

## Latex Allergy in Diabetic Patients

A call for latex-free insulin tops

Latex allergies have recently become more commonly recognized. It was only a matter of time before patients with diabetes would overlap with those of latex allergies. We admitted a 13-year-old boy with new-onset diabetes who was born with extrophy of the bladder requiring many surgical corrections. In many children with spina bifida and in others undergoing multiple urological procedures, latex allergies are well-known. Our patient reported that his lips had become quite swollen on a recent trip to the dentist, presumably secondary to the dentist's latex gloves. He also reported a severe allergy to peanuts.

Because of his presumed latex sensitivity, he was given his first few insulin injections in a latex-free fashion using a glass syringe and Humulin insulin withdrawn with the top removed. No local reaction was reported. His first local allergic reaction consisted of itching and a 0.5-cm erythematous flare occurring within minutes of an injection of Lilly IletinII pure pork insulin drawn through the top using a Becton Dickinson (BD) syringe. Subsequently, the same response occurred with Humulin and a BD insulin syringe. This eliminated the possibility of a pork allergy.

We developed a systematic approach to limit latex contact during insulin administration. Novo Nordisk informed us that their tops contained latex. Becton Dickinson stated that their insulin syringes contained latex but their TB syringes did not. Our patient had a local reaction to Humulin insulin withdrawn through the top with the BD TB syringe.

In August 1995, Towse et al. (1) described a laboratory technician with a 7-year history of diabetes who developed a local allergic reaction at the site of insulin injection. Further investigation ruled out insulin allergy and demonstrated elevated latex-specific IgE antibodies. The patient was able to use Terumo syringes (latex free) and Lilly insulin with no allergic response.

With the patient's and parents' consent, we divided the morning insulin

into two shots. After using a Terumo syringe (latex free) with 5 U of Humulin R drawn through the Lilly top, the patient again reacted. After using the Terumo syringe with 10 U of Humulin N drawn from a topless vial, he had a small amount of erythema with no wheal or itching. That evening, the dose was again divided and no alcohol was used to prepare the site. One shot was given using a Terumo syringe with Humulin drawn through the top. The second shot differed because the needle was wiped with 70% isopropyl alcohol after removal from the top and just before injection. The second site had much less erythema and itching.

Our final trial included two injections. The first injection contained Humulin N insulin drawn through the Lilly top into a Terumo syringe; the needle was dipped into 70% isopropyl alcohol and wiped. This produced a 0.5-cm wheal and 2-cm flare. The second injection contained Humulin R drawn through the Lilly top with a Terumo syringe. The insulin was transferred through the needle into a second Terumo syringe by removing the plunger and carefully injecting the insulin into the rear of the second syringe. The plunger was replaced and the exact dose measured. This injection with the "clean" (no piercing of Lilly top) needle produced no allergic reaction.

Through careful and persistent attempts, we eliminated the need for glass syringes, TB syringes with unavoidable dead space, and removal of the tops of each insulin bottle. Further communications with Eli Lilly (E. J. Bastyr, personal communications, August 1995) revealed that their tops are not latex-free, as mentioned in Towse et al. (1) but indeed contain 10% latex. Results of our patient's IgE specific antibody panel were latex 4,131% and peanuts 4,995%, reported by Smith Kline Beecham as class 5 reactivity on a scale from 0 to 6.

Latex allergy can lead to dire consequences. Because of the increasing number of latex-sensitive individuals, latex-free products must be made available. Our temporary solution of a dual syringe injection procedure is certainly inconvenient, time consuming, and more costly. At this moment it is working well, but as soon as possible, insulin companies need to start using latex-free tops. We ap-

plaud Terumo for their latex-free syringes.

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## IDDM and Pancreatic Carcinoma in Sardinia

Recently, a significant association between pancreatic carcinoma and diabetes has been reported (1,2). In the case of IDDM, a distribution of both diseases nicely correlating across some European countries (at high, medium, and low risk for IDDM), including Italy (except Sardinia) and Japan, has been described (2). The observed geographical association found to be statistically significant ( $r = 0.59$ ,  $P = 0.005$ ), supports, according to the authors, the hypothesis of a common environmental factor(s). To further test the hypothesis of whether the high incidence of IDDM recently described among Sardinians (3,4) could also be associated with a higher-than-expected mortality rate of pancreatic carcinoma, we report here data on rates of mortality related to pancreatic cancer in Sardinia (5). The standardized rate for men and women pooled together (7.08 [8.64 for men and 5.52 for women]) is quite close to the Italian rate (8), far from the rates of countries with high risk for IDDM, such as Finland (12), Norway (13), Denmark (15), Luxembourg (16), Sweden (17), and similar to the rates registered in countries with low risk for the disease, such as France (8.5), former East Germany (9), and Japan (7.5), and the rate excludes any kind of association in Sardinia between the two diseases. In this analysis, in fact,

Sardinia represents the most considerable exception to the association between the two variables, much the same as it does to the association between IDDM and latitude (3,4) and IDDM and milk consumption (6). Given the possible bias due to the genetic differences between Sardinians and other European populations (7) and to better define any possible relationship between pancreatic carcinoma and IDDM, we compared relative risk (RR) values for pancreatic cancer (5) with RR values for IDDM (8,9). Generally speaking, variation of risk for IDDM mainly clusters in the south and southwestern part of the island, while RR values for pancreatic carcinoma tend to be higher in the northwestern part of the island.

It thus seems that the relationship between pancreatic carcinoma and IDDM incidence is not a simple one and probably involves other factors. In conclusion, while these data confirm once more the peculiarity of Sardinia, they also suggest a strong role for the still unidentified genetic/environmental factor(s) in the pathogenesis of IDDM.

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## Low Incidence of False-Positive Exercise Thallium 201 Scintigraphy in a Diabetic Population

The accuracy of exercise thallium 201 scintigraphy (ETS) in the diabetic population in detecting significant coronary artery disease (CAD) has been questioned. It has been postulated that the high false-positive rate of ETS in diabetic patients is due to diabetic microvascular disease (1). However, this is unlikely because lactate levels measured during cardiac stimulation with atrial pacing at the time of cardiac catheterization do not rise (2). The most likely reason for the high positive rate of abnormal ETS is the presence of diabetic cardiomyopathy (3).

In a Finnish study performed to assess the prevalence of asymptomatic myocardial ischemia in diabetic subjects,

only 44% of diabetic patients with a positive ETS had significant CAD (4). In addition, in a high-risk group of IDDM patients being evaluated before a kidney transplantation, 50% had false-positive ETS (5).

In contrast, dipyridamole thallium 201 scintigraphy seems to be more sensitive. In a recent prospective study to test the efficacy of commonly used noninvasive tests for the diagnosis of CAD in the diabetic population, the sensitivity of dipyridamole thallium 201 scintigraphy was 80% and the specificity 87% (6). Previously, a prospective study of IDDM patients with end-stage renal disease using the same technology reported a sensitivity of 86%, a specificity of 79%, and an accuracy of 83% for the detection of CAD (7).

To assess the sensitivity of an ETS in the diabetic patients in our center, we reviewed the medical records of all diabetic patients who over a 1-year period had a cardiac catheterization that was preceded by an ETS. There were 69 patients identified, 42 men and 27 women. The 15 patients who had IDDM had a median age of 49.0 years, and the 54 patients who had NIDDM had a median age of 64.9 years. Of the patients, 26 had one-vessel disease, 20 had two-vessel disease, and 15 had three-vessel disease. Only eight patients with a positive ETS had no evidence of significant CAD. Two patients with significant CAD had a negative ETS (Table 1). Therefore, at our center, ETS had a sensitivity of 97% with a predictive value of 88%. We could not calculate specificity because of the lack of negative control subjects.

We would therefore conclude that ETS testing is highly sensitive in the diabetic patient in detecting significant CAD, and our findings disagree with previous reports of the low sensitivity of ETS in a diabetic population.

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Table 1—ETS results in 69 patients with diabetes

	One-vessel disease	Two-vessel disease	Three-vessel disease	No significant CAD
Positive ETS	25	19	15	8
Negative ETS	1	1	—	—