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differentiated, but this has no adverse influence on the response to treatment with regard to morbidity and mortality.

Autopsy series reports confirmed pulmonary involvement from carcinoma prostate in 24-74% of cases, but clinical pulmonary involvement is found in less than 6%, thereby demonstrating that pulmonary metastases are more frequent than has been appreciated on clinical evaluation. The incidence of intrathoracic metastases from carcinoma prostate at presentation in 1,435 patients has been found to be 5.2% (nodular disease 4.2%, lymphangitic spread 0.2%, mediastinal adenopathy 0.6%, and mediastinal adenopathy with pulmonary nodules (0.2%).³ Nodular variety tends to remain asymptomatic, but interstitial infiltration may produce progressive cough, dyspnoea, cor pulmonale and debilitation; however, our patient was free of these symptoms.

Missing the early diagnosis is a matter of concern for patients presenting in an atypical way such as in this case. Diagnosis dependent on elevated prostatic acid phosphatase level may fail, as 15-20% of metastatic prostatic carcinoma do not show elevated level by immunofluorescent method. However, prostatic antigen detection by immunoperoxide technique in metastatic prostatic cancer has achieved 100% positivity.⁴ Monoclonal antibodies against prostate antigens and radio-immunodetection of prostatic cancer using total body photoscan have been used successfully as diagnostic tools.⁵ Although not widely available, estimation of prostatic-specific antigens in suspected cases

may be a more sensitive indicator for detailed investigation of prostatic cancer.

Prostatic cancer is the second most common malignant tumour in men over 55 and the second most common cause of death from carcinoma, after carcinoma of the lung and bronchus. One-third of the patients with prostatic cancer are found to have metastasis at presentation. Prostatic cancer should be considered in the differential diagnosis of a man above 50 presenting with supraclavicular lymphadenopathy and/or noduloreticular shadowing on a chest X-ray, even when he is free of prostatic symptoms and has normal serum prostatic acid phosphatase level.

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An allergic reaction to intravenous methylprednisolone administration

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Abstract

A 60-year-old woman with acute asthma developed generalised urticaria and rapidly worsening bronchospasm immediately after IV administration of methylprednisolone sodium succinate. Subsequent skin testing was positive for this, but for no other corticosteroid. Later, both IV dexamethasone during a recurrent attack and oral prednisone for panhypopituitarism were well tolerated. This patient and a review of the literature reveal that corticosteroids are a very rare but important cause of anaphylaxis-like reaction.

Introduction

Ironically, corticosteroids, which have a long history in

the treatment of allergic conditions, can themselves induce anaphylaxis-like reactions. Peller and Bardana recently reviewed the literature of anaphylaxis-like reactions following topical and parenteral hydrocortisone administration.¹ We present a panhypopituitary asthmatic patient who developed an anaphylactic reaction after IV methylprednisolone sodium succinate (MPSS) and a review of the literature.

Case report

A 60-year-old woman, never previously treated with steroids, was admitted with a severe attack of asthma. When first investigated at our centre, she gave a 20-year history of intermittent bronchial asthma exacerbated by cold air currents, cold drinks, exposure to house dust and grass as well as emotional upsets. Serum IgE level and peripheral eosinophil count were

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moderate obstructive lung disease; forced expiratory volume in the first second was 65% and peak expiratory flow rate 70% of predicted values. Intradermal skin testing was positive with erythema and wheal with pseudopod for several grasses (Bermuda, Timothy and Alfa alfa).

Two years before admission, she had been found to have hypogonadism and hypothyroidism. Her random serum cortisol and serum prolactin were normal. Enhanced CT scanning showed a partially empty sella suggesting pituitary infarction in the past.

She was doing well on salbutamol inhaler prn and thyroxine 0.1 mg daily until two days prior to admission when she developed a progressive dry cough, nasal congestion and severe increasing dyspnoea, despite starting theophylline 250 mg tid and regular salbutamol inhalations two puffs qid. On examination she had sinus tachycardia of 106/minute, blood pressure 124/68 mmHg, pulsus paradoxus of 20 mmHg, respiration rate 46/minute and temperature of 37.5°C. She could not lie flat, had to use her accessory respiratory muscles, and a severe wheeze was audible throughout both lung fields.

She was treated in the Emergency Room with oxygen, nebulised salbutamol 5 mg in 2 ml of normal saline, a loading dose of aminophylline IV 5 mg/kg (serum theophylline level before <2 µg/ml) and methylprednisolone acetate (MPSS) (Solu-Medrone from Abbott) 250 mg IV. Within five minutes she developed rapidly progressive increase of her bronchospasm and an acute generalised itchy urticarial rash. She responded quickly to epinephrine 1:1000 0.3 ml SC and diphenhydramine IV 75 mg over five minutes. No further steroids were given and her asthma settled over the next 24 hours on oxygen, IV aminophylline and nebulised salbutamol. Intradermal skin testing by an allergist showed no reaction to normal saline, or 1:1000 solutions of MPSS, hydrocortisone sodium succinate (Solu-Cortef from Abbott) and dexamethasone. After intradermal histamine and 1:100 solution of MPSS, an itchy erythema and a wheal greater than 21 mm in diameter with pseudopods developed. Endocrine re-evaluation demonstrated that the patient had now developed panhypopituitarism.

During a readmission with an acute exacerbation of her asthma two months later, she was treated with IV dexamethasone without reaction. She was discharged and has remained well on theophylline for her asthma and thyroxine and prednisone replacement therapy.

Discussion

Our patient is an asthmatic who developed acute generalised urticaria and rapidly progressive increase of her bronchospasm within five minutes of IV MPSS administration. She had no cardiovascular collapse, but it is well recognised that the respiratory tract alone is more frequently involved in fatal anaphylaxis (70%) than is the cardiovascular system (25%).² Just prior to the administration of MPSS she had been given 0, and

her asthma. These observations, as well as the time-related occurrence of an urticarial rash and the positive skin test, makes the abrupt worsening of her asthma just after IV MPSS most likely to be secondary to anaphylaxis rather than a spontaneous exacerbation.

Subsequent intradermal skin testing showed a wheal and flare response to MPSS but none of the others tested showed such a response, including hydrocortisone sodium succinate, which makes it improbable that she is allergic to the sodium succinate *per se*. Other components in Solu-Medrone and Solu-Cortef are identical and consist of sodium biphosphate, dried sodium phosphate and benzyl alcohol. It appears that our patient reacted to the complete molecule of MPSS. This probably combines as a hapten to an endogenous carrier protein to form the allergen which provokes the anaphylactic response.

Our patient was not rechallenged with MPSS, but during a subsequent asthma attack she was treated with IV dexamethasone (Decadron MSD), and had no allergic reaction, although this contains parabens and sodium bisulfate which have been known to provoke such responses.³ Due to her panhypopituitarism she required steroid replacement and oral prednisone was well tolerated. Both these corticosteroids had shown a negative skin test. She was not skin tested against salbutamol or theophylline since re-exposure to these drugs caused no recurrence.

Five other reports have described anaphylactic responses to methylprednisolone.⁴⁻⁸ Mendelson *et al*⁴ reported a patient who developed anaphylaxis after IV methylprednisolone and hydrocortisone sodium succinate. This was not caused by the sodium succinate common to both these drugs since a similar response followed the ingestion of plain methylprednisolone. Freedman *et al*⁵ reported a patient who developed increasing bronchospasm, rash, cyanosis and hypotension after IV MPSS. Subsequent skin testing was positive for succinate esters of methylprednisolone and hydrocortisone but was negative for their acetate esters. Rao *et al*⁶ described an anaphylactic shock developing twice in a patient after IV MPSS. Intradermal testing with each individual component in the vial demonstrated a positive wheal and flare to MPSS only. Pryse-Phillips *et al*⁷ reported a patient who developed urticaria and hypotension but no bronchospasm during IV infusion of MPSS. His skin test was later positive to methylprednisolone only. The allergic reaction may thus be caused by the steroid molecule itself,^{4,7} its ester^{5,6} as in this patient, or the solvents in the preparation.^{1,3}

McNamara⁸ described a patient who, following resuscitation after an anaphylactic reaction to IV MPSS, was given a Medi Alert bracelet listing steroid allergies. Since such patients are often dependent upon glucocorticoid therapy either for asthma, or, like this patient, for another illness, skin testing with different corticosteroids becomes very important to establish not only those to which the patient is allergic but also

patient not to be deprived of potentially life-saving medication, only the former should figure on the Medi Alert bracelet.

Physicians using corticosteroids, particularly for acute asthma, should be aware that these drugs may – albeit rarely – induce anaphylactic reactions including worsening of bronchospasm.

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von Recklinghausen neurofibromatosis and myelomatosis

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Summary

We report a case of von Recklinghausen neurofibromatosis associated with myelomatosis. The association of these two relatively common conditions has not been described previously. We discuss the hypothesis that the NF-1 gene confers a degree of protection from certain common adult malignancies.

Introduction

von Recklinghausen neurofibromatosis (peripheral neurofibromatosis or NF-1) is an autosomal dominant condition with a prevalence of approximately one in 3,000.¹ The NF-1 gene has recently been mapped to chromosome 17.² Certain malignancies are associated with the condition, and include neurofibrosarcomas, pheochromocytomas and other APUDomas, as well as Wilm's tumour and childhood leukaemias. However, despite an anticipated bias in favour of reporting associations with neurofibromatosis, there have been relatively few reports of malignancies which occur commonly in an unaffected population.³

Case report

A 75-year-old European man was admitted as an emergency having fallen at home. He had collapsed with pain in his left thigh and was unable to stand. The pain had been present before the fall and he had been breathless on exertion for several weeks. He had von Recklinghausen neurofibromatosis, but had not been in hospital before and was taking no prescribed medication. There was no family history of neurofibromatosis. His father, mother, brother and half-brother were

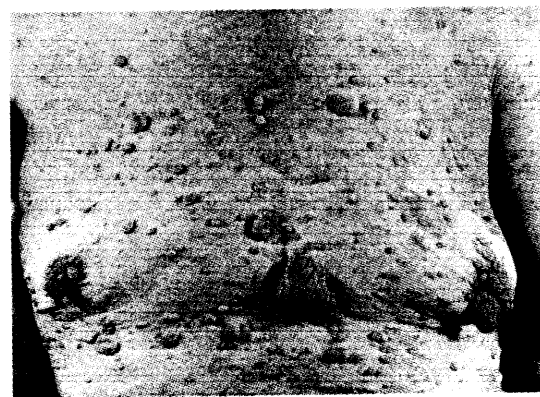


Figure 1. The patient's chest showing multiple sessile and pedunculated neurofibromas and several café-au-lait patches.

said to have been unaffected. The patient had never married and had no children.

Examination revealed stigmata of von Recklinghausen neurofibromatosis: multiple neurofibromas of the skin, lips and eyelids, and café-au-lait patches (Figure 1). He was anaemic and was unable to bear weight on his left leg because of pain in the upper femur.

Investigations confirmed anaemia: haemoglobin 7.2 g/dl, MCV 108 fl, white cell count $3.2 \times 10^9/l$, platelets $141 \times 10^9/l$. The peripheral blood film showed macrocytosis, moderate neutrophil hypersegmentation and rouleaux formation. Erythrocyte sedimentation rate (Westergren) was 158 mm/hour. Serum electrolytes