



Case report

Isolated severe thrombocytopenia in a patient with COVID-19: A case report



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ABSTRACT

COVID-19 is known to cause serious respiratory symptoms and involvement of other body systems such as hematopoietic, neurological and the immune system. In this report, we described a case of a COVID-19 patient who presented with no pulmonary involvement but severe thrombocytopenia. She suffered from headache and malaise with no respiratory symptoms, fever or chills. Chest radiological imaging was unremarkable but, the laboratory results showed significant thrombocytopenia associated with relatively decreased lymphocytes. Based on her high-risk work environment, a reverse transcription polymerase chain reaction (RT-PCR) test was performed and SARS-CoV-2 RNA was detected in the nasopharyngeal swab. Complete blood count (CBC) of patient was re-checked during admission and platelet count showed rising trend up to normal levels. A narrow diagnostic approach where only febrile patients with pulmonary symptoms are evaluated for a COVID-19 diagnosis will result in many missed diagnoses; so it is important that physicians are familiar with atypical and rare presentations of COVID-19, such as isolated thrombocytopenia.

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Introduction

An emerging infection primarily affecting the respiratory system started late December 2019, in Wuhan, China. The disease as found to be caused by a novel coronavirus subsequently called SARS-CoV-2, went on to create a world-wide pandemic and became a great threat to healthcare systems all over the world [1,2].

COVID-19 is known to cause serious respiratory symptoms and complications but, available data suggest that the symptoms of the disease can also result from involvement of other body systems such as hematopoietic, neurological and the immune system [3,4].

The common presentation of the disease is a febrile illness associated with respiratory symptoms such as cough and dyspnea; but other atypical manifestations of the infection have been observed [5]. A number of patients have been diagnosed with

COVID-19 who presented with afebrile illness, thrombocytopenia and bleeding tendency, diarrhea, confusion and renal dysfunction with no evidence of pulmonary involvement. A narrow approach in which only patients with fever and pulmonary symptoms are considered as potentially infected, will result in many missed and delayed diagnoses; which is why all physicians should consider these atypical presentations [6]. More importantly, isolated severe thrombocytopenia with no respiratory illness is rarely seen in COVID-19 patients. Here we described a case of COVID-19, presenting with isolated severe thrombocytopenia.

Case report

A 57-year-old woman, a pharmacist with considerable exposure to COVID-19 patients, presented to a clinic in Tehran with headache and malaise with the onset of 5 days prior to admission. She did not report any respiratory symptoms, fever, chills or gastrointestinal symptoms and was previously healthy, not taking any medications. Laboratory work-up was ordered in an outpatient visit by a general practitioner. The results showed significant

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Table 1
Laboratory findings of patient on each day of hospital admission.

	WBC (*1000/ mm ³)	Hemoglobin (g/dl)	Plt (*1000/ mm ³)	Lymphocyte (%) & Absolute Count (per/mm ³)	Neutrophil (%) & Absolute Count (per/mm ³)	C-Reactive protein
Day 1	7.1	13.6	43	(14 %) 1000	(75 %) 5400	Negative
Day 1	7	14	39	(15.7 %) 1100	(70 %) 4900	
Day 2	4.6	14.3	16	(28.2 %) 1300	(60 %) 2760	
Day 2	6.3	15	19	(23.8 %) 1500	(70 %) 4410	
Day 3	5	14.8	26	(22 %) 1100	(68 %) 3400	Negative
Day 3	4.6	14.5	38	(28 %) 1300	(60 %) 2760	
Day 4	4.2	13.9	40	(28.5 %) 1200	(64 %) 2688	
Day 5	4.7	14.6	64	(32 %) 1500	(51 %) 2397	Negative
Day 7	5.8	14.1	144	(35 %) 2030	(57 %) 3306	

thrombocytopenia with a platelet count of 48,000 (per/mm³) associated with a normal, neutrophil dominant (75 %) white blood cell count of 7100 (per/mm³) and relatively decreased lymphocytes (14 %). Based on laboratory findings she was admitted to a referral hospital in Tehran for evaluation of severe thrombocytopenia. Upon admission she had a core body temperature of 36.9 °C, a 81 bpm pulse rate (PR), a 14/min respiratory rate (RR) and a peripheral capillary oxygen saturation (SPO2) of 95 % while breathing room air. No abnormalities were detected during the physical examination and auscultation and chest radiological studies were unremarkable.

In the following laboratory studies, patient's platelet count continued to decline to 16,000 (per/mm³), as shown in Table 1, and a peripheral blood smear (PBS) taken on the 2nd day of admission showed considerable left shift with myeloid predominance and a platelet count of less than 10,000 (per/mm³).

Abdominal pelvic sonography was normal without organomegaly and other viral markers including HCV-Ab, HBs-Ag, HBe-IgM and HIV-Ab and serum protein electrophoresis were unremarkable. Given the hematopoietic abnormalities, a bone marrow aspiration and biopsy was under consideration. Also, considering her high-risk work environment, COVID-19 diagnostic testing was performed and a nasopharyngeal swab was positive for COVID-19 in a RT-PCR test. The complete blood count (CBC) of the patient was re-checked twice daily and after 1 day of admission the platelet count started to increase slightly (Table 1). The PBS of the 4th day of admission showed no platelet aggregation or giant platelets. Her platelet levels returned to normal by the 5th day of admission at which point she was discharged and with the remission of platelet levels, a bone marrow aspiration and biopsy was no longer necessary. One-week follow-up revealed a platelet count of 270,000 (per/mm³).

Discussion

In this manuscript we reported a case of COVID-19 disease who presented with no pulmonary involvement and only severe but transient, thrombocytopenia.

The emerging disease caused by a novel coronavirus with a high transmission rate, predominantly pulmonary symptoms and a reported mortality rate ranging between 2.0–4.4% has become a global pandemic [1,7,8], and the infection can cause systemic involvement including respiratory, neurological and hematopoietic complications [3,4].

Just like the atypical presentations in infections with SARS-CoV and MERS-CoV which are earlier coronavirus strains, in COVID-19 apart from the more common presentation of the disease which includes fever, rhinorrhea, anosmia, chest pain and respiratory symptoms such as dry cough and dyspnea, other atypical features of the disease should be acknowledged; such as confusion, diarrhea, thrombocytopenia and bleeding tendency, abnormal liver enzyme levels or impaired renal function [6].

Some recent studies indicate that COVID-19 significantly impacts the hematopoietic system which most commonly is represented by significant lymphopenia [9]. We observed decreasing levels of platelets which could be due to an immunologic reaction that can be seen in viral infections; as it has been observed in dengue, influenza, and HIV infections [10] and has been suggested to occur as an auto-immune response in COVID-19. It has also been proposed that the virus can directly affect the bone marrow resulting in abnormal haematopoiesis or cause platelet aggregation in the lungs and increase platelet consumption [11–13]. In another study which observed the hematologic impacts of COVID-19, 20 % of patients showed abnormalities that included mild thrombocytopenia as severe as it has been reported in other viral infections such as dengue fever [14].

Severe thrombocytopenia has been reported in one case of COVID-19 that was associated with pulmonary symptoms as well as neurological complications [15]. To the best of our knowledge, this is the first report of a COVID-19 infection with a severe isolated thrombocytopenia.

Variability in presentation of COVID-19 can lead to underdiagnoses of this condition. We present a case of PCR-positive COVID-19 patient with isolated severe thrombocytopenia to inform practitioners of this rare presentation. This paper highlights the atypical behavior of this virus over the course of the disease which could vary from cases with no symptoms to cases with unusual laboratory findings. Therefore, during the current epidemic of COVID-19, it is substantial to rule out the COVID-19 infection before any other diagnoses especially in a patient with isolated thrombocytopenia.

Declarations of interest

None.

Ethical considerations

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Declarations

Availability of data and materials: Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

CRedit authorship contribution statement

Sara Sadr: Conceptualization, Resources, Investigation, Writing - original draft. **SayedAhmad SeyedAlinaghi:** Methodology, Writing - review & editing. **Fereshteh Ghiasvand:**

Conceptualization, Resources, Writing - review & editing, Supervision. **Malihe Hassan Nezhad**: Methodology, Investigation, Writing - review & editing. **Nina Javadian**: Resources, Investigation, Writing - review & editing. **Roghieh Hossienzade**: Resources, Investigation, Writing - review & editing. **Fatemeh Jafari**: Conceptualization, Resources, Project administration.

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