

An unusual, severe adverse reaction to silver nitrate cautery for epistaxis in an immunocompromised patient*

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SUMMARY

Silver nitrate cautery is frequently used to control epistaxis. Although relatively free of side effects, we have encountered a case of a severe mucocutaneous reaction to silver nitrate cautery to the nose. The pathogenesis of this adverse effect is discussed.

Key words: epistaxis, cautery, adverse effects, immune disorders

INTRODUCTION

The management of epistaxis by cautery is a well-established method of practice. Cautery with a silver-nitrate-tipped stick (Avoca Caustic Applicator; 75% silver nitrate) has been advocated as the treatment of choice in cases where a bleeding vessel is visible (Ludman, 1981). This has been borne out by previous studies demonstrating the efficacy of chemical cautery in halting epistaxis (Small et al., 1982; John et al., 1987). Following preliminary local anaesthesia and vasoconstriction of the septum with a suitable agent, firm pressure with the stick directly on the bleeding point and on either side of it for a few seconds is required. In addition, the temporary insertion of a piece of cotton wool to apply pressure to the cauterized area may be required to control persistent oozing (Barr, 1989).

Silver nitrate produces a local astringent action by coagulating albumin and forming a complex precipitate on contact with the nasal secretions. Silver toxicity is extremely rare in the concentrations used, but transient sneezing and rhinorrhoea have been reported in patients with heightened sensitivity (Bhargava et al., 1980). Excessive application may produce widespread chemical burns in cases where simultaneous cautery of opposite sides of the septum at the same location has been carried out (Randall and Freeman, 1991). The following case describes a woman with multiple myeloma presenting with recurrent epistaxis, who developed a severe mucocutaneous reaction to chemical cautery to the nose.

CASE REPORT

A 67-year-old woman with IgG multiple myeloma presented to the ENT Department with a long history of recurrent minor epistaxis from both nostrils. There was no significant past medical history. Examination of her nose revealed the presence of

prominent varices in both Little's areas of the septum. Following preliminary topical anaesthesia with 5% cocaine solution, these varices were cauterized with silver-nitrate-tipped sticks with no immediate adverse effects.

She returned to the department a week later with a history of swelling, discomfort and a visible rash around her nostrils since the day following her nasal cautery, which had not settled following completion of a course of oral penicillin. On examination, she had an extensive erythematous rash with overlying vesiculation and scabbing involving the mucosa of the anterior aspects of both sides of the septum, and the skin of the vestibules, columella and nasolabial areas (Figure 1). A full blood count showed a haemoglobin of 70g/l, a white blood cell count of $0.7 \times 10^9/l$ (neutrophils: $0.2 \times 10^9/l$; lymphocytes: $0.4 \times 10^9/l$) and a platelet count of $54 \times 10^9/l$. Her urea and electrolyte levels including calcium assay were within normal limits. A coagulation profile was normal. Microbiological studies included CRP (<0.1) and blood serology - which demonstrated viral antibody titres including herpes virus antibody levels to be insignificant - a nasal swab from the affected area (which revealed no growth), and culture of tissue samples from the nose for viruses, bacteria and fungi, which again revealed no pathogenic growth. Plasma immuno-electrophoresis showed the following levels: IgA: 0.07 g/l (normal: 0.90-4.10); IgM: 0.27 g/l (normal: 0.40-2.65); and IgG: 32.21 g/l (normal: 6.80-14.50). Immunofixation studies showed the IgG to be a kappa-paraprotein. She was admitted and treated with a reducing course of prednisolone, co-amoxiclav and topical application of 2% fusidic acid and 1% hydrocortisone-acetate cream. Her symptoms of swelling and discomfort improved and the rash gradually subsided. She was discharged three days later and on review a fortnight later, the reaction in and around her nose had settled almost completely (Figure 2).

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Figure 1. Severe mucocutaneous reaction to silver nitrate cautery in a patient with multiple myeloma.



Figure 2. Appearance of the patient at two weeks following treatment with steroids.

DISCUSSION

Although chemical cautery has been shown to be relatively safe and effective in the vast majority of cases, its use can occasionally pose several problems. In the case of our patient with multiple myeloma, it is possible that the adverse reaction was due to an idiosyncratic response to the silver compound, a bacterial infection or an infection such as herpes simplex, which can give very bizarre appearances in immunocompromised patients and

can be triggered by mucocutaneous trauma. An infectious aetiology is probably unlikely due to the negative results obtained with microbiological studies. Another possible cause for the clinical appearances would be a subacute granuloma, a lesion often associated with trauma or local irritation representing a vasoproliferative inflammatory response. It is however usually solitary and polypoid and requires treatment by surgical excision (Lim et al., 1994). In the case described, the extensive erythematous rash, which regressed completely on treatment with systemic and topical steroids, may have been attributed to the underlying immunological deficiency, where presentation of an antigenic stimulus in the form of a caustic chemical substance applied directly to mucous membrane may have triggered off an abnormal immune response.

Multiple myeloma is a disseminated neoplastic disease of the B-lymphocytic system, in which a clone of transformed plasma cells in the bone marrow leads to the excessive production of abnormal immunoglobulins or portions of immunoglobulin molecules. An underlying immunological dysfunction with a compromised ability to manifest a normal humoral immune response after antigenic stimulation is frequently encountered in patients with multiple myeloma. This is partly due to severely depressed serum levels of normal immunoglobulins as a result of their accelerated catabolism by the abnormal paraprotein (Salmon, 1985). In myeloma, an inhibitory substance is secreted that activates macrophage-mediated suppression of proliferation of normal antibody-producing B-cell clones (Salmon, 1985). This phenomenon may have been responsible for prevention of a normal antigen-antibody reaction on presentation of an antigenic stimulus in the nose. On the other hand, an abnormal exaggerated immunological response mediated by the antigen-binding M-component of the myeloma immunoglobulin may have also contributed to the severe mucocutaneous reaction suffered by the patient.

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