

A case of steroid-induced diffuse alveolar hemorrhage

Sir,

Disruption of the alveolar-capillary basement membrane leading to bleeding into the alveolar spaces of the lung is characteristic of diffuse alveolar hemorrhage (DAH) syndrome and hemoptysis is the most common presenting symptom.^[1] Steroids are an uncommon cause of DAH and, through this case, we aim to increase awareness regarding the acute and life-threatening pulmonary complications of anabolic steroid (AS) usage.

A 47-year-old male, current smoker, presented with 1-week history of hemoptysis triggered by cough during construction work and sexual intercourse. He had at least five episodes of productive cough of 4–6 ounces of bright red blood through his mouth and nose. A visit to an otolaryngologist did not reveal a cause. A computed tomography (CT) scan of the chest with contrast revealed a nonspecific, patchy right upper-lobe airspace opacity [Figure 1] without a focal lesion or lymphadenopathy. The patient denied other symptoms and any exposures to birds, pets, and farm animals recently or in the past. He works as an electrician with exposure to insulation material. He is an avid weightlifter and his wife endorsed that he used AS 3 times a week (trenbolone acetate, testosterone cypionate, and drostanolone propionate). His physical examination and laboratory examination including complete blood count, comprehensive metabolic panel, and coagulation panel were normal. A bronchoscopy revealed normal mucosa, no endobronchial lesions, and progressively bloody return on bronchoalveolar lavage (BAL). Cytological and microbiological studies on the lavage fluid were negative for malignancy and infections, though hemosiderin-laden macrophages were noted. Hemoptysis was attributed to



Figure 1: Computed tomography scan of the chest demonstrating right upper-lobe patchy ground-glass opacity

DAH from AS use and discontinuation of steroids resulted in its cessation.

The etiology of DAH varies from rheumatic diseases, drugs, infections, toxins to acute rejection after lung transplantation.^[2] DAH is not a commonly known adverse effect of AS use and its pathophysiology is unclear.

CT abnormalities are nonspecific and include diffuse or patchy ground-glass opacities. Other tests used include bronchoscopy with BAL. BAL is the preferred method for diagnosis and DAH is confirmed if the aliquots become progressively hemorrhagic. Prussian blue staining is used to identify hemosiderin-laden macrophages and, if 20% out of 200 macrophages stain positive for hemosiderin, it is considered diagnostic of DAH.^[3] Treatment of DAH is aimed at the underlying cause such as cessation of the implicated drug or toxin, treatment of infection, or discontinuation of anticoagulation. When associated with capillaritis, systemic steroids, immunosuppressive agents, and/or plasmapheresis may be used.

To our knowledge, this is only the third such reported case. AS use can be suspected in patients who appear “bulked up,” or who have a fat-free mass index of more than 25.^[4] Early recognition, confirmation of suspicion via a bronchoscopy with BAL, and cessation of the offending agent are key in the management of patients with DAH, which if unrecognized and untreated can lead to in-hospital mortality rates of up to 25%.^[5]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest

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REFERENCES

1. Collard HR, King TE Jr., Schwarz MI. Diffuse alveolar hemorrhage and rare infiltrative disorders of the lung. In: Broaddus VC, Mason RJ, Ernst JD, Lazarus SC, King TE Jr., Murray JF, *et al.*, edited. *Murray & Nadel's Textbook of Respiratory Medicine*. 6th ed. New York: Elsevier; 2016. p. 1207.
2. Lichtenberger JP 3rd, Digumarthy SR, Abbott GF, Shepard JA, Sharma A. Diffuse pulmonary hemorrhage: Clues to the diagnosis. *Curr Probl Diagn Radiol* 2014;43:128-39.
3. De Lassence A, Fleury-Feith J, Escudier E, Beaune J, Bernaudin JF, Cordonnier C, *et al.* Alveolar hemorrhage. Diagnostic criteria and results in 194 immunocompromised hosts. *Am J Respir Crit Care Med* 1995;151:157-63.
4. Kouri EM, Pope HG Jr., Katz DL, Oliva P. Fat-free mass index in users and nonusers of anabolic-androgenic steroids. *Clin J Sport Med* 1995;5:223-8.
5. de Prost N, Parrot A, Picard C, Ancel PY, Mayaud C, Fartoukh M, *et al.* Diffuse alveolar haemorrhage: Factors associated with in-hospital and long-term mortality. *Eur Respir J* 2010;35:1303-11.

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