

INVESTIGATION OF RHABDOMYOLYSIS

INTRODUCTION

Rhabdomyolysis may be defined as an insult to skeletal muscle cells that alters the integrity of the cell membrane sufficiently to allow escape of cell contents into the extracellular fluid. Rhabdomyolysis causes sequestration of fluid in muscle compartments, hypovolaemia, hypotension, release of cell contents into extracellular fluid and acute renal failure (ARF).

SIGNS AND SYMPTOMS

Signs and symptoms are non-specific, with muscle pains, swelling and weakness; diagnosis is not initially suspected in up to 50% of cases. The index of suspicion should be high in the following groups of patients:

- Found collapsed
- Crush injuries
- Increased Creatine Kinase (CK)
- Acute renal failure (5-15% of cases of ARF are due to rhabdomyolysis)
- Drug ingestion e.g. alcohol, cocaine, heroin or ecstasy, or on statins
- Vigorous exercise particularly when accompanied by heat exhaustion
- Pigmented urine

Renal failure is caused by a complex interaction of renal vasoconstriction due to hypovolaemia and the toxic effects of myoglobin with acidosis which cause renal tubular damage, ischaemia and may cause obstruction due to casts. Prophylactic treatment is volume replacement and maintenance of urine output using saline or saline, mannitol and bicarbonate.

LABORATORY INVESTIGATION

- CK is a suitable indicator for the presence of rhabdomyolysis. Urine myoglobin is not contributory to diagnosis or prognosis and is not available.
- In the investigation of suspected rhabdomyolysis serum CK should be measured at presentation and, if less than 5,000 IU/L, measure again 12 hours later to determine the time course.
- There is not a suitable marker that offers unequivocal evidence about the likelihood of developing ARF. However, if serum CK remains below 5,000 IU/L during the first 3 days after the insult the probability of developing renal failure is low.
- If serum CK is above 5,000 IU/L regular monitoring of potassium and creatinine is indicated.
- In classical rhabdomyolysis serum phosphate, AST and uric acid will also be raised whilst calcium levels may be low. Bicarbonate will also be low due to acidosis.