CASE REPORT

Diabetic ketoacidosis is a medical emergency, characterised by hyperglycaemia, hyperketonaemia and metabolic acidosis. It is commonly precipitated by infection and inadequate doses of insulin caused by underdosing with insulin during intercurrent illness, non-compliance or poor injection technique. A recent paper in the British Medical Journal reports on 2 cases where recurrent diabetic ketoacidosis was caused by unrecognised difficulty when switching from one prefilled insulin injection device to another.

In the first case, a 68-year-old man with type 1 diabetes was admitted with critically ischaemic feet. He had an emergency right, below-the-knee amputation, but the left leg was deemed salvageable. Postoperatively he was stable and restarted injecting insulin twice daily with subcutaneous NovoMix 30 insulin using a FlexPen. He subsequently developed fever, vomiting and increased finger-stick glucose readings. No sepsis was found. His venous plasma glucose concentration was 20.9 mg/l and urinary ketones were present. He had a metabolic acidosis, and diabetic ketoacidosis was diagnosed. He was treated with intravenous insulin, fluid and antibiotics and the condition was resolved. The left foot remained critically ischaemic and he underwent a left, below-the-knee amputation and was metabolically stable postoperatively. Again, when he restarted subcutaneous insulin his blood glucose rose to 24.7 mg/l, he showed urinary ketones and was profoundly acidic. Once again, he had diabetic ketoacidosis.

Consultation with the diabetes team picked up the problem. He had been changed from a NovoPen 3 to a FlexPen. When his injecting technique was examined, he was rewinding the dial rather than depressing the plunger and so no insulin was delivered. Once he knew how to use the new pen he became stable again.

In the second case, a 17-year-old boy who had type 1 diabetes for 5 years was admitted with ketoacidosis and hyperglycaemia. He had had 3 episodes of diabetic ketoacidosis in the previous month and on each occasion he had responded to intravenous insulin and fluids. He was injecting NovoRapid insulin via a FlexPen with meals and Levemir insulin by NovoPen 3 twice daily. When his injection technique was examined during his latest admission, he was seen to be trying to inject insulin by ‘reverse dialling’ with both pen devices. This delivered insulin through the Novopen 3, but not through the FlexPen. Once he knew how to use the devices the incidents of ketoacidosis stopped.

These 2 cases highlight simple differences between insulin delivery devices that may lead patients to fail to inject their insulin.


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