Influenza vaccine-induced rhabdomyolysis leading to acute renal transplant dysfunction

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Case Report

A 57-year-old Caucasian man was diagnosed to have focal segmental glomerulosclerosis (FSGS) in 1995. He eventually underwent a cadaveric renal transplantation in February 2002 and because this was complicated by delayed graft function, his creatinine plateaued at a baseline of 266 μmol/l (creatinine clearance 34 ml/min).

In November 2002, he presented with a 4 week history of generalized malaise, dark urine, poor appetite, widespread muscle aches and difficulty in using his proximal muscles. The symptoms had begun about 1 week after he had received an inactivated influenza vaccine (split virion—Avantis Pasteur). His concurrent medications included cyclosporin A 125 mg BD, prednisolone 10 mg OD, azathioprine 150 mg OD and simvastatin 20 mg OD. He had taken the statin for at least 6 years without complications and the monitored creatine kinase (CK) had always been within the normal range. There was no family history of neurological or muscular disease. Neurological examination revealed flaccid weakness involving the proximal muscles of both upper and lower limbs, but no muscle fasciculation or tenderness. Abdominal examination revealed a non-tender renal transplant.

His blood urea was 33.5 mmol/l and creatinine 649 μmol/l (creatinine clearance 10 ml/min). The creatinine kinase (CK) was markedly elevated at 17 000 U/l. The urine dipstick revealed large quantities of protein and blood. The measured urinary myoglobin was 238 600 μg/l (normal less than 15 μg/l). Other admission laboratory data was normal except for potassium 6.3 mmol/l, phosphate 2.36 mmol/l and haemoglobin 88 g/l. Calcium was 2.47 mmol/l and white cell count 4.6 × 10⁹/l. Serum cyclosporin A level was 167 ng/ml. A full renal immunological screen was negative. A transplant ultrasound was normal. Transplant biopsy revealed moderate tubular atrophy with tubulitis and the presence of brown granular tubular casts consistent with myoglobin. A muscle biopsy revealed scattered regenerating and degenerating fibres with no significant inflammatory infiltrate, compatible with a toxic myositis. Further investigations ruled out the possibility of primary muscle disease or metabolic myopathy. Other causes of toxic myositis, like drugs and viral infections, were excluded. There had been no recent change in the patient’s medication. A neurological opinion agreed that the influenza vaccination was the most likely cause of the toxic myositis. The prednisolone was increased to 60 mg per day and the renal function gradually improved with serum creatinine falling to 370 μmol/l. Although the CK value normalized on day 10, his muscle weakness gradually improved over several weeks.

Discussion

Adverse reactions to influenza vaccines vary and non-specific systemic side effects have been reported to occur in 5–35% of vaccinated patients [1,2]. Specific adverse reactions to influenza vaccines have also been reported in the past and these include neurological disorders such as Gullian–Barre, peripheral neuropathy and demyelinating disease [3,4]. Muscle syndromes such as myalgias, myositis and rhabdomyolysis are recognised to not infrequently complicate viral infections, the most common associations being with influenza A and B, cytomegalovirus, adenovirus, Coxsackie virus, Herpes virus and Epstein-Barr.
virus [5]. However, muscle syndromes have only rarely been reported as attributable to influenza vaccine. Plotkin et al. reported a case of acute renal failure due to rhabdomyolysis following an influenza vaccination in a patient with no previous history of renal disease. This patient had been treated with cerivastatin and bezafibrate and it was concluded that the vaccine acted as a trigger for the development of rhabdomyolysis on a background of statin/fibrate therapy [6].

Here we provide the first report of acute renal failure due to rhabdomyolysis following an influenza vaccination in a renal transplant recipient who had been on simvastatin and cyclosporin A therapy. We believe that given the time course of events and the absence of other causes, this may well have represented an immunologically mediated response to the vaccine. Although Chazan et al. found no clinical or laboratory evidence that influenza vaccine could cause myopathy in patients taking statins [7], we conclude that there is a risk of rhabdomyolysis developing following influenza vaccinations in patients who receive concomitant myotoxic drugs. The possibility of this clinical presentation should not be overlooked in patients receiving this therapeutic combination.

Conflict of interest statement. None declared.

References