

Granulomatosis with Polyangiitis and Dengue Fever: A Rare Association

Sir,

A 45-year-old female presented to us with the complaint of bleeding gums, rashes, and fever from the past 20 days. She also had dyspnea on exertion and mild nonproductive cough from the past 1 week. On further inquiry, she had red discoloration of urine and stool. There was no history of diabetes, hypertension, or tuberculosis. On examination, the patient had hemorrhagic spots over the buccal mucosa and petechial rashes all over the body. Other examination findings were within the normal limits. With the above complaint, a differential diagnosis of novel coronavirus disease 2019 along with viral hemorrhagic fever, idiopathic thrombocytopenic purpura, aplastic anemia, and hematological malignancy was kept in consideration. The patient was kept on empirical broad-spectrum antibiotics along with other supportive treatments. On further investigation her platelet count was 38,000/ml which when repeated further reduced to <10,000/ml. Serum urea was 34 mg/dl and serum creatinine was 0.60 mg/dl. immunoglobulin M, immunoglobulin G, and NS1 Ag for dengue were positive. Urine examination revealed the presence of blood with red blood cell count of 30–35/HPF. Stool examination for occult blood was also positive. Reverse transcription-polymerase chain reaction of her nasopharyngeal swab for COVID-19 was negative. As the patient had complaint of nonproductive cough and exertional dyspnea, a Chest X-ray was done which showed the presence of nonhomogeneous opacity in the bilateral middle and lower zones [Figure 1]. In view of chest X-ray findings high-resolution computed tomography of the thorax was advised which showed the presence of bilateral upper, middle and lower lobe infiltrates with ground-glass opacities [Figure 2]. Sputum for gram stain, acid-fast bacilli, and aerobic culture and sensitivity were negative. In view of computed tomography findings, a possibility of diffuse alveolar hemorrhage was suspected and based on that bronchoscopy was performed which revealed increase in hemorrhagic fluid on sequential Bronchoalveolar lavage when collected from the right middle lobe [Figure 3]. The platelet count of the patient just before bronchoscopy was 75,000/ml. The ANCA profile was positive with C-ANCA titer of 1:640.

Based on the above findings, the diagnosis of Granulomatosis with Polyangiitis (GPA) and Dengue fever was made. The patient showed response within 2 weeks of starting steroids and immunosuppressive therapy.

GPA is an ANCA-associated necrotizing vasculitis predominantly affecting small-sized arteries.^[1] The upper and lower respiratory tract along with kidneys are most commonly and severely affected organs. Its prevalence

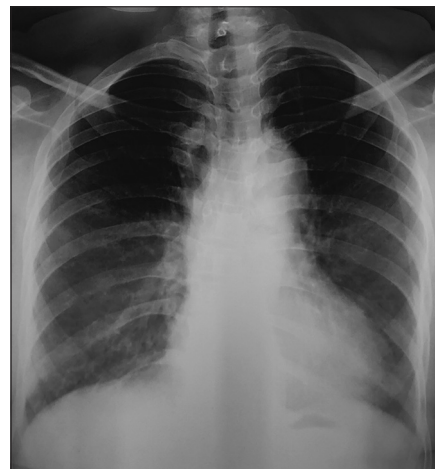


Figure 1: Chest X-ray showing presence of nonhomogenous opacity in the bilateral middle and lower zones

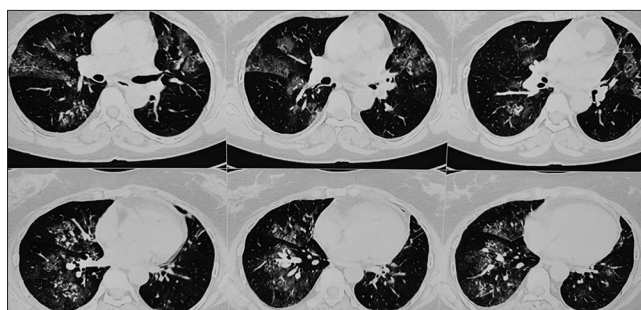


Figure 2: High-resolution computed tomography thorax showing presence of bilateral upper, middle and lower lobe infiltrates with ground glass opacities



Figure 3: Increase in hemorrhagic fluid on sequential bronchoalveolar lavage when collected from the right middle lobe

ranges from 2.3 to 146 cases per million with the incidence of 0.4–11.9 cases per million person per year. Most commonly,

it presents in older adults but cases have been reported in all age groups.^[2] The cause for the development of GPA is not known but few studies have shown a higher prevalence of antibodies against Epstein–Barr virus and cytomegalovirus in patients with GPA.^[3] Its association with respiratory syncytial virus infection have also been given in some studies.^[4]

In our case, the patient initially had Dengue fever which is a Flavi viral infection commonly prevalent in India. During dengue infection, there is the increase in the levels of cytokines and chemokines in the blood which activates the complement system and immune cells. The anti NS-1 antibody produced during dengue infection are partially responsible for its reactivity with endothelial cells.^[5]

To our knowledge, till now only one study conducted by Ghosh *et al.*^[6] has shown the association of GPA with dengue fever. It may be hypothesized that dengue infection could have precipitated GPA in an otherwise rare category of the population. As there is overlap in the clinical manifestation of COVID-19 and dengue fever, the possibility of COVID infection should always be kept into consideration.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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