

THE EFFECT OF RAPID COOLING ON THE COURSE AND PROGNOSIS OF EXERTIONAL HEAT STROKE - TWO CASE REPORTS

Y. Shani, Y. Heled, Y. Epstein, Y. Shapiro and D.S. Moran, Heller Institute of Medical Research, Sheba Medical Center, Tel Hashomer, Israel.

Heat stroke, an occasionally fatal disease, is the most serious of conditions associated with elevated body temperature. When it occurs during exercise it is regarded as exertional heat stroke (EHS). The elevated body temperature becomes a noxious agent, causing damage to the body's tissues, and giving rise to a characteristic multi-organ clinical and pathological syndrome. Two cases of EHS in which treatment was administered at different time intervals are presented.

Case 1: An 18-year-old previously healthy male participated in a pre-draft military selection trial during a hot summer day. The trial consisted of short and long distance running with various back loads, and various other interval exercises. After two hours of high intensity exercises he collapsed. No treatment was administered on site. The patient was evacuated to a hospital, arriving at the emergency room (ER) 60 min after collapse. Upon arrival to the ER, he was unconscious with a rectal temperature (T_{re}) of 40.5°C. Only then was treatment by tap water cooling and IV fluids initiated. The patient regained consciousness within a few hours, albeit remaining lethargic for several more days. Two days after the collapse he developed severe rhabdomyolysis with extremely high creatine kinase (CK) levels of 198,000 IU·L⁻¹, and marked swelling and pain of the right quadriceps and gluteus muscles. Marked hepatic and renal disturbances were noted as well. The patient was treated conservatively with laboratory results returning to normal values after 14 days.

Case 2: A 20-year-old previously healthy male participated in a similar pre-draft military selection trial as case 1, taking place during warm weather, and collapsed as well. T_{re} measured on site was above 42.5°C (the end of the thermometer's scale). Cooling treatment, namely splashing copious amounts of water on his body, was immediately initiated. When he arrived at the ER 40 min later, the patient was psychotic, aggressive, and with a T_{re} of 40.0°C. Treatment consisted of continued cooling, IV fluids, and IM Haloperidol. Within five hours from his collapse the patient was up and walking in good condition. There were no notable events during hospitalization, apart from relatively moderate CK and liver enzyme elevations.

Conclusions: Rapid recognition and treatment of EHS (case 2) can dramatically alter its course and prognosis, which are in direct relationship with the area under the curve of the hyperthermic period. Proper treatment should consist of liberally splashing copious amounts of water on the patient. Medical staff accompanying military training or athletic competition should be aware of the risk of EHS, as should the commanders and organizers of such events. A high level of suspicion must be maintained and proper means for cooling EHS victims kept at hand. Nevertheless, the prevention of EHS, which requires the application of relatively simple safety regulations, should be sought.

dmoran@glil-yam.org.il