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IgA Vasculitis in association with COVID-19

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1. Introduction

The cutaneous manifestations of COVID-19 have been an emerging and evolving topic of study since the beginning of the pandemic and the first reports emerged out of Italy [1]. With global spread and, to date, more than one hundred million cases, a greater appreciation for the cutaneous manifestations of COVID-19 has emerged with ample reports in the literature of at least six central patterns of skin involvement with COVID-19 [2]. One such pattern is petechial/purpuric eruptions, for which there are many possible etiologic mechanisms. Leukocytoclastic vasculitis secondary to COVID-19 has been reported and accounts for a minority of petechial/purpuric eruptions in the setting of COVID-19. This report documents a case of leukocytoclastic vasculitis with prominent IgA deposition in blood vessel walls within the papillary dermis (IgA vasculitis) following severe COVID-19 and in the absence of other causative factors.

2. Case Report

A 70-year-old female presented to the emergency department with a 4-week history of petechiae and palpable purpura that had started on the bilateral legs and had now spread to the thighs, forearms, and lower trunk (Supplementary FIG. 1 and 2). She endorsed mild pruritus but denied systemic symptoms other than residual fatigue from recent COVID-19 infection. She had contracted COVID-19 approximately one month prior to rash onset, and she reported having had severe symptoms and dyspnea nearly requiring hospitalization. She denied any other illnesses, exposures, or changes to her medications in the past six months. Biopsy with direct immunofluorescence of her rash revealed leukocytoclastic vasculitis with prominent IgA deposition around vessel walls, confirming a diagnosis of IgA vasculitis (FIG. 3). A work-up for visceral involvement as well as possible disease associations was negative. At follow-up six weeks after her initial consultation, her rash had completely cleared without treatment.

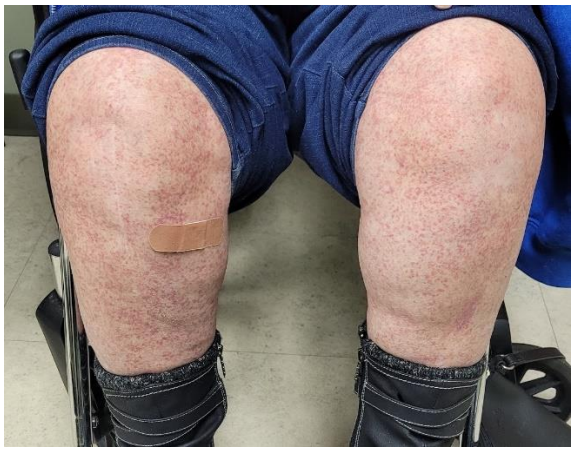

FIG. 1. **Diffuse palpable purpura and petechia on the lower extremities bilaterally.**

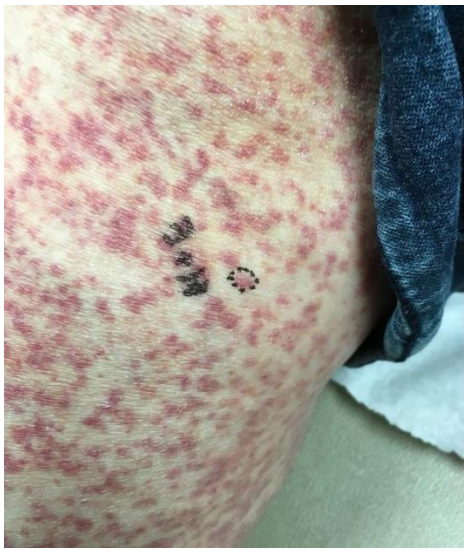

FIG. 2. **Closer view of palpable purpura of the lower extremities.**

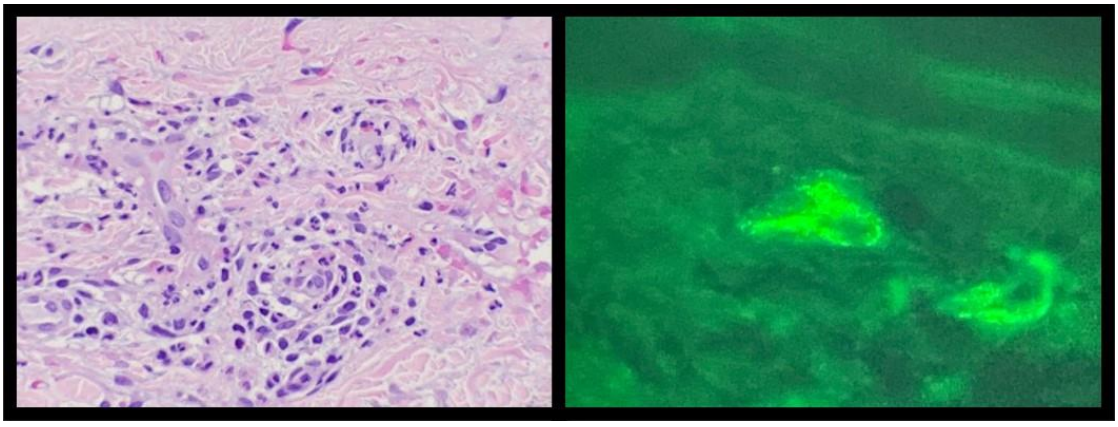

FIG. 3. **H&E (20×) demonstrated neutrophils in and around superficial dermal vessels with endothelial swelling, karyorrhectic debris, and mild erythrocyte extravasation; direct immunofluorescence demonstrated granular IgA and fibrinogen deposition around superficial dermal vessels.**

3. Discussion

Petechial and purpuric eruptions are one of the least common skin manifestations of COVID-19, accounting for only 3% of cases where any skin manifestation is noted. The etiology of the majority of petechial/purpuric eruptions in COVID-19 is likely related to the pro-thrombotic vasculopathy observed in acute infection secondary to massive macrophage-induced cytokine release. This is consistent with the tendency for COVID-19 to induce macro- and microvascular thromboembolic events affecting visceral organs, which accounts for much of the morbidity and mortality of the disease [3].

A less common etiologic mechanism for petechial/purpuric eruption in COVID-19 is leukocytoclastic or hypersensitivity vasculitis. An even more infrequent association is that of leukocytoclastic vasculitis (LCV) with prominent IgA deposition in superficial dermal post-capillary venules (IgA vasculitis), with only three reports in the literature and a single report of Henoch-Schonlein purpura in a child [4-7]. IgA vasculitis is a distinct subtype of LCV with a greater tendency for systemic, specifically renal and gastrointestinal, involvement. While the exact pathogenesis is unclear, infection with viruses and other microorganisms are known triggers for IgA vasculitis. In two reports, renal involvement in addition to purpuric rash was noted. However, for the patient in this report, rash spontaneously cleared in approximately eight weeks without treatment, and she did not have any evidence of renal involvement several months after rash clearance.

This report serves to strengthen the uncommon association between COVID-19 and IgA vasculitis. While an incidental association between the presented patient's IgA vasculitis and recent severe illness with COVID-19 cannot be completely ruled out, she had no other precipitating illnesses, exposures, or medication changes that might account for development of her vasculitis. Although she did not have any evidence of systemic involvement, multiple case reports have documented IgA deposition in glomeruli, warranting surveillance for renal involvement in patients who initially present without it.

The patient consented to the use of her case presentation and clinical photos for publication and teaching purposes.

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