Fitting the pieces together B U R N S

Delirium in Paediatric Burn Patients

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What is delirium?[1]

A disturbance of mental status, characterised by:

- A disturbance in **attention** and **awareness**
- A disturbance in **cognition**
- An acute onset and **fluctuating** course
- Caused by an underlying disease process or the side effects of treatment of a disease

Background

Despite being considered benign and reversible, there is growing concern that delirium in hospitalised patients has serious consequences for short and long term morbidity. Not only that, but delirium increases the length of hospitalisation and can increase a patient's economic burden by over US$70,000[4,5].

In adult burns patients, delirium is a common and serious complication of a burn injury, with 77 percent of burn-injured patients diagnosed with delirium in the Intensive Care Unit (ICU)[2]. Factors such as age, ventilation status, benzodiazepine administration, and surgical requirements have been linked to an increased risk of delirium[5,6]. No literature currently explores delirium in the burn-injured Paediatric Intensive Care Unit (PICU) patient.

Objectives

1) To **review the burden of delirium** in burn-injured PICU patients
2) Explore the **demographic and iatrogenic factors associated** with its presence in PICU patients after a burn injury

Methods

10 burn-injured patients* (aged 10 months to 14 years) admitted to the PICU of Lady Cilento Children's Hospital from October 2015-September 2016 were prospectively reviewed based on their medical information (including all sedative and analgesic medications administered) and delirium status.

Patient Characteristics

Median Age (*IQR*)	5.50 (*1.00-11.75*)
Sex	
Male, *n*(%)	6 (50.0)
Female, *n*(%)	6 (50.0)
Length of stay	
Median LOS PICU (*IQR*)	6.00 (*2.00-13.75*)
Median LOS LCCH (*IQR*)	23.50 (*9.25-44.25*)
Mean %TBSA[1] (5.00-82.00), (*SD*)	36.90 (*23.35*)
Mean ISS[2] (1.00-36.00), (SD)	15.75 (*11.86*)
Mechanical Ventilation, n (%)	12 (100.0)
Delirium Indicated	
Positive Screen**, n (%)	4 (40.0)
Nursing Observation***, n (%)	9 (90.0)

Note: [1]Total body surface area; [2]Injury Severity Score;*Total *n* = 12 (2 never recovered consciousness and died during admission; consequently not assessed); **CAP-D and/or pCAM-ICU/ psCAM-ICU; ***Nursing observations indicated concern about delirium or symptoms of delirium (during at least one shift); *SD* = standard deviation.

Results

The frequency of delirium in this sample is **up to 90 percent**. Positive indication of delirium was correlated with younger age (r_s = -.76, p = .011) and sedation administration. Specifically administration of:

Diazepam (r_s = .76, p = .024)
Methadone (r_s = .76, p = .024)
Clonidine (r_s = .76, p = .024)

was correlated with positive indications of delirium** over multiple shifts. High collinearity existed between the administration of diazepam, methadone and clonidine (r_s = .66, p = .040) Delirium was not correlated with TBSA, Injury Severity or Length of Stay (LOS).

Delirium is "a common, serious complication of burn injury"[2]

Conclusions

It is clear that burn-injured patients do experience a high rates of delirium, and may be more at risk if they are younger or are receiving doses of clonidine, methadone and diazepam. Early results also highlight the value in bedside nurses in identifying symptoms of delirium.

Other factors, such as TBSA, Injury Severity and LOS may also be related to experiencing delirium, but was not evident in this sample. Caution should be drawn interpreting these results due to the small sample size, but these preliminary results highlight the need for further research into delirium in burn-injured PICU patients.

1. American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (Vol. 5th). Washington, DC: American Psychiatric Publishing.
2. Perry, S., & Blank, K. (1984). Delirium in Burn Patients. *Journal of Burn Care and Rehabilitation, 5*(3), 210-214.
3. Traube, C., Mauer, E. A., Gerber, L. M., Kaur, S., Joyce, C., Kerson, A., . . . Greenwald, B. M. (2016). Cost Associated With Pediatric Delirium in the ICU. *Critical Care Medicine*, 1.
4. Van Rompaey, B., Schuurmans, M. J., Shortridge-Baggett, L. M., Truijen, S., Elseviers, M., & Bossaert, L. (2009). Long term outcome after delirium in the intensive care unit. *Journal of Clinical Nursing, 18*(23), 3349-3357.
5. Agarwal, V., O'Neill, P. J., Cotton, B. A., Pun, B. T., Haney, S., Thompson, J., . . . Pandharipande, P. (2010). Prevalence and risk factors for development of delirium in burn intensive care unit patients. *Journal of burn care & research, 31*(5), 706-715.
6. Guo, Z., Liu, J., Li, J., Wang, X., Guo, H., Ma, P., . . . Li, P. (2016). Postoperative Delirium in Severely Burned Patients Undergoing Early Escharotomy: Incidence, Risk Factors, and Outcomes. *J Burn Care Res*.

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