A Rare Educational Case of Idiopathic Cutaneous Leukocytoclastic Vasculitis

Shruthi Vijayalakshmi [1], Shreyan A Patel [2], and Admir Syla [1]

[1] Internal Medicine, Lewis Gale Medical Center, Salem, VA, USA
[2] Edward Via College of Osteopathic Medicine-Virginia, Blacksburg, VA, USA

Introduction

Leukocytoclastic vasculitis (LCV) is a common form of small vessel vasculitis that is characterized on histopathological examination by neutrophilic inflammatory infiltrates, degeneration of neutrophilic nuclear contents (leukocytoclasis), fibrinoid necrosis, and damage to vessel walls [1]. LCV can be idiopathic or caused by infections, drugs, autoimmune diseases, malignancies, and, more recently, COVID-19 vaccines [2, 3]. Most cases of idiopathic CLCV are self-limiting, but further workup needs to be performed if there are signs of systemic disease [2].

Case Presentation

A 23-year-old female with a past medical history of hypothyroidism presented to the emergency department for a painful, non-pruritic rash all over her body that started two days ago with associated subjective fevers and myalgias. She did not report any vesicle formation, but her pain was exacerbated by moving her extremities. Of note, she recently took amoxicillin one month ago for streptococcal pharyngitis. She endorsed residual symptoms of rhinorrhea, sore throat, nausea, and malaise. Her only home medication was levothyroxine. She denied chest pain, shortness of breath, and any other gastrointestinal symptoms. She denied recent travel outside of the country, sick contacts, new exposure, or tick bites.

On admission, vital signs were normal. On physical examination, she had raised, nonconfluent, erythematous papules on all her extremities and trunk that were tender to palpation. The lesions were predominantly located in the lower extremities and spared the palms of her hands and soles of her feet. The joints of her hands and feet were slightly erythematous, edematous, and warm to the touch. Genitourinary examination revealed herpetic lesions in the suprapubic region.

Laboratory results on admission showed an unremarkable CBC and CMP. ESR was mildly elevated at 21 mm/hr. CRP was also elevated at 4.63 mg/dL. Coagulation studies were normal. Electrocardiogram showed normal sinus rhythm at 68 beats per minute. Chest radiograph showed no acute cardiopulmonary abnormalities.

Autoimmune screening for antinuclear antibodies was negative. Serum complement C3 was mildly elevated at 174 mg/dL whereas serum complement C4 was within normal limits at 32 mg/dL.

An extensive workup for infectious etiologies was performed. Testing was negative for Streptococcus pyogenes, HIV-1, HIV-2, hepatitis B and C, Mycobacterium tuberculosis, COVID-19, and HSV-1. Serology testing for influenza type A and B, Epstein-Barr virus, and Coxsackie A virus were all negative. However, testing was positive for HSV-2. Antibody titers for adenovirus and Coxsackie B serotypes 1 through 6 were elevated as well.

She was started on oral prednisone for her exanthem as well as valacyclovir empirically for genital herpes. She was discharged from the hospital two days later after improvement of her symptoms and was given a prednisone taper for two weeks along with outpatient infectious disease follow up.

Select Laboratory Results on Admission

Test	Result	Reference Range	Units
Erythrocyte sedimentation rate (ESR)	21	0 – 20	mm/hr
C-reactive protein (CRP)	4.63	< 0.3	mg/dL
Serum complement C3	174	82 – 167	mg/dL
Serum complement C4	32	12 – 38	mg/dL
Adenovirus	1:16	< 1:8	-
Coxsackie B serotype 1	1:32	< 1:8	-
Coxsackie B serotype 2	1:32	< 1:8	-
Coxsackie B serotype 3	1:32	< 1:8	-
Coxsackie B serotype 4	1:32	< 1:8	-
Coxsackie B serotype 5	1:32	< 1:8	-
Coxsackie B serotype 6	1:32	< 1:8	-

Patient Consent
The patient provided consent for this case report to be written; she did not consent to use of medical photographs.

Discussion

Vasculitis refers to the inflammation of blood vessels. According to the 2012 Revised International Chapel Hill Consensus Conference Nomenclature of Vasculitides (2012 CHCC), vasculitis is classified into small vessel, medium vessel, and large vessel vasculitis.[2] Examples of large vessel vasculitis include Takayasu arteritis and giant cell arteritis. Examples of medium vessel vasculitis include polyarteritis nodosa and Kawasaki disease. Small vessel antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis examples include microscopic polyangiitis, granulomatosis with polyangiitis, and eosinophilic granulomatosis with polyangiitis, which are all pauci-immune. On the other hand, immune-complex small vessel vasculitis, such as Henoch-Schoenlein purpura and CLCV, presents with moderate to marked deposition of immunoglobulin within the vessel walls and activation of the complement system.[2]

The hallmark clinical feature of CLCV is bilateral palpable purpura especially on the lower extremities and buttocks. The condition is commonly triggered by infections and medications. Infectious triggers include Mycobacterium, Staphylococcus aureus, Chlamydia, Neisseria, HIV, and hepatitis.[4] Beta-lactam antibiotics, NSAIDs, and TNF-alpha inhibitors are common offending medications, and symptoms typically manifest one to three weeks after initiation.[1] CLCV can also be caused by autoimmune and connective tissue disorders, such as Sjogren's syndrome, systemic lupus erythematosus, and rheumatoid arthritis as well as monoclonal gammopathy or hematological neoplasms.[1]

Streptococcal upper respiratory tract infection is another trigger for CLCV.[1] In this case, the patient was recently diagnosed with streptococcal pharyngitis and exhibited residual symptoms; however, antigen-antibody testing for Streptococcus pyogenes was negative. She did not have any extracutaneous manifestations. The fact that our patient's symptoms improved after initiating prednisone in conjunction with inconclusive testing for any clear etiology corroborated the diagnosis of idiopathic CLCV.

Conclusion

Cutaneous leukocytoclastic vasculitis (CLCV) is an uncommon diagnosis in the general population with an annual incidence of less than 50 per million individuals that should be considered for acute skin-limited changes.[3,4] The incidence of CLCV is rising due to greater clinical awareness of the condition. The mainstay of treatment is glucocorticoid therapy.

Limitations:
A minor limitation of this case report is that this patient had positive serology for other viruses- HSV-2, Adenovirus, and Coxsackie B. As such, it is difficult to say whether this patient's clinical presentation was truly idiopathic.

Implications for Practice:
Making the diagnosis early and ruling out all other etiologies can greatly reduce morbidity from CLCV.

References

1. Yap BJM, Lai-Foenander AS, Goh BH, Ong YS, Duangjai A, Saokaew S, Chua CLL, Phisalprapa P, Yap WH. Unraveling the Immunopathogenesis and Genetic Variants in Vasculitis Toward Development of Personalized Medicine. Front Cardiovasc Med. 2021 Sep 21;8:732369. doi: 10.3389/fcvm.2021.732369
2. Baigrie D, Goyal A, Crane JS. Leukocytoclastic Vasculitis. 2022 May 8. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–.
3. Fiorillo G, Pancetti S, Cortese A, Toso F, Manara S, Costanzo A, Borroni RG. Leukocytoclastic vasculitis (cutaneous small-vessel vasculitis) after COVID-19 vaccination. J Autoimmun. 2022 Feb;127:102783. doi: 10.1016/j.jaut.2021.102783
4. Jennette JC. Overview of the 2012 revised International Chapel Hill Consensus Conference nomenclature of vasculitides. Clin Exp Nephrol. 2013 Oct;17(5):603-606. doi: 10.1007/s10157-013-0869-6
5. Fraticelli P, Benfaremo D, Gabrielli A. Diagnosis and management of leukocytoclastic vasculitis. Intern Emerg Med. 2021 Jun;16(4):831-841. doi: 10.1007/s11739-021-02688-x
6. Sáenz de Santa María García M, Morales-Cabeza C, Noguerado-Mellado B, Rojas-Pérez-Ezquerra P, Zubeldia JM. Cutaneous leukocytoclastic vasculitis due to amoxicillin hypersensitivity. Ann Allergy Asthma Immunol. 2016 Oct;117(4):446-447. doi: 10.1016/j.anai.2016.08.005

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.