Rhabdomyolysis is an extreme form of myositis, whereby inflamed muscle cells leak their contents into the circulation. This leakage can result in electrolyte abnormalities, acidosis, clotting disorders, hypovolemia, myoglobinuria and acute renal failure. Physical symptoms include muscular weakness, swelling, pain, cramping and darkened or tea-coloured urine.

One of the most reliable methods of assessing muscular damage is to check for increases in blood serum levels of creatine kinase, which is located in the sarcolemma and mitochondrial intermembrane space of healthy muscle cells. Other laboratory indicators of rhabdomyolysis include elevated serum myoglobin levels, the presence of myoglobinuria and mild increases in aminotransferase and lactate dehydrogenase levels.

Rhabdomyolysis can be caused by a number of factors, including trauma, such as crash syndrome, hyperthermia, infections or other health disorders. Non-traumatic causes include the use of drugs such as statins and strenuous exercise (the latter usually involve people who are inexperienced in exercise and uneducated in fitness and health principles, dehydrated, heat stressed or taking drugs or who are military recruits in basic training).

Several food-related causes of acute rhabdomyolysis have been recognized, including fish (Haff quail poisoning).
disease), wild mushrooms and quail (coturnism). Coturnism, like Haff disease, is rare and often misdiagnosed. It is seen in rural Mediterranean areas during autumn, the migration period of the European common quail, *Coturnix coturnix* (Fig. 1). Coturnism has been recognized since antiquity; the Old Testament mentions the group poisoning of the Jewish people during the Exodus (Numbers:11).

Clinical symptoms of coturnism usually start 1–9 hours after the bird has been ingested. Symptoms of rhabdomyolysis predominate and neurological features are absent, in contrast to other types of food-toxin poisoning. Unusual smell or taste does not help in identifying toxic food, and cooking methods cannot detoxify a bird capable of causing the syndrome. The relation between quantity consumed and the possibility of becoming ill has not been identified. However, muscular exertion before or after the meal is known to aggravate and accelerate the manifestations, as may have happened with 2 of our patients. The symptoms of patient 2, who had visited a gym before the meal and did not take supplements or other drugs, were initially misdiagnosed as indicating an embolic event. Although symptoms may be severe, most cases, such as those reported here, are benign and of short duration. None of our patients experienced headache, a lower level of consciousness or meningism. No muscle stiffness was present.

As no other cause of rhabdomyolysis was evident, we believe that quail consumption was the culprit. All 3 cases occurred in autumn, the quail migration period. Previous reports have speculated that the syndrome is caused by a toxin or alkaloid that has a curare-like action and nicotinic effects on autonomic ganglia and which is contained in seeds eaten by the quail, most likely from hemlock (*Conium maculatum*) (Fig. 2) or other plants (e.g., red hempnettle, or *Galeopsis ladanum*). Coniine, the most important alkaloid of *C. maculatum*, can be lethal in a dose of 150 mg, but in smaller doses it produces neurotoxic effects, acute rhabdomyolysis and acute renal failure. However, coniine triggers clinical manifestations only in sensitive people; personal susceptibility seems to be a factor common to coturnism and Haff disease. The patients described here shared their meals (Fig. 4) with other people who were not affected. Although some investigations have suggested that susceptibility runs in families, others have excluded a pre-existing enzyme defect as a cause. Our patients did not report any previous attacks or family histories of such events.

Coturnism is a rare cause of acute rhabdomyolysis, and it should be considered in a geographically and temporally appropriate situation (e.g., the Mediterranean in the fall) where patients experience unexplained rhabdomyolysis, especially if it occurs in an epidemic. Once other causes are ruled out, treatment is mostly supportive, with appropriate volume replacement, urinary alkalinization and aggressive diuresis or hemodialysis if required.

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