

3-1-2014

# Clinical vignette: Levamisole-tainted cocaine causing leukocytoclastic vasculitis

Brad H. Rosen

Peggy Beeley

Follow this and additional works at: [https://digitalrepository.unm.edu/hostpitalmed\\_pubs](https://digitalrepository.unm.edu/hostpitalmed_pubs)

---

## Recommended Citation

Rosen, Brad H. and Peggy Beeley. "Clinical vignette: Levamisole-tainted cocaine causing leukocytoclastic vasculitis." (2014).  
[https://digitalrepository.unm.edu/hostpitalmed\\_pubs/24](https://digitalrepository.unm.edu/hostpitalmed_pubs/24)

This Presentation is brought to you for free and open access by the Internal Medicine at UNM Digital Repository. It has been accepted for inclusion in Hospital Medicine by an authorized administrator of UNM Digital Repository. For more information, please contact [disc@unm.edu](mailto:disc@unm.edu).



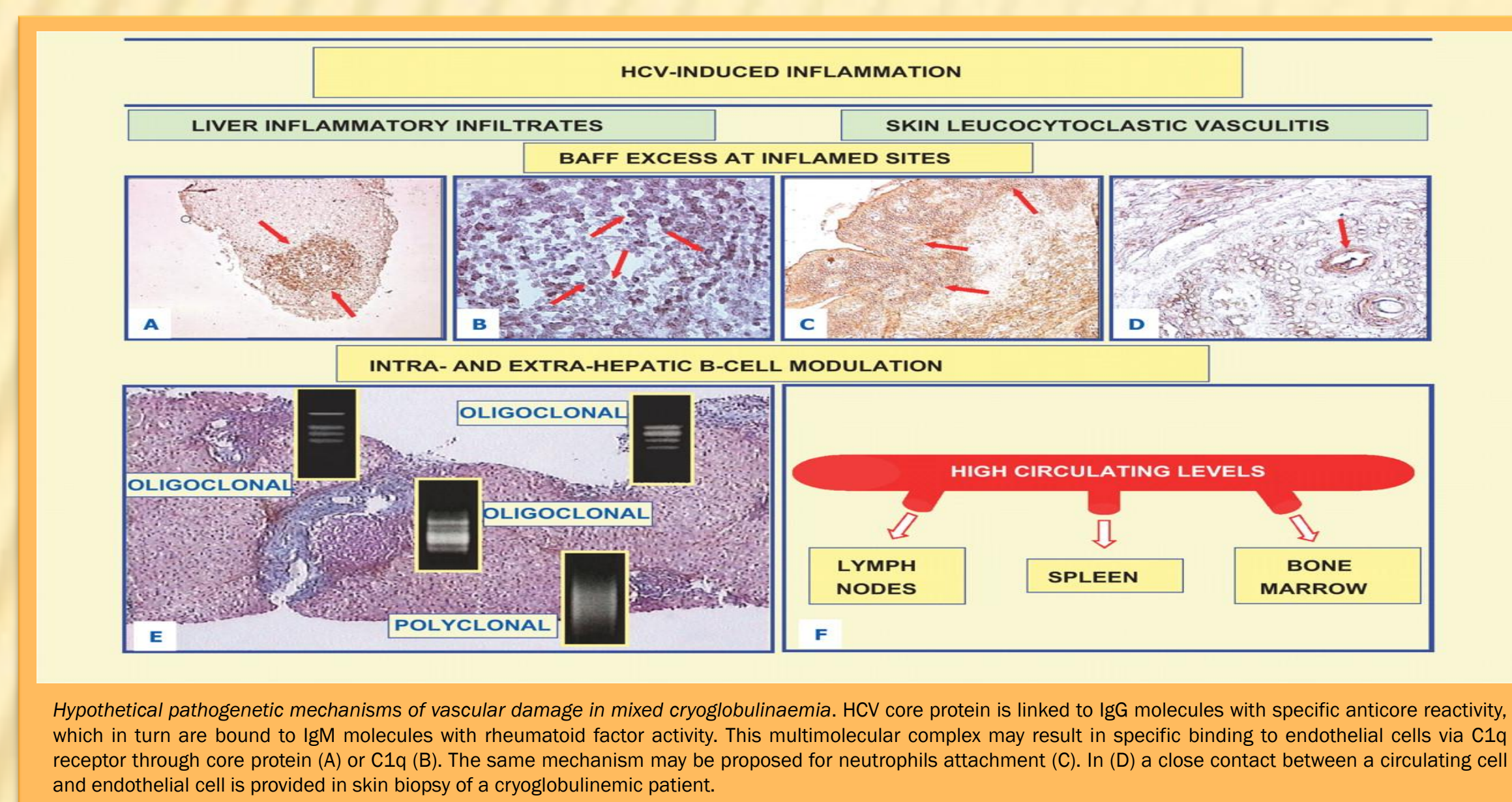
# Levamisole-Tainted Cocaine Causing Leukocytoclastic Vasculitis

Brad H. Rosen and Peggy Beeley

Department of Internal Medicine, University of New Mexico School of Medicine

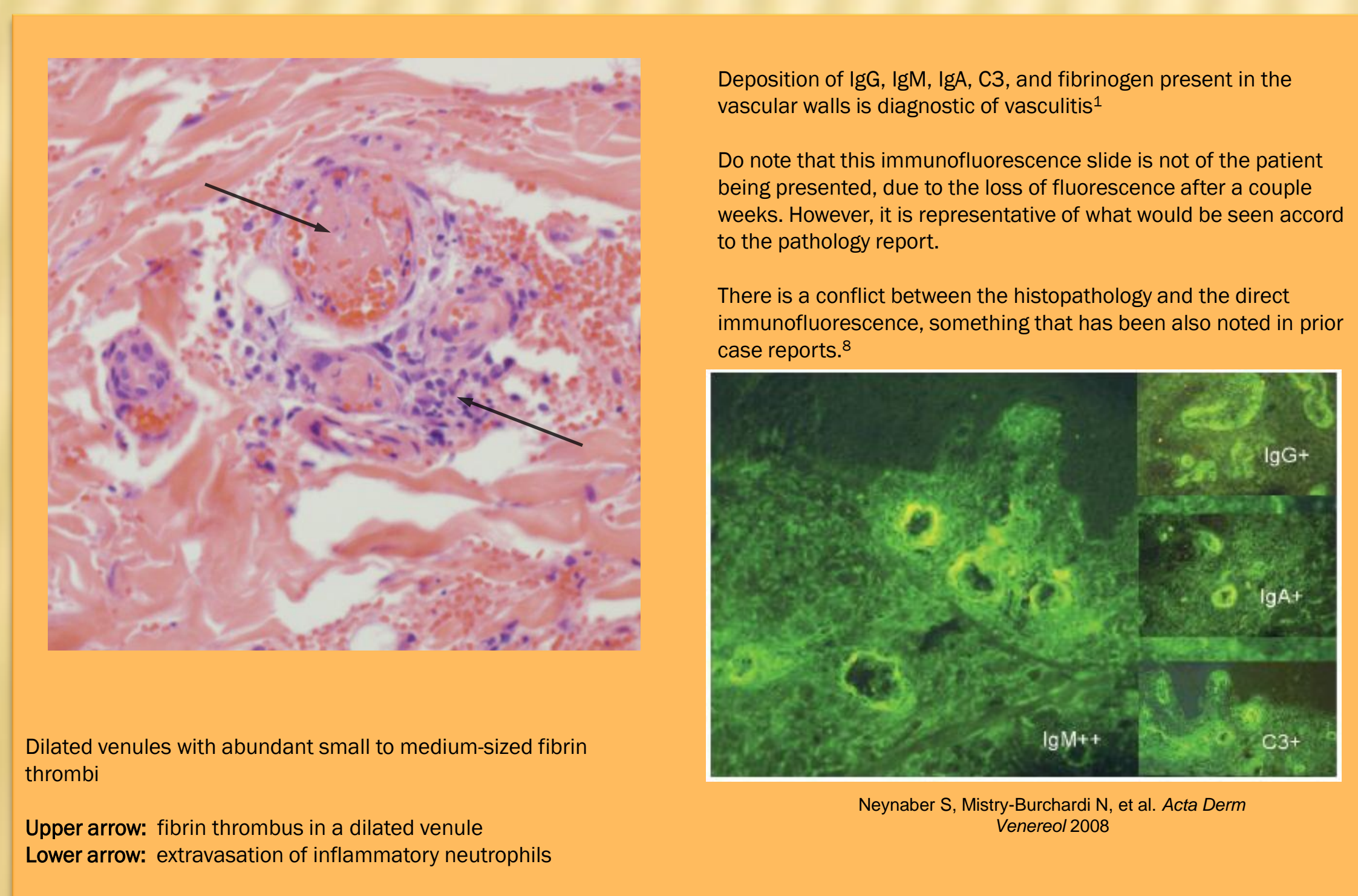
## INTRODUCTION:

- ◆ In 2009, MMWR reported that up to 70% of cocaine seized at US borders is cut with levamisole.<sup>6</sup>
- ◆ This anti-helminthic agent is primarily used in veterinary medicine, but it has immunomodulating properties and has been used to treat some forms of cancer in humans. Specifically, it was tested in colon cancer<sup>2</sup> and has some steroid-sparing use in pediatric nephrotic syndrome.
- ◆ From experience in these populations it is known to cause a reversible neutropenia. The association of cocaine and levamisole with leukocytoclastic vasculitis is recently being reported in the medical literature.<sup>3-5</sup>



## USE AS A CUTTING AGENT:

- ◆ The reason for levamisole's increasing use as a cutting agent is multifactorial and a fascinating interplay of pharmacology and drug distribution and sales.
- ◆ At the point of sale, use of levamisole does result in larger and heavier rocks, leading to the assumption that a higher quality product is being purchased.
- ◆ There is some preliminary evidence that levamisole itself may be selected for pharmacologic qualities, rather than just the resultant effect on appearance.
- ◆ Levamisole may interact with monoamine neurotransmitters in key regions of the brain, specifically with serotonin, norepinephrine, and dopamine.<sup>10</sup> This may be enhancing the cocaine user's subjective high, leading to repeat use.



## CASE REPORT:

- ◆ A 36-year-old woman presented to Emergency with 2.5 years duration of waxing and waning severe pain related to confluent necrotic lesions involving her lower extremities. Her medical history was significant for crack cocaine use for 12 years, resulting in a recent admission for febrile neutropenia consistent with levamisole toxicity. Last use was the night prior to this presentation, toxicology screen was positive for cocaine.
- ◆ Physical exam revealed a cachectic, malnourished woman in severe distress with painful non-blanching purpura noted along the helixes of both ears and tip of the nose. Her lower extremities had large, minimally retiform purpuric plaques with surrounding erythema, which later developed hemorrhagic bullae over the subsequent 10-day hospital course.
- ◆ At admission, her absolute neutrophil count was 2,200, reaching a nadir of 1,000. Inflammatory markers included C-reactive protein elevated at 6.9, erythrocyte sedimentation rate greater than 120.
- ◆ No evidence of infectious process was found during the hospital course, including viral serologies and bacterial cultures.



- ◆ ANA was positive (titer, 1:320), as well as P-ANCA positive (titer, 1:2560) with both PR3 and MPO significantly elevated at 441 and 289, respectively. Additional rheumatologic serologies included positive Lupus-like inhibitor, Beta-2 glycoprotein IgM, anti-cardiolipin IgM, and normal IgG levels.

- ◆ A skin biopsy was obtained and histopathology showed dilated venules with abundant small to medium-sized fibrin thrombi. (panel at Left)
- ◆ Direct immunofluorescence pattern had deposition of IgG, IgM, IgA, C3, and fibrinogen in venule walls diagnostic of leukocytoclastic vasculitis. (panel at Left)
- ◆ Treatment with steroids resulted in slow partial resolution of the lesions.

## TREATMENT:

- ◆ There is no specific treatment for this condition, rather identification of the cause and then removal of the offending agent is the primary issue.
- ◆ Small role of systemic corticosteroids, but unproven.

## DISCUSSION:

- ◆ Timely identification of this process is key for therapeutic intervention of patient abstinence from all cocaine use.
- ◆ As levamisole is being found with such frequency in cocaine, manifestations of toxicity with respect to impaired immunity and vasculitis must be made known to practitioners.
- ◆ This presentation does not tend to respond to immunosuppressants and in fact application of steroids or cytotoxic therapy may worsen the condition when combined with the effects of cocaine and levamisole.
- ◆ Additionally,



## REFERENCES

- Barnadas MA, Perez E, et al. Diagnostic, prognostic and pathogenic value of the direct immunofluorescence test in cutaneous leukocytoclastic vasculitis. *Int J Dermatol* 2004; 43: 19 – 26.
- Moertel CG, Fleming TR, et al. Levamisole and fluorouracil for adjuvant therapy of resected colon carcinoma. *N Engl J Med* 1990; 322: 352-8.
- Powell J, Grech H, and Holder J. A boy with cutaneous necrosis occurring during treatment with levamisole. *Clin Exp Dermatol* 2002; 27: 32-33.
- Menni S, Pistrutto G, Gianotti R, et al. Ear lobe bilateral necrosis by levamisole-induced occlusive vasculitis in a pediatric patient. *Pediatr Dermatol* 1997; 14: 477-9.
- Rongioletti F, Gio L, Ginevri F, et al. Purpura of the ears: a distinctive vasculopathy with circulating autoantibodies complicating long-term treatment with levamisole in children. *Br J Dermatol* 1999; 140: 948-51.
- Centers for Disease Control and Prevention (CDC). Agranulocytosis associated with cocaine use – four states, March 2008–November 2009. *MMWR Morb Mortal Wkly Rep*. 2009; 58: 1381-5.
- Zhu NY, LeGatt DF, and Turner AR. Agranulocytosis after consumption of cocaine adulterated with levamisole. *Ann Intern Med* 2009; 150: 287-289.
- Bradford M, Rosenberg B, et al. Bilateral necrosis of earlobes and cheeks: another complication of cocaine contaminated with levamisole. *Ann Intern Med* 2010; 152: 758-759
- Walsh NMG, Green PJ, et al. Cocaine-related retiform purpura: evidence to incriminate the adulterant, levamisole. *J Cutaneous Pathol* 2010; 37: 1212 – 1219.
- Spector S, Munjal I, and Schmidt DE. Effects of the immunostimulant, Levamisole, on opiate withdrawal and levels of endogenous opiate alkaloids and monoamine neurotransmitters in rat brain. *Neuropsychopharmacology* 1998; 19: 417-427.
- Neynaber S, Mistry-Burchardi N, et al. PR3-ANCA-positive necrotizing multi-organ vasculitis following cocaine abuse. *Acta Derm Venereol* 2008; 88: 594 – 596.

## Disclosure:

- ◆ Some tissue images are not from the case presented as they were not available.

[bhrosen@salud.unm.edu](mailto:bhrosen@salud.unm.edu)