

More and more reports show an increasing incidence of rhabdomyolysis triggered by exercise. Are we exercising too hard?

Exercise-induced rhabdomyolysis

In this issue of the Journal of the Norwegian Medical Association, Christian Aalborg et al. from Akershus University Hospital (1) and Hilde Fardal & Lasse G. Gøransson from Stavanger University Hospital (2) present data showing an increased incidence of exercise-induced (exertional) rhabdomyolysis. The numbers are compelling. Some of the increase may be due to greater media coverage of the condition, which makes it more likely that people will contact their doctor with muscle pain after exercise, and more likely that doctors will perform laboratory tests to clarify the diagnosis. In active training circles, many are aware of rhabdomyolysis, with terms such as «rhabdo workouts» used to describe strenuous exercise sessions. The increase in the number of cases reported, plus the fact that patterns of physical activity in the population are changing, give us reason to believe that the increase in incidence is real. While we are less active in our daily lives than we used to be, organised fitness sessions remain as popular as ever (3). Strength training has also become more common with emphasis on eccentric exercises and large numbers of repetitions.

The definition of rhabdomyolysis varies greatly, from modest creatine kinase (CK) levels of five times the upper reference limit to thresholds as high as 10 000 IU/l. This makes it difficult to compare incidences between studies and to discuss recent developments.

Recommendations for treatment are based on retrospective studies of injuries sustained during natural disasters and war (4). A CK level above 5 000 IU/l is often taken to indicate rhabdomyolysis in need of treatment, and the importance of early, aggressive fluid resuscitation is emphasised (5). At the same time, the results from Akershus University Hospital (1) suggest that the risk of renal failure is lower in exercise-induced rhabdomyolysis than in other forms of the condition. This has also been shown in large retrospective data sets (6). In a study of 203 volunteers who performed 50 maximal eccentric elbow flexion repetitions, 51 had serum CK levels above 10 000 IU/l on day 4. None displayed biochemical signs of impaired renal function (7), suggesting that many patients with exercise-induced rhabdomyolysis are probably overtreated. Moreover, the CK level alone cannot be used to determine which patients are at risk of developing acute kidney injury (8). Other indices, such as serum myoglobin and the use of urinary dipsticks to detect myoglobinuria, are not specific either (8).

We thus have few tools with which to identify those in need of treatment. In practice, the decision on whether or not to treat must come down to the individual clinician, based on consideration of CK level, hydration, electrolyte imbalance, muscle soreness and swelling, and myoglobinuria.

Precisely what hospital treatment should entail is also subject to debate. The articles in this issue of the Journal of the Norwegian Medical Association show that treatment choice depends more on the treating physician and department than on disease severity (1, 2). In principle, extensive diuresis and alkaline urine are important for avoiding direct toxicity of myoglobin in the renal tubules (9). However, in the few studies that do exist, the use of sodium bicarbonate to alkalinise the urine was no more effective than hydration with isotonic saline (9). With such limited evidence on which to base decisions, it is not surprising that treatment at the two hospitals varied (1, 2).

It has been shown retrospectively that patients who experienced a delay in fluid resuscitation after trauma had a greater risk of renal

failure (4). However, the treatment can itself cause adverse effects, in particular overhydration, but also metabolic acidosis, hypernatraemia and exacerbation of hypocalcaemia (10). Aggressive fluid resuscitation should therefore only be performed if there are clear benefits for the patient.

Fardal & Gøransson at Stavanger University Hospital propose that measurement of myoglobinuria could be used to guide treatment, and they call for clinical studies to evaluate this approach (2). One retrospective study found that myoglobinuria was not a sensitive indicator of rhabdomyolysis (11). Nevertheless, myoglobinuria may perhaps be helpful in identifying those patients with rhabdomyolysis who will develop kidney injury.

There thus appears to have been a genuine increase in the incidence of exercise-induced rhabdomyolysis. It is important to avoid over-treatment, and yet serious complications must not be overlooked. The results of these two studies should form the basis for a national multicentre study to shed further light on these issues.

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