

SEVERE BURN INJURIES COMPLICATING PSYCHOGENIC POLYDIPSIA

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SUMMARY. In rare cases, psychogenic polydipsia may develop as a post-burn complication, prevalently concerning females. Two such cases are reported, both in female patients. Their treatment and outcome are described.

Introduction

Psychogenic polydipsia develops in many diseases.^{1,2} However, there have been extremely few reports on the association between burns and psychogenic polydipsia.³ We have not found any report on post-burn psychogenic polydipsia in the relative English literature. Of some 4600 patients seen in our burns unit between January 2007 and August 2008, two patients with severe burns developed psychogenic polydipsia.

Case reports

Case 1

A 34-year-old female sustained flame burns in multiple body regions following a chemical explosion. Initial fluid resuscitation and wound dressing were performed at a regional hospital and the patient was transferred to our unit for further management 6 h post-burn. On examination, she was found to be suffering from 65% total body surface area (TBSA) burns (46% full thickness), moderate inhalation injury, bilateral ocular burns, deafness, and explosion injuries involving multiple body regions. Tracheotomy was performed immediately. Fluid resuscitation, wound management, and anti-infection and nutritional support were also carried out. On day 4 post-burn, the patient underwent eschar shaving of the burns on the four limbs and the anterior trunk, together with irradiated pigskin grafting, plus debridement and suturing of the right chest wall wound. The patient's condition remained stable after this operation. Between days 8 and 27 post-injury, the patient's mean urinary volume was 5810 ± 1184 ml/d (range, 4000-8150 ml/d). The volume of intravenous fluid infused, including partial physiological requirement and continued loss and nutritional support, was 2865 ± 454 ml/d at this

stage. A laboratory work-up found that the urine specific gravity was 1.005-1.010. The highest fasting blood glucose was 6.6 mmol/l, and urine glucose was negative. Renal function and blood serum electrolytes were within normal levels. Magnetic resonance imaging showed no abnormal appearance of the appendices suprasphenoidales. Although it was very difficult to communicate with the patient owing to the tracheal incision and deafness, she was recorded as feeling thirsty and requesting large amounts of water, frequently up to 8850 ml/d. After day 28 post-burn her water consumption decreased to about 2000 ml/d and her urine output stabilized at about 3000 ml/d. The volume of intravenous fluid slightly decreased.

Case 2

A 27-year-old female suffered 33% TBSA burns (20% deep dermal, 10% full thickness) in multiple body regions with moderate inhalation injury, caused by a firecracker. Initial fluid resuscitation (about 600 ml) was given at a regional hospital and the wound was not treated. The patient was transferred to our unit for further management 8 h post-burn. Treatment included fluid resuscitation, wound management, and anti-infection and nutritional support. On day 4 post-burn the patient underwent eschar shaving of the burns on the four limbs, with irradiated pigskin grafting, and with large sheet skin grafting on the right hand. Symptoms of polydipsia began to appear on day 5 post-burn. The patient reported experiencing thirst, dizziness, lip dryness, and chest discomfort unless she drank water. Her mean urinary volume was 6715 ± 1710 ml/d (range, 4400-10800 ml/d) from day 4 to day 15 post-burn. The volume of intravenous fluid infused was 2655 ± 416 ml/d during this period. Further examination showed that renal function was normal and that the urine specific gravity was 1.015-1.025. The highest fasting blood glucose value was

6.3 mmol/l and urine glucose was negative. Magnetic resonance imaging revealed normal appendices suprarenoidales. The antidiuretic hormone was 11.7 ng/l. The water deprivation test showed that urine volume decreased notably and returned to normal.

Discussion

Psychogenic polydipsia - in marked contrast to conditions in which water ingestion is regulated homeostatically - is a condition in which drinking occurs in the absence of any physiological need and in opposition to homeostatic requirements.⁴ The underlying mechanisms of psychogenic polydipsia are as yet unknown. It is possible that multiple factors, such as dry mouth caused by dry food and/or cellular dehydration accompanying eating, are involved.⁴ Falk hypothesized that psychogenic drinking might be a form of "adjunctive behaviour", i.e. a sort of displacement activity resulting from the thwarting of eating due to an intermittent food schedule. These explanations are not however without their limitations.⁴

Many researchers believe that the mechanism of psychogenic polydipsia could be related to ongoing severe trauma.³ There have been extremely few reports on the association between burns and psychogenic polydipsia.³ Only one case report of post-burn psychogenic polydipsia has been found in the Chinese literature.³

It is widely held that post-burn hyperdiuresis induces renal inadequacy, kidney injury, and hyperglycaemia. We must therefore know for sure whether a patient already had renal functional impairment when post-burn hyperdiuresis was discovered - in the two cases considered here, renal

function was normal and the period of hyperdiuresis was not in the burn effusion recruitment period. Also, the two patients received good treatment in the post-burn shock stage. We should therefore consider non-renal hyperdiuresis. Multiply detected fasting blood glucose in the two cases showed no obvious abnormality and the urine glucose was negative, and as the literature reports that the level of blood sugar can increase to a variable extent after severe burns,⁵ we can exclude hyperdiuresis caused by diabetes or hyperglycaemia. The two cases have the identical significant feature of polydipsia prior to hyperdiuresis, so it is easy to distinguish from hydrops admatulam caused by other reasons. The water deprivation test showed that urine production decreased manifestly, and consequently confirmed the diagnosis of psychogenic polydipsia.

Conclusion

The treatment of severe burn injuries complicating psychogenic polydipsia is relative simple. It is necessary to control water intake and perform hormone replacement therapy. The two cases discussed here are not a matter of organic parenchymatous damage - they both present the condition of depression that is induced by pain after burn injuries, together with a distressful and worried appearance and some functional damage and disturbances.

It is interesting to note the data in the literature suggesting that female burn patients are likely to present emotional problems⁶ - consequently, it was no surprise when we found that the two severely ill patients with burn injuries complicating psychogenic polydipsia were both female.

RÉSUMÉ. Dans de rares cas la polydipsie psychogénique peut se produire comme une complication post-brûlure, de façon prédominante dans le sexe féminin. Les Auteurs décrivent deux cas de cette condition particulière, tous les deux chez des femmes, le traitement et le résultat final.

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