

ration of sputum occurred in April 1992 (age, 52 years). Atopic bronchial asthma (IgE antibodies specific for *Candida*, *Aspergillus* and *Alternaria* were positive) was diagnosed, and treatment with bronchodilators was started in July. His condition improved in response to bronchodilators and inhaled corticosteroids, but dyspnea developed in September 2000. The patient was admitted because of radiographic evidence of pulmonary infiltration. The serum IgE level was 4190 IU/ml (normal: < 250 IU/ml), and the peripheral eosinophil count was $2.18 \times 10^9/\mu\text{l}$ (normal: $0.07\text{--}0.44 \times 10^9/\mu\text{l}$). *Aspergillus* immediate type skin reaction and precipitating antibodies to *Aspergillus fumigatus* were positive. Serum IgE and IgG antibodies specific for *Aspergillus fumigatus* were positive, and a computed tomographic scan of the chest revealed central bronchiectasis. ABPA was diagnosed. Prednisolone 40 mg was given and the symptoms improved. The serum IgE level decreased to 843 IU/ml, and the eosinophil count fell to $0.612 \times 10^9/\mu\text{l}$. The dose of prednisolone was gradually tapered to 10 mg, and the patient was discharged. In January 2001 pain of the left-hand fingers, occurring occasionally since the previous admission, worsened and coldness developed. In addition, the patient had gait pain of the right lower extremity, eosinophilia ($4.4 \times 10^9/\mu\text{l}$), thrombocytopenia ($67 \times 10^9/\mu\text{l}$), and elevated levels of IgE, eosinophilic cationic protein ($150 < \mu\text{g/l}$, normal: $< 15.7 \mu\text{g/l}$), an increased C-reactive protein level; he was therefore readmitted. Angiographic examination of the left lower extremity revealed blockage of flow in the radial artery, leading to a diagnosis of radial artery thrombosis. Venography of the right lower extremity showed interruption of flow, and deep venous thrombosis was diagnosed. These results and the presence of lupus anticoagulant led to a diagnosis of APS. The patient responded to treatment with urokinase, heparin, and prednisolone 60 mg and was discharged. Chest symptoms did not occur during this admission.

To our knowledge, this is the first reported case of ABPA associated with APS.

Marked eosinophilia is sometimes associated with thromboembolism (1, 2).

Eosinophilic cationic granule proteins potentially inhibit the anticoagulant activities of glycosylated forms of thrombomodulin, mainly major basic protein (3).

Because the increase in the eosinophil count coincided with the decrease in the platelet count, eosinophils may have played a role in the development of APS in our patient. The elevation of major basic protein associated with the increased eosinophil count most likely suppressed thrombomodulin, inhibited activation of protein C, and activated fibrinogen (4). Such an increase in eosinophils may represent preliminary activation of the coagulation cascade.

In our patient, antiphospholipid antibody may have increased the risk of thrombosis. The presence of anti-SS-A antibody in our patient suggested the involvement of some immune disorder in the development of ABPA and APS.

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Adverse reactions linked to Quorn-brand foods

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Key words: allergy; food; fungus; gastrointestinal; hypersensitivity; mycoprotein; Quorn.

Quorn-brand meat alternatives sold nationally since

1993 in the United Kingdom and since 2002 in the United States appear to cause adverse reactions in some consumers. The products are based on 'mycoprotein'-processed *Fusarium venenatum* fungus.

The Center for Science in the Public Interest has received 284 reports of adverse reactions via an Internet site (www.quorncomplaints.com) and frequently amplified through telephone conversations or e-mails. Eighty percent of the reports came from the UK; the others came from elsewhere in Europe and the US. Symptoms occurred for several minutes to several hours after ingestion of Quorn. A total of 143 people (50%) experienced adverse reactions on two or more occasions. Some complainants got sick the first time they ate Quorn, and others only after eating it several times.

Severe vomiting was the most common reaction (179; 63%), including seven reports of bloody vomit. Diarrhea was also common (95; 33%). Nine people reported fainting after vomiting, with one treated for dehydration. Nine people reported hives/rash and swelling of face, tongue, or throat. One person each reported anaphylaxis and fecal incontinence. Only 15 individuals (5%) reported allergies to mold, uncooked mushrooms, cashews, wheat, or soy.

Several cases are consistent with immediate hypersensitivity reactions. A 41-year-old woman experienced anaphylaxis for the first time 30 min after eating Quorn. A 51-year-old man experienced numbness and swelling in his lip and cheek 10 mins after eating Quorn.

A novel fungus-derived ingredient in meat substitutes may cause gastrointestinal and other symptoms in consumers.

A 50-year-old man began experiencing nausea, breathing difficulty, and hives on his back and buttocks 10 min after eating Quorn.

Those anecdotal reports are supported by other data. Marlow Foods Ltd., Quorn's producer, receives about 100 adverse-reaction reports (including several IgE food-allergy reactions) annually (1). An 'idiosyncratic response' of vomiting and diarrhoea occurred in 10 complainants (2). Two complainants had a skin-prick test response to mycoprotein > 2 mm. Food challenges were not conducted.

In a company-sponsored, double-blind study, 200 volunteers ate up to 15 g (dry weight) of mycoprotein up to eight times over 4 weeks (3). Another 100 volunteers ate foods without mycoprotein. Six people in the test group vomited a total of seven times. Three of those people agreed to rechallenges (up to four), with one person vomiting again (4). One person in the control group vomited, but was not rechallenged. In contrast, another company-sponsored study did not detect symptoms that the researchers ascribed to the test material (5).

Research is needed to find the mechanism(s) by which mycoprotein causes symptoms. Regardless of the mechanism, physicians should be aware that Quorn may cause illnesses. Acceptance by government agencies (6) of Quorn as being safe raises questions about the adequacy of those agencies' premarket reviews and postmarket monitoring of novel ingredients.

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A case of isolated rice allergy

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Key words: food allergy; gastrointestinal symptoms; rice; urticaria.

Rice (*Oryza sativa*) belongs to the sub-family of Oryzoidea which is a member of the Gramineae family. Although rice is one of the most common cereals produced and consumed around the world, there have been only a few reports on rice allergy most of which define contact urticaria caused by raw rice (1, 2). There are only two reports in the literature describing immediate hypersensitivity reactions after ingestion of rice (3, 4). A 9-year-old girl was admitted to our asthma clinic for routine follow-up visit

and had been under regular follow-up during the last 2 years. She had been found allergic to grass pollens through intradermal but not epidermal tests. However, her history was not suggestive of any seasonal symptoms. Her skin prick tests (SPTs) with other common inhalant (ALK, Horsholm, Denmark) (mites, weeds, trees, animal dander, and molds) and food allergen extracts (Allergopharma, Reinbek, Germany) (hen's egg, milk, soy, wheat, fish, and peanut), and her specific IgE to grass pollens had also been found negative. During that visit, her parents informed that she 'dislikes' foods constituting rice and avoided eating them for the last 3 years. A couple of attempts to feed her with rice resulted in immediate nausea, abdominal pain and diarrhea. On one occasion, she had suffered urticaria-angioedema in the kitchen when her mother was sorting rice.

We performed SPT (Allergopharma, Reinbek, Germany) and prick-prick tests with various cereals including rice, wheat, barley, oat and lentil, and demonstrated a (++++) wheal and flare reaction only to rice with both tests. The total IgE concentration was 165 kU/l, and IgE specific to rice (CAP-FEIA, Pharmacia, Uppsala, Sweden) was 13.2 kU/l (Class 3). For a more definitive diagnosis we performed a double-blind, placebo-controlled food challenge which result in nausea, abdominal pain and diarrhea after 10 min of ingestion.

Although our patient demonstrated positive response to grass pollens through intradermal skin tests, her SPT response and specific IgE to grass pollens were negative, and her asthma symptoms were perennial rather than seasonal. It has been pointed out that the presence of a positive intradermal skin test response in the presence of a negative SPT response does not indicate the presence of a clinically significant sensitivity (5). Thus, we excluded grass pollen sensitivity. Cereal grains may show cross-reactivity with grass pollens and each other. Our patient had no problems when eating other cereals. Her SPTs and prick-prick tests with available cereals were also negative. Therefore, it seems rice allergy in our patient is isolated instead of being a co-sensitization to grass pollens or other cereals.