TREATING NEAR DROWNING WITH HYPOTHERMIA

As I write this, the Christmas holidays are nearly over and with them the mass migration to the beaches of Cape Town. This case report, from Sydney, Australia, may be pertinent to South African practice.

A 46-year-old English tourist became distressed when caught in strong currents off a Sydney beach. He was pulled to shore by an off-duty lifesaver, and was apnoeic but with a weak pulse. After a minute of mouth-to-mouth ventilation, his pulse was lost and chest compressions were started. The ambulance arrived 10 minutes after cardiac arrest and documented a wide complex bradycardia with no pulse. He was given adrenaline, sodium bicarbonate and atropine during resuscitation and after 26 minutes of cardiac arrest, a pulse returned and he was in atrial fibrillation. At this point he was intubated and ventilated.

When he arrived at the emergency department his systolic blood pressure was 90 mmHg, pulse rate 136 bpm and irregular, and core temperature 34.7°C. Coarse bilateral crackles were heard in his chest and his pupils were fixed and dilated. Initial arterial blood gases showed a severe, mixed respiratory and metabolic acidosis. Chest X-ray showed the changes of aspiration pneumonitis. The ventilator was adjusted to hyperventilate and reverse the respiratory component of the acidosis. Computed tomography of the head and neck was normal.

It was decided to use controlled hypothermia to limit further hypoxic brain injury. The patient was packed in ice and given cooled intravenous fluids, aiming for a core temperature of 33°C for 12 hours.

His condition improved rapidly. Within a few hours the heart spontaneously reverted to sinus rhythm, with no subsequent evidence of myocardial injury. The metabolic and respiratory acidosis normalised over 10 hours and after 12 hours of hypothermia the cooling was reversed. He was extubated on day 3 after admission and discharged from hospital on day 7.

Two weeks after the event, neuropsychological assessment showed that his cognitive function was relatively intact, although there was moderate impairment in new learning ability and capacity for visuospacial information and slowed information processing. This might be consistent with hypoxic brain injury, but may also have been present before the accident.

Repeat assessment 5 months later in the UK showed normal psychometric performance, with persisting impairment of visuospatial processing and organisational abilities. However, the patient and his family reported that he was functioning normally.

The lessons to be learned from this case are that severe acidosis or fixed dilated pupils are not useful prognostic markers in the near-drowned patient, and that controlled hypothermia at 33°C for 12 hours can be used in near-drowned patients who have spontaneous circulation but remain comatose, but that this approach cannot yet be recommended in children because of the risk of neutropenic sepsis.

Williamson J, *et al. MJA* 2004; **181**: 500-501.

Bridget Farham

SINGLE SUTURE

SKIN DEEP

A recent study in the *Journal of Investigative Dermatology* suggests a novel approach to the delivery of an HIV vaccine: through a skin patch. The study of the DermaVir patch, carried out on primates, produced simian immunodeficiency virus (SIV)-specific CD4 and CD8 cell responses in SIV-naïve rhesus macaques. Another study by the same team, published in *AIDS*, showed a similar response in immunocompromised macaques. The vaccine consists of plasmid DNA that expressed every HIV protein except for integrase, complexed with glucose. The patch is applied to shaved skin. Langerhans cells in the epidermis process antigens in the skin and send them to draining lymph nodes. The Langerhans cells see the vaccine particles as HIV, eventually differentiating into dendritic cells that present the HIV antigens to T cells. The patch is worn for 3 hours. Researchers suggest that it would be worn either every few months or every 2 years.

Lisziewicz J, *et al. J Invest Dermatol* 2004; **123.**