, normal nutritional markers, and negative rapid diagnostic tests for dengue and malaria. Further, bone marrow examination was planned to rule out hematopoietic disorders followed by intravenous immunoglobulin (IVIg) and ART initiation, considering HIV related ITP as the most likely alternative etiology. However, her platelet counts started showing a spontaneous recovery, and therefore, bone marrow examination, IVIg, and ART initiation were deferred. The patient showed remarkable improvement as she improved symptomatically and her laboratory values normalized (anemia and leucopenia, however, persisted) She was discharged after ART initiation following two weeks of ATT in an asymptomatic condition.

Discussion

SARS CoV-2 virus infection is associated with respiratory tract infection (RTI) of variable severity, lower RTI being more frequently associated with severe illness. Besides lung involvement, COVID-19 is now known to have several extrapulmonary manifestations as well.[2] Affected cases may or may not have an asymptomatic illness and pulmonary involvement at the time of presentation. Moreover, presenting symptoms may be due to co-existing conditions and may not be related to COVID-19 alone.

Further, whenever symptomatic, certain conditions such as co-existing RTIs e.g. pulmonary TB may have similar symptoms and warrants special concern in COVID-19.[3] Our patient had co-existing untreated RVD (diagnosed three months back). She presented with prolonged fever, abdominal symptoms, and constitutional features. The symptoms seemed more likely to be due to abdominal TB and untreated RVD as the chest radiograph was normal, and ultrasonography, done later, revealed the findings suggestive of TB. Hematological abnormalities such as leucopenia, thrombocytopenia are common manifestations of COVID-19.[2,4] Our patient had pancytopenia on presentation, which was not present earlier (compared to previous baseline investigation, Table 1); thrombocytopenia was a new finding.

On evaluation, we ruled out nutritional as well as infective (more common) causes of cytopenia or thrombocytopenia i.e. dengue and malaria. Few studies have reported the association of the severity of thrombocytopenia with the severity of COVID-19.[5-8] Also, limited published evidence suggests a possible association of coagulopathy, unusually more frequently noticed in COVID-19. In such scenarios, thrombocytopenia has been attributed to cytokine storm as a consequence of severe COVID-19, direct cytopathic effects on hematopoiesis, or severe lung injury leading to endothelial activation and increased platelet consumption.[8] Our patient had severe thrombocytopenia at presentation, but no clinical features of pneumonia or severe illness or cytokine storm. Based on the evaluation, ITP seemed more likely, secondary to RVD, TB, or SARS CoV-2 infection. Based on symptomatology and previous assessment, neither RVD nor TB was a new illness. Moreover, she showed a spontaneous recovery in platelet counts i.e. without administering treatment specific to ITP or RVD.[9] She was started on ATT; however, recovery in platelet count as early as that seen in our patient is rarely seen in TB associated ITP.[10] Therefore, in our severe patient, thrombocytopenia was probably related to immune-mediated platelet destruction due to SARS CoV-2 infection. As per limited published literature, COVID-19 related ITP has been found to be more common in elderly and moderate-to-severe patients, some of the patients developing in post-recovery period. Noteworthy is the uncommon occurrence of severe life-threatening bleed as well as good initial response to short course of glucocorticoids and intravenous immunoglobulin. In the wake of ongoing pandemic and detection of new COVID-19 cases daily, it is essential for clinicians at primary care level to understand the pathogenesis of COVID-19 related thrombocytopenia and therefore to consider it as one of the differentials in cases presenting with thrombocytopenia and absence of typical clinical features of COVID-19. Also, an algorithmic approach is essential to diagnose new-onset ITP.

Conclusion

SARS CoV-2 infection has been reported to have various extrapulmonary manifestations that may be present with or without pulmonary involvement. Contrary to conventional belief, the severity of cytopenia (thrombocytopenia) may not correlate with the severity of COVID-19, only. ITP remains an important mechanism and demands equal consideration besides other mechanisms of thrombocytopenia in COVID-19, especially if severe, due to distinct treatment options.

Declaration of patient consent

Written informed consent was taken from the patient.

Table 1: Laboratory parameters

Date →	18/3 (old)	27/6 (Day of admission)	28/6	29/6	1/7	4/7	9/7
Hemoglobin (gm/dl)	9.7	9.3	8.2	8.4	7.3	7.6	7.9
TLC (cells/ul)	3450	4200	3800	2170	2340	1480	2100
DLC (%)	N53L33	N39L50	N76L16	N43L43		N44L30	
Platelet (/ul)	194000	5000	11000	9000	22000	68000	243000
Urea (mg/dl)	13	81.9	94	52		17.1	
Creatinine (mg/dl)	0.5	1.31	1.01	0.61		0.37	
Bilirubin (mg/dl)	0.2	1.17	0.55	0.34	0.6	0.73	
AST/ALT (IU/L)	21/10		50.7/16.2	51/16.4	35/13	36/14	
ALP (I.U)	262		131	99	79	93	
Total protein (gm/dl)	8.5		6.21	6.28	6.24	7.5	
Albumin (gm/dl)	4		2.2	2.2	2.3	2.9	
CRP (mg/dl)			10.8			1.42	
LDH (U/L)			389			314	
Ferritin (ng/ml)			183.3			172	
MCV (fL)	91.5	86	88.8	88.3	84.4	86.7	86.8
ActiveB12(pg/ml)			266				
Folate (ng/ml)			10.5				
D-Dimer (ng/ml)			2608			363	
Fibrinogen (mg/dl)			301			240	
CD4 count	247						
HbsAg & HCV	negative		negative				
VDRL	Non reactive						

TLC – total leukocyte count, DLC – differential leukocyte count, AST – aspartate transaminase, ALT – alanine transaminase, LDH – lactate dehydrogenase, ALP – alkaline phosphatase, CRP – C reactive protein, VDRL - Venereal disease research laboratory

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Dhama K, Khan S, Tiwari R, Sircar S, Bhat S, Malik YS, *et al.* Coronavirus disease 2019-COVID-19. Clin Microbiol Rev 2020;33:e00028-20.
2. Gupta A, Madhavan MV, Sehgal K, Nair N, Mahajan S, Sehrawat TS, *et al.* Extrapulmonary manifestations of COVID-19. Nat Med 2020;26:1017-32.
3. Kumar R, Bhattacharya B, Meena V, Soneja M, Wig N. COVID-19 and TB co-infection – 'Finishing touch' in perfect recipe to 'severity' or 'death'. J Infect 2020;81:e39-40.
4. Terpos E, Ntanasis-Stathopoulos I, Elalamy I, Kastritis E, Sergentanis TN, Politou M, *et al.* Hematological findings and complications of COVID-19. Am J Hematol 2020;95:834-47.
5. Zulfiqar A-A, Lorenzo-Villalba N, Hassler P, Andrès E. Immune thrombocytopenic purpura in a patient with Covid-19. N Engl J Med 2020;382:e43.
6. Bhattacharjee S, Banerjee M. Immune thrombocytopenia secondary to COVID-19: A systematic review. SN Compr Clin Med 2020;1-11. doi: 10.1007/s42399-020-00521-8 [Epub ahead of print]
7. Ambike D, Bijarniya K. Asymptomatic pediatric Covid-19 presenting with thrombocytopenia – A rare finding. Indian J Pediatr 2021;88:103-4.
8. Xu P, Zhou Q, Xu J. Mechanism of thrombocytopenia in COVID-19 patients. Ann Hematol 2020;99:1205-8.
9. Ambler KLS, Vickars LM, Leger CS, Foltz LM, Montaner JSG, Harris M, *et al.* Clinical features, treatment, and outcome of HIV-associated immune thrombocytopenia in the HAART era. Adv Hematol 2012;2012:910954.
10. Weber SF, Bélard S, Rai S, Reddy R, Belurkar S, Saravu K. Immune thrombocytopenia secondary to tuberculosis: A case and review of literature. Int J Tuberc Lung Dis 2017;21:466-70.