

HEAT STROKE

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Disorders due to heat have afflicted man throughout history and under diverse circumstances. The latter include military campaigns (1, 2), religious pilgrimages (3, 4), and modern-day "fun runs" (5, 6). Increased mortality among the elderly during heat waves has been well-documented (7-9); so have instances of babies left in cars parked in the sun (10).

A number of factors predisposing to heat stroke have been identified: obesity, intercurrent infection, drugs (eg. anticholinergics), alcohol, skin disorders (eg. miliaria), diabetes and thyrotoxicosis — in fact, any condition which compromises the normal thermoregulatory processes may be implicated (11-16). By far, however, the vast majority of victims are healthy, young individuals in whom the common thread is physical activity under relatively high environmental heat load.

Heat stroke is a medical emergency of the first order. Care must be taken to maintain the airway, treat shock, and correct fluid and electrolyte imbalances. Since the basic underlying problem is an overheated body core, rapid and effective cooling constitutes the cornerstone of management. Complications to watch for include renal failure, rhabdomyolysis, cardiac arrhythmias, disseminated intravascular coagulation, and hepatic failure (11, 12, 17-20). Time is of the essence. Mortality rate rises with the time lapse between onset of the problem and the institution of cooling and first-aid measures (11, 21-23).

Early treatment, of course, hinges on early diagnosis. Unfortunately there are many instances of delay in recognising the problem, either because the clinical presentation was 'not typical', or too much time was wasted in

excluding other obscure causes of collapse. A recommended rule-of-thumb in military and sports medicine, therefore, is to consider any soldier or athlete who collapses during or after physical training a priori a case of heat stroke until proven otherwise (24).

The problem of exertional heat stroke has been studied in Singapore, particularly in the military population. A recent monograph on "heat disorders", jointly published by the SAF Medical Services and the Ministry of Health, provides a comprehensive update on the epidemiology, pathophysiology, clinical presentation, management and prevention of heat disorders in the local context (25). The primary objective is to increase awareness among doctors of the condition and hence their ability to handle this serious and challenging problem when it arises. The clinical review article on exertional heat stroke which appears in this issue of the SMJ complements that effort.

A point worth noting in the review article is the exclusion of anhydrosis or absence of sweating as a diagnostic criterion for heat stroke. This previously held misconception is still perpetuated by some medical textbooks (26, 27) which continue to cite "hot, dry skin" as an important clinical sign in heat stroke. Unfortunately, this may give the impression that the patient found to be sweating is suffering from only heat exhaustion and not heat stroke. The fact is, many severe and fatal cases of heat stroke have been reported in which victims were found to be sweating profusely (12, 28-30). Cessation of sweating — which at best is indicative of damage to the sweat glands as a late complication (31) — is an unreliable and dangerously misleading measure of severity in heat illness. Its significance ought, therefore, to be de-emphasised.

It is important to recognise that heat exhaustion and heat stroke (in increasing order of severity) together occupy the extreme end of a spectrum of disorders due to heat, forming a continuum with no clear, clinical demarcation. What is important is that both emergencies require rapid cooling and immediate first aid, and no time should ever be wasted trying to differentiate the two.

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