To the Editors:

Myoglobinuric acute renal failure following dengue viral infection

Myoglobinuria is a well documented complication of a wide range of infections. There are no previously published reports of myoglobinuria caused by dengue viral infection.

A 28-year old house wife presented with fever, vomiting and myalgia for 3 days. There was marked muscle tenderness with mild proximal weakness of both lower limbs. On the following day her urine became dark brown. Over the next 3 days she gradually became oliguric. On the 5 day after admission she became dyspnoeic and hypotensive.

Laboratory investigations showed: haemoglobin concentration 18.5 g/dl, haematocrit 54%, WBC 12.3 $\times$ 10^9/l, and platelet count 135 $\times$ 10^9/l. Serum CPK, CPK-MB and AST levels peaked at >5000U/l, 2700 U/l and 1845 U/l respectively. Urine microscopy showed pigmented casts. Both serum and urine were positive for myoglobin on spectrophotometry. Serum urea and creatinine peaked at 34.8 mmol/l and 780 µmol/l respectively.

Ultrasound scan revealed normal kidneys. There were electrocardiographic and echocardiographic evidence of myocarditis. Immunochromatography test was positive for both IgM and IgG dengue antibodies and dengue antibody titre (HAI) done on the 7 day was D2 - 2560 (normal <20).

She was treated with intravenous mannitol and bicarbonate to induce alkaline diuresis. Peritoneal dialysis was commenced and supplemented by haemofiltration. She made a complete and an uneventful recovery.

Infections account for about 5% cases of myoglobinuria (1). Influenza A and B are the most common reported viruses causing myoglobinuria (2). Muscle damage may be caused by direct invasion, by generation of toxic mediators or are immunologically induced. Myoglobin *per se* is not nephrotoxic, but it becomes highly nephrotoxic when hypovolaemia, acidosis or renal ischaemia are present (3). Haem pigments are thought to induce renal damage by plugging of renal tubules by pigment containing casts, passive back diffusion of filtrate through the damaged epithelium and decreased glomerular filtration (4). In the early stages of oliguria alkaline diuresis induced by mannitol and sodium bicarbonate may be helpful in preventing acute renal failure (ARF) (5). Prognosis for recovery from ARF due to non-traumatic rhabdomyolysis and myoglobinuria is excellent once the early period has passed, and permanent kidney damage is rare (6).

References

1. Seibold S, Merkel F, Weber M, Martin M. Rhabdomyolysis and acute renal failure in an adult with measles virus infection. *Nephrology, Dialysis and Transplantation* 1998; **13**: 1829-31.
2. Foulkes W, Rees J, Sewry C. Influenza A and rhabdomyolysis. *Journal of Infection* 1990; **21**: 303-4.
3. Fabris A, Pellanda MV, Gardin C. Rhabdomyolysis. In: Ronco C, Bellomo R, eds. Critical Care Nephrology. Netherlands: Kluwer, 1998: 739-48.
4. Rowland LP, Penn AS. Myoglobinuria. *Medical Clinics of North America* 1972; **56**: 1233-5.
5. Eneas JF, Schoenfelf PJ, Humphreys MH. The effect of infusion of mannitol-sodium bicarbonate on the clinical course of myoglobinuria. *Archives of Internal Medicine* 1979; **139**: 801-5.
6. Grossman RA, Hamilton RW, Morse BM, Penn AS, Golberg M. Non-traumatic rhabdomyolysis and acute renal failure. *New England Journal of Medicine* 1974; **291**: 807-11.

H H Gunasekera *and* **A V N Adikaram**, *Registrars,* **C A Herath**, *Nephrologist, and* **H H R Samarasinghe**, *Physician, Sri Jayawardenapura General Hospital, Nugegoda.*