

Bilateral gluteal compartment syndrome after 'ecstasy' hyperpyrexia

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The reported consequences of 'ecstasy' hyperpyrexia have included lower-leg compartment syndrome¹ but not, so far, gluteal compartment syndrome.

CASE HISTORY

A 19-year-old man was taken to the accident and emergency department having ingested four tablets of 'ecstasy' (3,4-methylenedioxymethamphetamine, MDMA). Glasgow Coma Score was 7, his pupils were dilated and there was generalized muscle fasciculation; axillary temperature was 42°C, but within 35 minutes this rose to 43°C. He was hyperkalaemic, and arterial blood-gas analysis showed a metabolic acidosis. The trachea was intubated and intermittent positive pressure ventilation (IPPV) was begun. The hyperkalaemia was treated with dextrose and insulin infusions and active cooling measures included bladder irrigation and cold peritoneal lavage. Dantrolene was administered intravenously to a total 2 mg/kg. Axillary temperature fell to 39.2°C and he was transferred to the intensive care unit, where IPPV and sedation were continued and lactate-free haemofiltration was instituted to correct the persisting metabolic acidosis. Sodium bicarbonate and mannitol were infused to promote alkaline diuresis in the presence of myoglobinuria (urinary myoglobin 326 µg/L). The cardiovascular system was initially stable with good gas exchange.

Twenty hours after admission his condition deteriorated with worsening gas exchange and rising peak airway pressures. Gross abdominal distension was impeding mechanical ventilation. In addition, both buttocks and the posterior aspects of both thighs had become tense and swollen; compartment pressures were not measured. Creatine kinase had risen from 1334 u/L on admission to 140 580 u/L, indicating substantial muscle damage, and disseminated intravascular coagulation (DIC) had developed: fibrinogen <1 g/dL, D-dimers 16 000 µg/mL, platelet count 25×10^9 /L. An urgent laparotomy was performed to exclude bowel ischaemia and to facilitate

mechanical ventilation. Several litres of bloodstained peritoneal fluid were evacuated with immediate improvement in gas exchange; the bowel appeared normal but the pancreatic head was swollen and the liver was pale. The surgeons immediately proceeded to bilateral thigh and gluteal fasciotomies, at which the muscle initially seemed viable; the fasciotomy wounds were left open. Post-operatively, blood continued to ooze from the fasciotomy wounds despite aggressive treatment of the DIC with blood component therapy. He required further visits to theatre for debridement of necrotic muscle and to secure haemostasis over the next three days. An elective defunctioning colostomy was fashioned on day 9 to protect the buttock and thigh wounds from faecal soiling. On day 16 the buttock wounds were finally closed, at which point 74 units of blood had been transfused. Renal failure required continued haemofiltration until day 23. Ventilatory support was stopped by day 32 and he was discharged from the intensive care unit on day 37; at that time there was no sign of peripheral nerve damage from the compartment syndromes. At one year he was walking and functioning normally.

COMMENT

Hyperpyrexia, rhabdomyolysis and DIC are well-documented results of MDMA misuse. Lower-leg compartment syndrome has been reported, but this seems to be the first account of gluteal compartment syndrome in these circumstances.

Usually gluteal compartment syndrome is unilateral, caused by prolonged lateral decubitus. Bilateral gluteal compartment syndrome has been described only after surgery in the exaggerated dorsal lithotomy position (2 urological cases)^{2,3} and in drug-induced coma^{4,5}. Our patient did not seem to have been immobile for long before he was admitted. Seemingly, the drug-induced rhabdomyolysis caused oedema within the limited compartment space, thus progressively impairing perfusion of surrounding muscle. The management of compartment syndromes includes early fasciotomy to limit further damage to muscle and nerves. The coexistence of DIC, however, may result in massive fasciotomy bleeding.

REFERENCES

- 1 Screaton GR, Singer M, Cairns HS, Thrasher A, Sarner M, Cohen SL. Hyperpyrexia and rhabdomyolysis after MDMA ('ecstasy') abuse. *Lancet* 1992;**339**:677-8
- 2 Goldberg M, Stecker JF, Scarff JE, Wombolt DG. Rhabdomyolysis associated with urethral stricture repair: Report of a case. *J Urol* 1980;**124**:730-1
- 3 Leventhal I, Schiff H, Wulfsohn M. Rhabdomyolysis and acute renal failure as a complication of urethral surgery. *Urology* 1985;**26**:59-61
- 4 Bleicher RJ, Sherman HF, Latenser BA. Bilateral gluteal compartment syndrome. *J Trauma* 1997;**42**:118-22
- 5 Klock JC, Sexton MJ. Rhabdomyolysis and acute myoglobinuric renal failure following heroin use. *Calif Med* 1973;**119**:5-8

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