

difference that is highly significant. Thus, the percentage of subjects complaining of symptoms suggesting atopy is higher in females.

In contrast, the percentage of subjects with both a history of hay fever and a positive skin test to grass pollens (Table 2) is comparable in both sexes. Likewise, the percentage of subjects with a history of asthma, hay fever and childhood dermatitis, and at least a positive skin test, is very similar in men and women (Table 2). Thus, if atopy is defined according to skin tests to common allergens, its prevalence is similar in both genders.

The explanation for this excess of reported symptoms in females is unclear. It is not related to the age distribution of men and women in our studied population, which was very similar (mean age in men: 39.8 ± 13.1 , mean age in women: 40.1 ± 13.3). Another hypothesis could have been that female interviewees could be more prone to provide positive answers to female interviewers. Indeed, 11 out of our 17 interviewers were female. However, the same results were also observed in data collected by male interviewers.

In the literature, so far, epidemiological surveys [1, 2] have provided similar estimates of allergic symptoms in adults of both sexes. However, Freidhoff *et al.* [3] stated that if the proportion of men and women reporting allergy was similar, in people reporting allergy, the relative proportion (mean: women) of positive skin tests to at least one environmental allergen was 2:1. These data, together with ours, suggest that atopy should be defined according to biological criteria of IgE-mediated responsiveness rather than according to symptoms.

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Anaphylactoid reaction after injection of anti-rhesus-D-hyperimmunoglobulin

Introduction

Anti-D-immunoglobulin prophylaxis has resulted in a significant fall in the frequency of haemolytic disease in new-born infants and has been used world-wide without major problems regarding side-effects [1–3]. Here we want to report the case of an anaphylactoid reaction to anti-D-immunoglobulin.

Case report

Patient M.D., 25 years old (blood group B Rh⁻), whose husband is Rh⁺, had tolerated the first prophylaxis with anti-D after the birth of her first child, 3 years ago. Nine months ago, after termination of a four month abortus and curettage, she again received 200 µg anti-Rh200 (Biotest, Frankfurt, FRG) intramuscularly. Immediately after the injection the patient experienced itching, heat sensation and tachycardia, and fell unconscious for several minutes. Immediate treatment with high doses of glucocorticosteroids, antihistamines and fluid infusions led to complete recovery.

When the patient appeared at the allergy division of our clinic she presented in normal physical condition, there were no pathological skin or clinical changes.

There was no history of atopic diseases in the personal or family history, although the patient's mother had experienced an ampicillin rash.

Test results

Under emergency conditions, skin tests with the hyperimmunoglobulin as well as other human gammaglobulin preparations were performed. There were only negative or doubtful test reactions (Table 1).

It was concluded that the patient had suffered from a pseudo-allergic anaphylactoid reaction. We recommended that future applications of human gammaglobulin

Table 1 Results of skin tests with different human immunoglobulin preparations in patient M.D.

Test reagent	Concentration	Reading after		
		20 min	12 hr	2 days
<i>Prick test</i>				
Anti Rh200	1 : 10	φ	φ	φ
Anti Rh200	Undiluted	φ	φ	φ
Human albumin	5 g%	φ	φ	φ
Standard gammaglobulin (Beriglobin)	16 g%	φ	φ	φ
NaCl	0.9 g%	φ	φ	φ
Histamine	0.1 μg/ml	++	φ	φ
<i>Intradermal test</i>				
Anti Rh200	1 : 10	φ	φ	φ
Anti Rh200	Undiluted	(+)*	φ	φ
Human albumin 5%	1 : 10	φ	φ	φ
Human albumin 5%	Undiluted	(+)*	φ	φ
Standard gammaglobulin (Beriglobin)	0.8 g%	φ	φ	φ
Standard gammaglobulin (Beriglobin)	1.6 g%	(+)*	φ	φ
NaCl	0.9 g%	φ	φ	φ
Histamine	0.1 μg/ml	++	φ	φ

* Control tests in 10 normal healthy volunteers showed similar changes indicating irritative reactions.

φ = Negative.

preparations should be avoided or (for life-saving indications) be performed under utmost caution.

Discussion

Adverse reactions to anti-D seem to be extremely rare [3, 4]. Jones *et al.* reported a case of serum sickness after several applications of anti-D [5]. To our knowledge no anaphylactoid reaction to anti-D has previously been reported.

However, anaphylactoid reactions have been described after application of various human serum proteins [6], but mostly the pathophysiology remained obscure. In some cases true allergy against constituents (e.g. preservatives as thiomersal) was detected [7]. We observed anaphylactoid reactions after infusion of human serum albumin with positive skin tests to modified HSA by the stabilizing substance caprylate [8]. According to the manufacturer, anti Rh200 contained no additives.

In the case presented here no sensitization towards human gammaglobulin or other serum proteins was detected. We suspect a pseudo-allergic reaction, i.e. an adverse reaction clinically mimicking the symptoms of allergy without immunological sensitization [9]. Pseudo-allergic reactions after application of serum proteins have been attributed to direct complement activation or mediator release by protein aggregates present in the protein solution [6, 8]. A similar mechanism might be discussed in the present case, although this cannot be proved retrospectively. A possible intravascular application of the hyperimmunoglobulin could contribute to the occurrence of such adverse side-reactions.

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