

and/or constipation) and rash and other skin disorders.² Thrombotic thrombocytopenia has also been reported on several occasions. Isolated thrombocytopenia,³ and thrombocytopenia with purpura⁴ without evidence of thrombotic thrombocytopenia, resolving promptly after withdrawal of the drug, have also been documented. In our patient, discontinuation of clopidogrel rapidly reversed the low platelet count. The other drugs that the patient was taking (atenolol and isosorbide dinitrate) have been in use for many years in patients with cardiovascular disease, without any known adverse effects on platelet count and blood coagulation. We therefore believe that clopidogrel was the drug responsible for the thrombocytopenia and the resulting haemorrhage in herpes zoster lesions in this patient.

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Chromosome 22q11.2 deletion syndrome associated with severe eczema

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Chromosome 22q11.2 deletion syndrome (DS22q11.2), caused by the hemizygous deletion of contiguous genes at chromosome 22q11, has a variable phenotype, including DiGeorge's syndrome and velocardiofacial syndrome.¹ As patients have various malformations associated with branchial arch structures, including thymus hypoplasia, they show severely deficient cell-mediated immunity. Although the association of primary immunodeficiency syndromes with allergies and autoimmune diseases has long been recognized, only one DS22q11.2 case with severe eczema has been reported to date.² We report the first DS22q11.2 patient with an itchy eruption, hyper-IgE level and eosinophilia, mimicking atopic dermatitis (AD).

A 3-month-old Japanese boy presented with pruritic eruption over the whole body since birth. He was born at 40 weeks' gestation, and showed neonatal hypocalcaemia, congenital heart defects and abnormal facial appearance. The diagnosis of DS22q11.2 was confirmed by chromosomal analysis using fluorescent *in situ* hybridisation. There was no family history of AD.

Clinical examination revealed scaly xerotic diffuse erythema with evidence of scratching over the whole body. The face and trunk were involved more severely than the limbs (Fig 1 a–c). A laboratory examination showed decrease in CD4-positive T cells, a high level of IgE and eosinophilia.

A skin biopsy was taken, which showed spongiotic dermatitis with superficial perivascular infiltration of

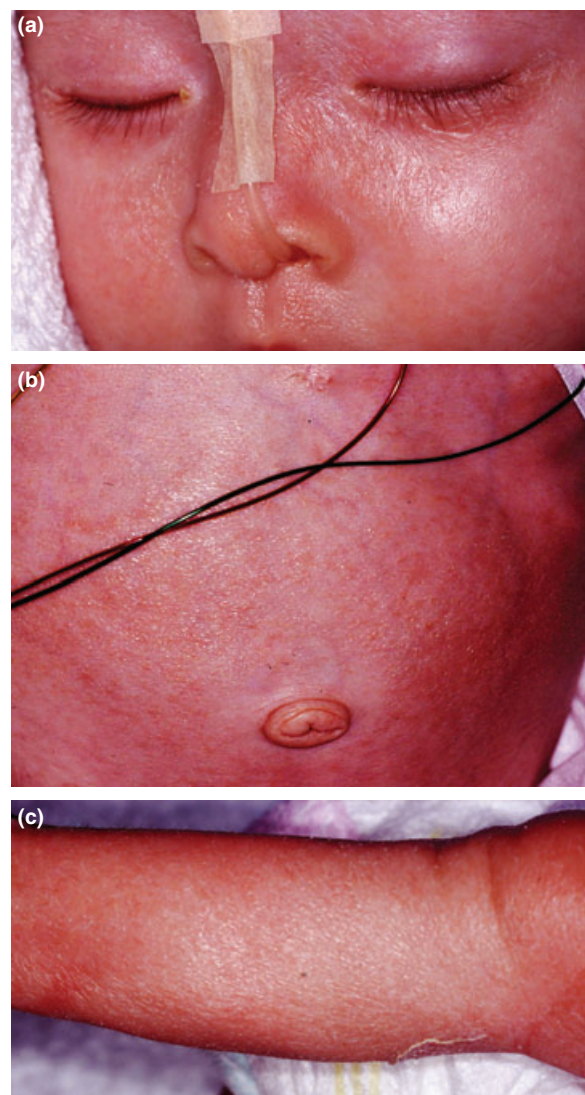


Figure 1 Scaly xerotic diffuse erythema with scratching was seen on the whole body. (a) The face and (b) the trunk were involved more severely than (c) the limbs.

mononuclear cells and eosinophils. The patient was treated with topical hydrocortisone, resulting in only minimal improvement. A diagnosis of interstitial pneumonia led to treatment with oral prednisolone, which resulted in improvement of the skin. However, the child died of respiratory and heart failure from pulmonary atresia with ventricular septal defect.

The common association of primary immunodeficiencies with allergies and autoimmune diseases raises the question of why immunodeficient patients can develop symptoms suggestive of immune-system hyperactivation. Recently, regulatory T cells (Treg), a particular subset of T cell, have been increasingly implicated as important in negative regulation of immune responses and prevention of immunological disorders.³ Natural Treg cells develop in the thymus, and neonatal thymectomy can cause various organ-specific autoimmune diseases in mice. In addition, mutations of the *FOXP3* gene, which is known as a master gene for differentiation of Treg cells, results in immune dysregulation polyendocrinopathy enteropathy-X-linked syndrome. Features of this syndrome include severe eczema, hyper-IgE level and eosinophilia.³ Furthermore, it has recently been suggested that Treg cells may contribute to the amplification of T-cell activity in AD,⁴ although many factors are involved in the pathophysiology of AD.⁵ These results suggest that impaired Treg function in primary immunodeficiencies can induce symptoms suggestive of immune-system hyperactivation, such as AD.

DS22q11.2 is a relatively common primary immunodeficiency syndrome, estimated to affect 1 in every 3000 live-born individuals.¹ Although only one previous case of DS22q11.2 with severe eczema has been reported (ours is the second), a recent statistical study showed that DS22q11.2 is significantly associated with both eczema and asthma.² Thus, clinical dermatologists should be aware that DS22q11.2 may present as the AD-like skin diseases found in Wiskott–Aldrich syndrome and Netherton's syndrome, and in contrast to true AD, allergen avoidance should not be used for these patients.

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Contact allergy to ketoconazole cross-sensitive to miconazole

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Imidazoles are the most commonly prescribed antimycotics. Contact allergies to various imidazoles have been reported,¹ and some of the imidazoles show crossreactivity to each other.² Imidazoles are also used in products such as antidandruff shampoo and film-developing reagents, and it is possible that patients are sensitized by such products before seeing dermatologists. We report a case of cross-sensitivity to both miconazole and ketoconazole, and discuss the sensitizing process.

A 70-year-old woman presented in our dermatology clinic with a report of chronic itching and increased dandruff for about 18 months. She had no history of allergic skin diseases or dermatomycosis.

Upon examination, erythema with scales all over the scalp was seen. The patient was diagnosed as having seborrhoeic dermatitis, and prescribed ketoconazole lotion. The dermatitis worsened greatly after a week of lotion application, with exudates and crust appearing on the face, scalp and neck (Fig. 1a, b), and contact allergy to the prescribed lotion was suspected. Under detailed questioning, the patient denied any previous use of topical antimycotics; she revealed, however, that she had started using an antidandruff shampoo containing miconazole, after which she got the scalp symptoms. Patch testing with all the ingredients of the shampoo and with ketoconazole lotion showed positive reactions to both miconazole and ketoconazole (Table 1). Therefore, it seemed likely that the patient had been sensitized first to miconazole in the shampoo and had then developed crossreactive allergy to ketoconazole. Patch testing with bifonazole and clotrimazole creams and tacalcitol lotion were negative.

Oral prednisolone 0.25 mg/kg/day was given for 2 weeks, together with topical corticosteroid. Discontinuation of the miconazole shampoo cleared the patient's original dermatitis.

Seborrhoeic dermatitis is one of the most common diseases in ordinary dermatology clinics, and ketoconazole is often prescribed for it. Miconazole is also used in antidandruff shampoos in Japan, and ketoconazole in similar shampoos in Europe and the USA. In addition to medical use, miconazole is also used in canine shampoo³