Febrile Neutropenia Associated With Cocaine Adulterated With Levamisole: A Case Presentation

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OBJECTIVE

To present a case of levamisole-induced granulocytopenia.

INTRODUCTION

Levamisole is an anti-helminthic and has also been studied as an immunomodulator. Recently, levamisole has been employed as a cutting agent in cocaine sold in the United States, Canada, and Europe and has been associated with cases of severe granulocytopenia.

CASE PRESENTATION

49-year-old Caucasian male, with known hepatitis C and recurrent skin nodules, presented with a 10-day history of progressive fatigue, sore throat, nasal congestion, cough, and fever. He was treated with antibiotics with improvement in the skin nodules. The patient was homeless, admitted to cocaine use, and his urine was positive for cocaine. White blood cell count was 800 with an ANC of 400. Hemoglobin and platelet count were normal. Although sputum culture grew Pseudomonas aeruginosa, chest x-ray was within normal limits. Workup for autoimmune disease or possible viral illness was negative. Peripheral blood smear was non-diagnostic, and a bone marrow aspiration and biopsy revealed hypocellularity with a marked decrease in granulopoiesis. Urine was subsequently tested for levamisole and was positive. With supportive treatment, including antibiotics and G-CSF, the patient progressively improved, with white blood cell count returning to normal. Unfortunately, the patient has subsequently had multiple readmissions for recurrent granulocytopenia associated with resumption of cocaine use.

DIAGNOSIS

This patient was diagnosed with levamisole-induced granulocytopenia. He has had repeated admissions to the hospital with the same presentation. Bone marrow biopsy showed no signs of malignancy, however it did show hypocellular bone marrow with markedly decreased granulopoiesis. Flow cytometry was normal. His urine was tested for lavamisole and it tested positive. Other diagnoses were explored, however they produced negative results.

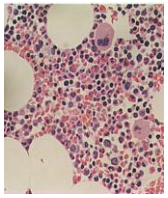
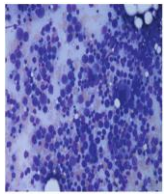


Figure 1. Showing a normal bone marrow



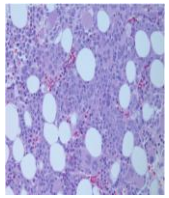


Figure 2. and 3 Showing neutrophils and bands are almost absent with abundance of granulocytic precursors. The remainder shows a normal heterogeneity. (1)

TREATMENT

The mainstay treatment is supportive, and it deals with treating the infection that is predisposed due to the granulocytopenia. Thus, the patient should be pan-cultured and broad spectrum antibiotics should be started. In some cases, granulocyte colony-stimulating factor can be used to further stimulate the recovery of the patient thus shortening the period of leukopenia.

Figure 4. Occlusive necrotizing vasculitis.

REFERENCES

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DISCUSSION

HISTORY

Patients who consume cocaine laced with levamisole are predisposed to developing agranulocytosis leading to infections.

RISK FACTORS

Little is known about why levamisole affects some people and not others. Genetic predisposition might play a role, including HLA 27 positivity, which might induce the production of leukocyte-agglutinating antibodies. Smokers of crack cocaine seem to be at an increased risk for this phenomenon.

PHYSICAL EXAM

Clinical presentation is characterized by fever, which is usually related to infection; sepsis and septic shock can ensue. Additionally, it has been reported that levamisole can cause occlusive necrotizing vasculitis.

DIAGNOSTIC TESTS

- Check CBC with differentilal, pan-culture, peripheral smear, bone marrow and flow cytometry.
- Rule out other causes of leukopenia.
- Perform a urine study sending it for lavamisole.

TREATMENT

Supportive treatment:

1. IV fluids
2. Broad-spectrum antibiotics
3. Granulocyte colony-stimulating factor

RECOVERY

Usually between 7-10 days. However, neutropenia can re-occur.

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