

Pancreas Transplantation for Treatment of Generalized Allergy to Human Insulin in Type 1 Diabetes

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ABSTRACT

We report the case of a 29-year-old man with a 14-year history of type 1 diabetes, normal renal function, and mild diabetic retinopathy. The patient progressively developed a generalized allergic reaction to two insulin excipients—protamine and metacresol—with systemic manifestations of tremor, tachycardia, vertigo, shortness of breath, and short episodes of unconsciousness causing him to be out of work. In June 2003, he received a vascularized cadaveric pancreas transplant using induction with polyclonal antibodies along with tacrolimus and sirolimus but without steroids. A hyperglycemic episode following corticosteroid therapy for rejection treatment required reintroduction of insulin therapy with prompt reappearance of allergic manifestations. Now, the patient is euglycemic without insulin or allergic manifestations and a glycated hemoglobin of 6.4%.

REPLACEMENT OF ANIMAL insulin preparations by human insulin has significantly decreased the prevalence of allergic reactions to insulin.¹

CASE HISTORY

A 29-year-old man (body surface 1.88 m², body mass index 26.7 kg/m²) presented with a generalized allergy to insulin. Past medical history was marked by stable mild diabetic retinopathy, no macroangiopathy, and normal renal function. Type 1 diabetes diagnosed 14 years prior was treated by injections of biosynthetic human insulin four times a day (70 to 75 units/d, glycated hemoglobin 8.0%). Ten years later, the patient progressively developed a generalized allergic reaction, with systemic manifestations of tremor, tachycardia, vertigo, shortness of breath, and short episodes of unconsciousness causing him to be out of work. These reactions started a few minutes after each injection despite H1 antihistamine and antidepressants treatment and resumed after 4 to 5 hours. After dermatological screening, allergic tests to insulin, and psychiatric evaluation, we diagnosed an allergy to two insulin excipients—protamine and metacresol. Despite selection of several types of insulin, he continued to suffer life-threatening reactions.

The patient was considered for vascularized pancreas transplant. In preparation for transplantation, he received a human leukocyte antigen DR semi-identical compatible blood transfusion along with tacrolimus, which was continued until the time of transplantation. Six months later (June 2003), he received a three-antigen-matched vascularized cadaveric pancreas transplant allocated through the Eurotransplant Organization. It was a whole pancreaticoduodenal

transplant implanted with a laterolateral duodenojejunostomy with portal venous drainage. Posttransplant immunosuppression consisted of induction with polyclonal antibodies along with tacrolimus and sirolimus but no steroids. Thereafter, the recipient was doing well without allergic symptoms and with excellent renal function and no sign of pancreas rejection.

One year later, he developed oral ulcers and severe leukopenia. Although sirolimus was stopped his symptomatology did not improve. Fasting glucose deteriorated, and an acute rejection episode was suspected. A hyperglycemic episode following corticosteroid therapy to treat rejection required the reintroduction of insulin therapy (55 to 60 units/d). Allergic manifestations promptly reappeared. Finally, atorvastatin was stopped as a potential toxic agent; the oral ulcers as well as leukopenia disappeared. Sirolimus was readministered, corticosteroids reduced, and insulin therapy stopped. Currently, the patient is euglycemic without insulin or allergic manifestation, and glycated hemoglobin is 6.4%. In conclusion, vascularized pancreas transplantation may be a valid option for life-threatening insulin allergic reactions.

REFERENCE

1. Messaad D, Outtas O, Demoly P: Hypersensitivity to insulin. *Presse Med* 33:631, 2004

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