Breathing

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Inhalational injury Time is a major factor; anyone trapped in a fire for more than a couple of minutes must be observed for signs of smoke inhalation. Other signs that raise suspicion are the presence of soot in the nose and the oropharynx and a chest radiograph showing patchy consolidation. The clinical features are a progressive increase in respira tory e ff ort and rate, rising pulse, anxiety and confusion and decreasing oxygen saturation. These symptoms may not be apparent immediately and can take 24 hours to 5 days develop. Treatment starts as soon as this injury is suspected and the airway is secure. Physiotherapy , nebulisers and warm humid ified oxygen are all useful. The patient’s prog ress should be monitored using the respiratory rate, together with blood gas measurements. If the situation deteriorates, continuous or intermittent positive pressure may be used with a mask or T-piece. In the severest cases, intubation and management in an intensive care unit will be needed. Nebulised heparin can be useful in preventing the formation of the fibrin casts, although heparin requires antithrombin for its e ffi cacy (which is defi - cient after burn injury) and some providers suggest additional antithrombin administration. The e ffi cacy of inhaled heparin therapy may be enhanced by the simultaneous administration of the mucolytic agent N -acetylcysteine. Bronchodilators, such - as albuterol, may also be of value, additionally stimulating mucosal repair, demonstrating anti-inflammatory properties and decreasing inflammatory mediators such as histamine, leukotrienes and tumour necrosis factor. The key , therefore, in the management of inhalational injury is to suspect it from the history , institute early manage - ment and observe carefully for deterioration. Thermal burn injury to the lower airway These rare injuries can occur with steam injuries. The manage - ment is supportive and the same as that for an inhalational injury . Metabolic poisoning Any history of a fire within an enclosed space and any history of /uni00A0 altered consciousness are important clues to metabolic poisoning. Blood gases must be measured immediately if poison - ing is a possibility . Carboxyhaemoglobin levels raised above 10% must be treated with high inspired oxygen for 24 /uni00A0 hours to speed its displacement from haemoglobin. Metabolic acidosis is a feature of many forms of poisoning. Modern treatment of - cyanide poisoning involves the intravenous administration of vitamin B12 (hydroxycobalamin), which interacts with cyanide to form cyanocobalamin, which is water soluble and excreted to in the urine. Once again the key to diagnosis is the history and blood gas measurement will confirm the diagnosis. - Mechanical block to breathing Any mechanical block to breathing from the eschar of a significant full-thickness burn on the chest wall is obvious from

Figure 46.1 Burns to the face and neck with inhalation injury requiring intubation.

and high inspiratory pressures if the patient is ventilated. The treatment is to make some scoring cuts through the burned skin to allow the chest to expand (escharotomy). Breathing

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