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Vasculitis Following COVID-19 Vaccination in Hepatitis B Patient

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Abstract

A 55-year-old man with 25 years history of chronic inactive hepatitis B presented to the hospital due to widespread purpura started 15 days after 2nd dose of Pfizer vaccine for COVID-19. IgA vasculitis is a type of autoimmune disease that causes palpable purpura in the lower limbs, as well as stomach pain, arthralgia, and renal diseases. He was released with oral prednisolone after being diagnosed with an acute a leukocytoclastic asculitis. leukocytoclastic vasculitis is an uncommon but increasingly recognized side effect following COVID-19 vaccination.

Keywords: Hepatitis B; Pfizer vaccine; COVID-19; Leukocytoclastic vasculitis; Autoimmune disease; Glomerulonephritis; Fever; Dyspnea; Cough; Arthralgia; Urinary symptoms

Background

Coronavirus disease is a highly contagious infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The pandemic started in December 2019 from Wuhan, China, and spread to the rest of the world [1]. Many vaccines are rapidly developed to prevent and reduce the severity of the disease, including Bharat BioNTech, Johnson & Johnson, SinoVac, Sinopharm, Novavax, Gamaleya (Sputnik V), Oxford/AstraZeneca, Moderna, and BioNTech/Pfizer.

The impact of COVID-19 vaccination on the occurrence of autoimmune disease exacerbations is still being debated [2,3]. With global efforts to vaccinate against COVID-19 continuing, as well as the development of additional 'booster' doses needed to battle future forms of SARS-CoV-2, the impact of vaccination on pre-existing autoimmune disorders will remain significant for the foreseeable future. In adults, IgA nephropathy and IgA vasculitis are the most prevalent causes of primary glomerulonephritis, and in children, they are the most common cause of hematuria. Exacerbations of IgA nephropathy and IgA vasculitis in patients who received COVID-19 vaccination have begun to appear in specialized journals.

As postvaccination problems are more likely to appear promptly to main or secondary care, it's vital to be informed of the likelihood of autoimmune disease worsening after COVID-19 vaccination to help with diagnosis and therapy. This report describes the assessment and management of a man complaining of vasculitis after 2 weeks of his second dose of Pfizer vaccination. The case adds to the growing body of evidence that exacerbations of IgA vasculitis can occur after COVID-19 vaccination, and it serves as a model for acute clinicians examining patients who present after getting the vaccine.

Case Presentation

A 55-year-old male with history of Chronic inactive hepatitis B for 25 years presented to the hospital with widespread purpuric rash and arthralgia, started two weeks after 2nd dose of Pfizer vaccine for COVID-19. Apart from chronic inactive HBV, the patient had no other chronic medical illnesses like HTN, DM, autoimmune diseases, malignancy, any other chronic diseases or recent drug intake that can predispose to leukocytoclastic vasculitis. During the hospital course he developed severe abdominal pain which after being fully investigated, was presumed to be related to

mesenteric vasculitis rather than to acute mesenteric ischemia.

Investigations

Laboratory findings showed elevated CRP levels, however, normal ESR levels. Complete blood count, urinalysis, and liver/kidney function tests were all normal. Also, p-ANCA and c-ANCA were both negative. Histopathology showed leukocytoclastic vasculitis.

Treatment

The patient was treated with plasmapheresis and was given steroids (20 mg twice daily for 14 days followed by a taper) as supportive therapy. The patient was discharged after six weeks after receiving 14 sessions of plasmapheresis with stable condition, complete disappearance of the rash and to continue plasmapheresis once weekly for three months. Besides, considering HBV-associated vasculitic syndromes, he was commenced on Tenofovir pending HBV DNA PCR result which came back indicating inactive HBV replication.

Discussion

IgA vasculitis diagnosis in adult patients, such as in the case deliberated in this article, is complicated by the fact that this is typically a condition with onset in childhood. The 1990 American College of Rheumatology classification [4] requires the presence of at least two of four criteria: age ≤20 years at onset, palpable purpura, acute abdominal pain/bowel angina and biopsy histology appearing granulocytes on the vessel walls. The 2010 EULAR/PRINTO/PRES (European League Against Rheumatism/Paediatric Rheumatology International Trials Organisation/Paediatric Rheumatology European Society)criteria [5] for classifying IgA vasculitis (box 1) was designed and validated using a sample of paediatric patients only, making it of uncertain utility in the classification of adult patients. Due to this limitation, the patients discussed in this case exhibited clinical features. It complies well with the EULAR / PRINTO / PRES standards for IgA vasculitis (Table 1).

Table 1: Box 1 EULAR/PRINTO/PRES criteria for IgA vasculitis 6.

Purpura or petechiae with lower limb predominance and at least one of the following:
Abdominal pain.
Histopathology: leucocytoclastic vasculitis or proliferativeglomerulonephritis with IgA-predominantdeposits.
Arthritis or arthralgia.
Renal involvement: proteinuria >0.3 g/24 hours or haematuriaor red cell casts.

With the ongoing international campaign to increase COVID-19 vaccine coverage, rare postvaccination problems have unavoidably increased. Because vaccines are created and distributed at such a rapid pace, there is little information on postvaccination effects in specific patient populations, such as individuals with autoimmune diseases. It is widely understood that immune system challenges, most commonly in the form of upper respiratory tract mucosal infections, trigger acute flares in IgA illness with synpharyngitic macroscopic hematuria episodes [6]. Immune challenges from vaccination are thought to produce IgA vasculitis flares in the same way.

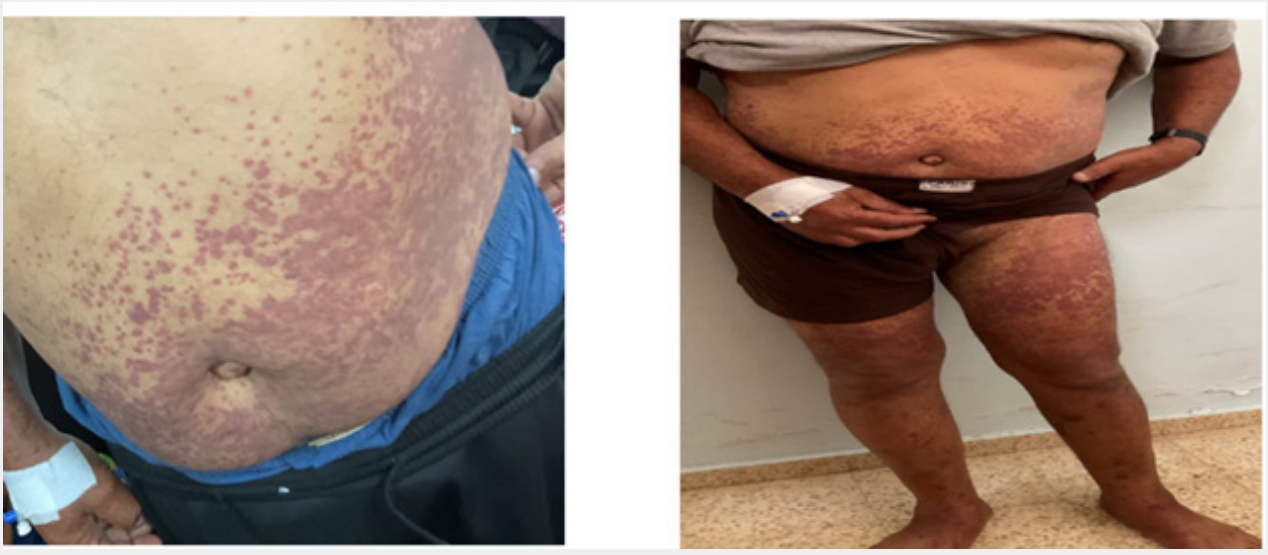

Figure 1: Adult-onset IgA vasculitis encompasses a wide range of clinical manifestations.

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Autoreactivity of serum anti-SARS-CoV-2 spike IgA may play a pathophysiological role in postvaccine exacerbations, according to a recent study [7]. Serum samples from a patient with reactivation of IgA vasculitis after COVID-19 immunization showed autoreactivity of the patient's IgA after vaccination, whereas serum from two healthy donors and pre vaccination serum showed no autoreactivity. There was no evidence of autoreactivity after vaccination. More research is needed to prove a causal link between COVID-19 immunization and IgA vasculitis aggravation. In patients presenting with frank vasculitis after recent COVID-19 vaccination, however, the existing research suggests that exacerbation of IgA vasculitis is a plausible differential (Figure 1).

Following COVID-19 vaccination, a number of recent studies have reported comparable exacerbations of IgA vasculitis or nephropathy. Gross haematuria occurred within 24 hours of receiving the COVID-19 vaccine in a 52-year-old woman with previous histology-proven IgA nephropathy [8]. Within one week of commencement, the patient's symptoms disappeared on their own. There have also been reports of new diagnoses of IgA nephropathy following the second dosage of the Moderna COVID-19 vaccination [9]. The presence of focal glomerular and tubular scarring in biopsies, as well as a history of microscopic haematuria, suggests that these instances are an exacerbation of previously asymptomatic IgA nephropathy. Within 5 days, both cases were resolved without the need for intervention. These accounts show short-term symptoms that resolve either spontaneously or after an initial course of steroids, similar to the instance detailed here. More research is needed to see if this holds true for all cases of IgA vasculitis caused by COVID-19 immunization. Adult-onset IgA vasculitis encompasses a wide range of clinical manifestations, with little association between the severity of the acute presentation and the development to end-stage renal failure [10]. According to one study, people with subclinical glomerulonephritis may have their disease unmasked after receiving COVID-19 vaccination and present with acute haematuria of unclear etiology [11]. It's unclear if the cohort of patients with IgA vasculitis aggravated by COVID-19 immunization represents a novel group with a uniform clinical course or the same varied course previously documented in IgA vasculitis.

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