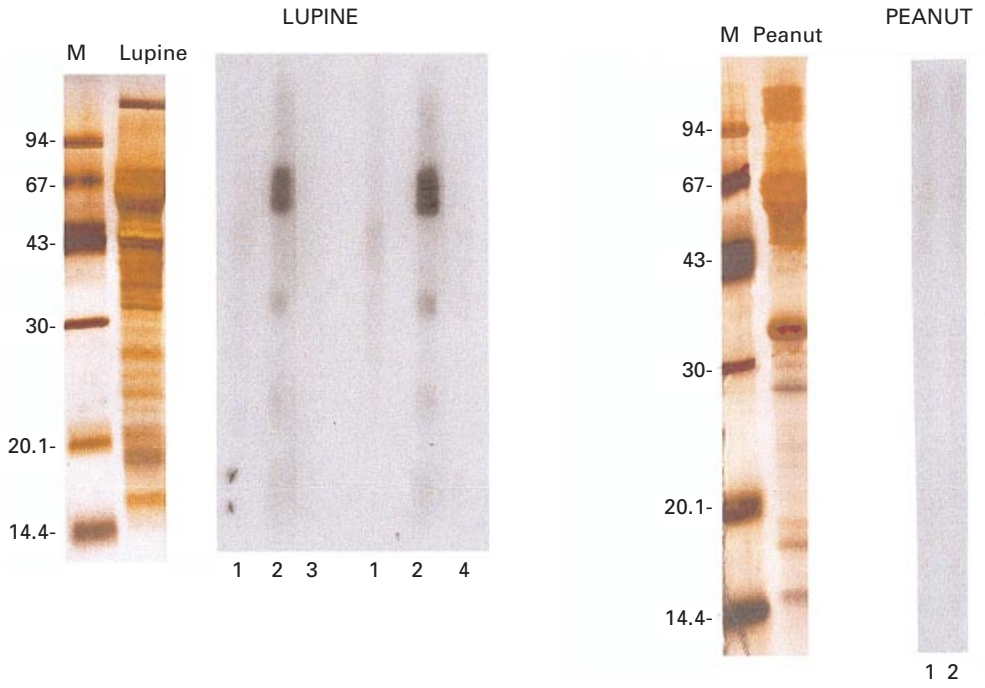

Figure 1. Lane M) marker; 1) pure TBS; 2) Parisot 1/10th; 3) Parisot inhibited by lupine flour; 4) Parisot inhibited by peanut.

evidence that it was occupational allergy to airborne lupine flour. Food allergy to lupine flour has been reported in patients allergic to peanut, showing a cross-allergy between these two legumes (1). A 43-kDa protein may be the major allergen. However, at least one case of lupine allergy without cross-allergy to peanut has been reported (2).

Our case is identical, but allergenicity has been related to other proteins (3, 4). The complete inhibition of the immunoblot with lupine flour by peanut, although the patient had no allergy to peanut, may indicate that the allergens involved in the airborne allergy are not relevant to peanut allergy.

To our knowledge, we report the first case of occupational allergy to lupine flour.

*Hôpital Central
54035 Nancy Cedex
France

Accepted for publication 30 March 2001
Allergy 2001: 56:918–919
Copyright © Munksgaard 2001
ISSN 0105-4538

References

1. Moneret-Vautrin DA, Guerin L, Kanny G, Flabbe J, Fremont S, Morisset S. Cross-allergenicity of peanut and lupine: the risk of lupine allergy in patients allergic to peanuts. J Allergy Clin Immunol 1999;**104**: 883–888.
2. Matheu V, De Barrio M, Sierra Z, Gracia-Bara MT, Tornero P, Baeza ML. Lupine-induced anaphylaxis. Ann Allergy Asthma Immunol 1999;**83**.
3. Helfe S, Lemanske RF, Bush RK. Adverse reaction to lupine-fortified pasta. J Allergy Clin Immunol 1994;**94**:167–172.
4. Romano C, Ferrara A, Tarallo S. Allergic reaction to lupine seed (*Lupinus albus*) [Abstract]. Allergy 1997;**52 Suppl 37**: 113–114.

Management of insulin allergy

R. Wessbecher*, M. Kiehn, E. Stoffel, I. Moll

Key words: allergologic diagnostics; allergy to human insulin; tolerance induction.

• We report a 59-year-old male patient who had diabetes mellitus type IIb for 8 years. After his thyroid operation, diabetes was first poorly controlled with oral antidiabetic medication and then treated intermittently with different insulins for 2 months before he used human insulin only. Subsequently, he developed itchy wheals at the site of injection which persisted for 2 h; several weeks later, he had systemic reactions with nausea, generalized pruritus, tachycardia, and a flare reaction at the older injection sites within 30 min after

Tolerance induction is the best treatment in insulin-allergic patients.

injection. He was transferrred for evaluation of insulin allergy and therapy. After 20 min, intradermal skin testing revealed a twofold positive reaction with erythema and urticaria to human insulin 40 U/ml at 1:100 and protamine. Protamine remained onefold positive after 24 h; human insulin became negative (Table 1). No systemic adverse reactions were noted. All other additives were negative.

Our patient showed skin reaction to protamine of a retarding insulin that he had tolerated before, but anti-IgE antibodies were not found. Insulin-specific IgE antibodies (measured by the UniCAP system of Pharmacia & Upjohn Diagnostics, Freiburg, Germany) were found for all the different insulins (porcine insulin 4.28 kU/l, human insulin 3.72 kU/l, and bovine insulin 2.61 kU/l). IgE antibodies for protamine were negative, and total IgE antibody was 290 kU/l. We started tolerance induction to human insulin by a rapid protocol. After seven injections at intervals of 30 min, the patient tolerated 1U human insulin. We used H-Insulin Hoechst® (now called Insuman rapid®) as follows: 0.004, 0.01, 0.02, 0.04, 0.1, 0.2, 0.5, and 1 U. The cumulative dose was 1.774 units after 3.5 h (15). After 11 subcutaneous injections, the required dose was reached. No allergic local or systemic reactions were observed. Finally, he tolerated 32 units of human insulin (12-10-10) and 16 units of insulin monotard HM® (9-0-0-7).

In a 2-year follow-up, our patient showed no relevant clinical symptoms, the skin test to human insulin was negative but still positive to protamine after 20 min and 24 h, and specific IgE antibodies to insulins were negative to porcine and bovine insulins (RAST class 0, quantitative <0.35 kU/l), or lessened like own human insulin (RAST class 1, quantitative 0.41 kU/l). The patient is still tolerating well his daily human insulin dosage of 25-20-20 IU, but local reactions which resolve spontaneously sometimes occur.

In general, allergic reactions to insulins might be developed at the beginning of therapy but also during the long course. They concern 10–56% of diabetics (1). Additives such as protamine may induce same cutaneous reactions by the presence of antiprotamine-IgE or -IgG antibodies and should be ruled out first (2). Tolerance induction with a regimen of rush or delayed administration of insulin injections is the treatment of choice. Additional antihistamine or coadministration of steroids may sometimes be helpful (3). The pathomechanisms of tolerance induction are still not known. When insulin therapy is interrupted or stopped, it is likely that skin tests and specific IgE antibodies will become positive again (4).

Table 1. Intradermal skin test schedule (test solutions for Human-Insulin Hoechst)

Agent	Concentrations	Test reading after 20 min	24 h
Human-Insulin Hoechst (40 U/ml)	0.1 ml 1:100	++	Ø
Protamine sulfate	0.1348 mg	++	+
Aqua ad injec.	ad 1.0 ml		
Protamine sulfate	0.1348 mg		
Sodium $H_2PO_4 \times 2H_2O$	2.1000 mg	++	+
Glycerol 85%	18.8235 mg		
Phenol	0.6000 mg		
m-Cresol	1.5000 mg		
Caustic soda solution	ad pH 7.3 mg		
Hydrochloric acid	ad pH 7.3 mg		
Aqua dest.	ad 1.0 ml		

*Department of Dermatology
University Hospital Hamburg-Eppendorf
Martinistr. 52
20246 Hamburg
Germany
E-mail: wessbech@uke.uni-hamburg.de

Accepted for publication 28 May 2001
Allergy 2001: 56:919–920
Copyright © Munksgaard 2001
ISSN 0105-4538

References

1. Liebermann P, Patterson R, Metz R, Lucena G. Allergic reactions to insulin. JAMA 1971;**215**:1106.
2. Bollinger ME, Hamilton RG, Wood RA. Protamine allergy as a complication of insulin hypersensitivity: a case report. J Allergy Clin Immunol 1999;**104**:462–465.
3. Grammer LC, Chen PY, Patterson R. Evaluation and management of insulin allergy. J Allergy Clin Immunol 1983;**71**:250–254.
4. Chng HH, Leong KP, Loh KC. Primary systemic allergy to human insulin: recurrence of generalized urticaria after successful desensitization. Allergy 1995; **50**:984–987.