Rhabdomyolysis and Acute Renal Failure following Methadone Abuse

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Dear Sir,

Since the report of Grossman et al. [1] the association between nontraumatic rhabdomyolysis and acute renal failure is well recognized. The most commonly identified causes of rhabdomyolysis are alcohol abuse, seizures and drug abuse: heroin, amphetamine, phenothiazines, benzodiazepines, cocaine [2-4]. We describe a case where rhabdomyolysis and acute renal failure were caused by abuse of the synthetic narcotic methadone.

A 28-year-old man was admitted to our hospital comatose, cyanotic and breathing shallowly. The previous evening he had taken 30 mg methadone intravenously. On admission his blood pressure was 60/40, and the pulse rate was 90 beats/min. Chest examination revealed bilaterally rales; a chest roentgenogram showed prominent infiltration in both lower lobes. Arterial pH was 7.12, pO₂ 4.37 kPa and pCO₂ 8.43 kPa. Investigations showed blood urea 6.9 mmol/l, creatinine 193 µmol/l. Urinalysis and urine sediment were normal, the urine was positive for myoglobin. Acute respiratory distress syndrome developed, and the patient was treated with positive end-expiratory pressure ventilation. For the first 4 h the patient was anuric, after treatment with fluid loading, furosemide and dopamine (dose 3 µg/kg/min) he sustained good diuresis. On the second day the creatine kinase level was 204.0 µkat/l (normal 0.17-2.08 µkat/l), blood urea 5.2 mmol/l, creatinine 191 µmol/l. On the third day the creatine kinase level was 82.8 µkat/l, blood urea 3.9 mmol/l, creatinine 92 µmol/l. Over the subsequent days creatine kinase returned to the normal level. A chest roentgenogram on the fourteenth day was normal, and the patient was discharged on the eighteenth hospital day in good condition.

The mechanisms by which drugs cause rhabdomyolysis are not clear. In most cases limb compression associated with unconscious state and secondary ischemia is a critical factor in producing rhabdomyolysis [2], a direct toxic effect is likely in alcohol abuse [2,3] and rhabdomyolysis is probably related to increased demands on muscle in β-agonist and amphetamine overdose [5]. Rhabdomyolysis may induce renal damage secondary to tubular obstruction by myoglobin and results in acute renal failure in up to one third of the cases [1,2]. In our case rhabdomyolysis was confirmed by a hundredfold increase in the serum creatine kinase level and myoglobinuria; acute renal failure was confirmed by anuria at admission and an increase in the serum creatinine level. We found only one report of methadone abuse in association with rhabdomyolysis and acute renal failure [6], but this case suggests that

methadone abuse, like that of other narcotics, may be the cause of non-traumatic rhabdomyolysis and acute renal failure.

References

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