

Gentamicin induced acute hypereosinophilia



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ABSTRACT

Gentamicin, an aminoglycoside, has been used for the treatment of severe infections by both Gram positive and negative organisms. Nephrotoxicity and ototoxicity are the common adverse effects. The patient being described had urinary tract infection for which he received gentamicin, and developed hypereosinophilia. To the best of our knowledge, this is an unreported event.

Key words: Gentamicin; Hypereosinophilia; Corticosteroids

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INTRODUCTION

Gentamicin is an aminoglycoside used in the treatment of Gram positive and negative organisms. They exert their bactericidal effect by binding to the bacterial ribosome, thereby causing misreading during translation of bacterial messenger RNA into proteins. Nephrotoxicity and ototoxicity are the common adverse effects. Drug induced hypereosinophilia is an unreported scenario with gentamicin administration.

CASE REPORT

A 75 year old male, with no comorbidities and no regular medications, presented to Medicine department with 3 days history of dry cough and dyspnoea. He had fever and dysuria 10 days ago and was taking intravenous gentamicin (80 mg q8h) at an outside hospital. Urine culture was not done. After receiving 7 days of gentamicin, he started developing cough and mild dyspnoea; which got aggravated and was referred for further management.

On examination, he was conscious, oriented and afebrile. His respiratory rate was 24/minute with saturation 90% in room air. His pulse rate and blood pressure were normal. Respiratory system examination revealed diffuse rhonchi. Other systems were normal.

His complete blood count showed leucocytosis (12300 cells/cumm with neutrophils 34%, lymphocytes

20%, eosinophils 46%) with normal haemoglobin and platelet counts. His hemogram prior to gentamicin administration (done outside had total WBC 10100 cells/cumm with neutrophils 72%, lymphocytes 23%, eosinophils 5%) did not show eosinophilia. His absolute eosinophil count and serum IgE levels were 4800 cells/cumm (40-440) and 2890 IU/ml (28-140) respectively. Peripheral blood smear revealed severe eosinophilia. Sputum culture grew normal flora and sputum AFB stain was negative. Chest Xray, ECG and echocardiography were normal. Urine microscopy had 8 to 10 pus cells and urine culture was sterile. Other investigations like renal and liver functions, HbA1c, electrolytes, calcium, antinuclear antibody profile and stool microscopy were also normal.

Gentamicin was stopped. He was started on intravenous methylprednisolone (40 mg q6h), nebulizations (salbutamol, budesonide and ipratropium bromide), oral montelukast (10 mg once daily) and oral acebrophylline (100 mg twice daily). By day 2 of admission, his symptoms started improving; and by day 5 he became asymptomatic. His repeat complete blood counts showed total counts 9800 cells/cumm with neutrophils 54%, lymphocytes 40%, eosinophils 6%. He was discharged on tapering doses of oral prednisolone.

DISCUSSION

Eosinophilia may be defined as an increase in absolute eosinophil count of ≥ 500 cells/cumm;

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and hypereosinophilia indicates severe eosinophilia (≥ 1500 cells/cumm). Hypereosinophilic syndrome refers to hypereosinophilia occurring on at least two occasions with end-organ damage due to eosinophilia. Eosinophilic pneumonias are a heterogeneous group of diseases characterised by eosinophilia and pulmonary infiltrates.

Eosinophilia is commonly due to allergic and atopic diseases. Infections, particularly parasitic and fungal, may produce an eosinophilia. Neoplasms, like Hodgkin's lymphoma, may occasionally show an elevated eosinophil count. Connective tissue disorders and skin disorders, such as pemphigus, may also be associated with eosinophilia.^{1,2} Medications are the leading causes for peripheral blood eosinophilia in developed countries.³ Of these, antibiotics are the major culprits. Asymptomatic eosinophilia has been observed with penicillins, cephalosporins and flouroquinolones.^{3,4}

Eosinophilia usually develops within 8 weeks of drug initiation. Asymptomatic or mild eosinophilia does not require any treatment. However, severe symptoms warrant the discontinuation of the offending drug. Corticosteroids are used in severe cases. There is no clear consensus on the duration of steroid therapy; but a 2 to 6 weeks therapy is usually recommended. Other immunosuppressive drugs like azathioprine, cyclophosphamide and hydroxyurea have also been used.^{5,6} Antihistamines may also be beneficial.⁷

Though nephrotoxicity and ototoxicity are the commonly encountered adverse effects with gentamicin; anaphylaxis and myoclonus have also been described.⁸⁻¹⁰ Our patient developed acute hypereosinophilia following 1 week of gentamicin administration. He had a score of 7 according to Naranjo scale, suggestive of probable adverse drug

reaction. He improved following the discontinuation of gentamicin and administration of steroids.

CONCLUSION

Drug induced eosinophilia have been observed with antimicrobial agents like penicillins, cephalosporins and flouroquinolones. Gentamicin is known to have nephrotoxic and ototoxic effects. Acute hypereosinophilia due to gentamicin, to the best of our knowledge, has not been reported yet.

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RGM-Concept and design, manuscript preparation, revision of manuscript and treating Physician; **MCS**- Revision of manuscript and treating Pulmonologist.

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