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End of life decisions and care of the adult burn patient

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ABSTRACT

Introduction: Despite advancements in the provision of burn care, there is still a significant cohort of patients who fail to respond to therapy or for whom treatment is deemed futile. The decision to withdraw support from, or to implement a Do-Not-Resuscitate (DNAR) order in, such patients can be challenging. Our aims were to review the withdrawal of life-sustaining treatment, issuing of DNAR orders and end of life care in burn patient deaths.
Methods: A retrospective case notes review was undertaken, for all burn in-patient deaths from 1st April 2001 to 31st December 2007.
Results: Following exclusions, 63 patients were included in our study, with a median age of 56 years (21–94). End of life decisions in younger patients (under 65 years) were more often due to burn severity. In those over 65 years, reasons were due to co-morbidities, and these decisions were made late in the patient's admission. In 34% of patients, end of life care was not comprehensively documented.
Conclusion: A coherent, decisive approach should be adopted and adhered to by all members of the multi-disciplinary team, with clear, standardised documentation in place.

1. Introduction

Over recent years significant progress has been made in the provision of burn care, resulting in better survival; despite these advancements, there is still a significant cohort of patients who fail to respond to therapy or for whom treatment is deemed futile. The decision to withdraw support from, or implement a Do-Not-Attempt-Resuscitation (DNAR) order in such patients can be challenging. The difficulties in predicting survival can be attributed to the complex nature of burn physiology, high incidence of sepsis and multi-organ failure, and associated injuries sustained including concomitant inhalation injuries. In addition, many of the most challenging patients have extensive co-morbidities which further complicate their resuscitation and subsequent management.

There is extensive literature regarding DNAR orders in the intensive care setting and the elderly medical population [1–11], yet few studies involve the burn patient [12,13]. In addition, the Liverpool Care Pathway [14] is well established for palliation of patients in other settings, particularly oncology, but is rarely implemented in the burn patient. The Shriner's group reported on the end of life care of the paediatric burn patient, recommending a standardised approach to documentation of DNAR orders and limitation of support in children [15]. Similar work is warranted in the adult burn patient.

The aims of this study were to review all burn patient deaths in our unit, to establish whether a DNAR order was issued, whether a decision was taken to withdraw life-sustaining treatment, the logistics of these decisions, and the palliation of these patients.

2. Methods

The West Midlands Regional Burns Service is a Burns Centre covering a population of 5.5 million. A retrospective case note review was undertaken for all burn inpatient deaths over a six

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and a half-year period (1st April 2001 to 31st December 2007). Names were identified from our informatics department.

Patient demographics, including age, sex, existing co-morbidities, social factors and burn characteristics such as burn Total Body Surface Area (TBSA), type of burn and associated inhalation injury, were obtained from clinical case notes. Subsequent management post-admission was reviewed including the number of days spent on the intensive care unit (ICU), the issuing of a DNAR order, withdrawal or withholding of treatment and the care given after this decision.

Patients with non-burn related skin loss such as toxic epidermal necrolysis syndrome (TENS) or those with burns acquired in hospital were excluded from this study. As this was a retrospective review of burn death patients it does not include information on those patients that received DNAR orders who survived.

2.1. Patient pathways

The West Midlands Regional Burn Service manages all types and severity of burn. Minor burns may be managed on an outpatient basis, however, a typical patient pathway for a major burn would involve acute management by the burn team in the Emergency Department. Occasionally, the patient will initially be managed at a peripheral Emergency Department and transferred to our unit as soon as safely possible.

Those patients with larger burns are assessed by the intensive care team and their suitability for admission to the intensive care unit (separate from the burns unit) decided upon. Patients with inhalation injury or those requiring advanced respiratory support alone, basic respiratory support with support of at least two organ systems, or complex patients at risk of multi-organ failure represent Level 3 care [16,17]. These patients are managed on the intensive care unit. Indications for high dependency care (Level 2 care) include patients requiring more detailed observation or intervention including support for a failing organ system, post-operative care or those stepping down from higher levels of care. High dependency care beds are available on the burns unit. Level 1 care patients, at risk of deterioration can often be managed on the burn unit with critical care and anaesthetic involvement as required. Level 0 care patients' needs can be met through the burns unit. Burn patients on the ICU are managed in a discrete area of the central ICU by the burns team in combination with the intensivists and anaesthetists. All surgeries are performed in the burns theatre.

3. Results

Of 1499 burn admissions between 1st April 2001 and 31st December 2007, there were 77 in-patient deaths (5% mortality). Notes were obtained for 63 patients, who were included in the study. Fourteen patients whose notes could not be obtained were excluded from the study. Of these patients, 32 were male and 31 were female, with a median age of 56 years (21–94).

3.1. Patients and burn characteristics

From these 63 patients, two broad groups were identified. The younger patient with larger burns, and the older patient with a typically smaller burn and co-morbidities. To explore this further, data was split into patients under 65 years and those over 65 years (Table 1).

Almost all patients over 65 years had a significant co-morbidity, compared with 19% of the younger group. Co-morbidities included diabetes mellitus, cardiovascular disease, epilepsy, alcoholic liver disease, current malignancy, recent chest infection and chronic obstructive pulmonary disease. Over half of the older group lived alone, and half were dependent on carers or had a registered disability. All of these dependent or isolated patients had one or more significant co-morbidity.

Burn aetiologies included flame (68% – 40% without and 28% with accelerant), scald (14%), radiant heat (6%), electrical (5%), contact (5%) and chemical (2%). Concomitant inhalation injury and deliberate self-harm (DSH) were more prevalent in the younger age group. A large proportion of burns due to flame with accelerant were caused by deliberate self-harm.

The average burn TBSA was higher at 53% in the under 65 year patients, compared to 17% in the over 65 years. The average TBSA for those burns due to DSH was 59%.

3.2. Issuing of DNAR orders/withdrawal of treatment

The nature of decisions made for the 63 patients before they died were classified, specifically whether a DNAR order was in place at the time of their death, or if any life-sustaining treatment was withheld or withdrawn (Table 2). Those patients who had no treatment withdrawn had full active treatment until their death, whether or not a DNAR order was issued. Therefore these patients could have, for example, inotropic support or ventilatory support. Of the 27% of patients with withdrawal of treatment alone, all except one patient was on the ICU. There were small insignificant differences

Table 1 – Patient demographics.

	<65 Years (n = 36)	>65 Years (n = 27)	All patients (n = 63)
Average age (years)	39 (r = 21–60)	79 (r = 68–94)	56 (r = 21–94)
Significant co-morbidities (%)	19	96	52
Lived alone (%)	17	52	32
Carers/disability (%)	3	48	22
Average TBSA (%)	53 (r = 4–97)	17 (r = 3.5–55)	38 (r = 3.5–97)
Inhalation injury (%)	64	37	52
Deliberate self-harm (%)	42	7	27
Associated injury (%)	3	7	5