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Burns in patients over 90: A fifteen-year series from a regional burns centre

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ARTICLE INFO

Article history:
Accepted 22 June 2014

Keywords:
Burns
Over 90
Outcome

ABSTRACT

The elderly constitute an expanding subgroup within society, and may have differences in health needs compared to younger patients. The specific needs and outcomes of elderly patients with burns have been widely studied. However, the definition of elderly often used in previous studies is a cut off of 65 years old. Within this broadly defined group, the very elderly may have distinct health care needs and issues. This study investigated aetiology, management and outcome of burns in those over 90 years treated at a single UK burns service over a period of 15 years between 1998 and 2013, and compares these data to published data describing 'younger' elderly burns patients. Twenty two patients were included, with a 2:1 female:male ration, and a mean 9%TBSA burn. Six of the 22 died during their admission, and those who survived averaged 8 days inpatient stay per %TBSA. The very elderly with burns may fare worse than younger elderly patients. Although burns in the very elderly are relatively infrequent events, they require significant resource. Further work to optimise their outcome is required.

1. Introduction

The elderly population, typically defined as those over 65 years old [1], is widely acknowledged as being an expanding group in society. Given this shift in demographics, greater consideration of the healthcare needs of older people must be made. This applies to burns management as it does to all other areas of clinical practice. Reduction in mobility, as well as sensory and cognitive impairment in later life may predispose the elderly population to different patterns of burn aetiology compared to other patient groups. As elderly patients may be more likely to have medical co-morbidities, their outcomes, burn healing and rehabilitation may also differ from other patient groups. Furthermore, burns in the elderly may be more severe than burns in patients aged under 65 [2].

Numerous studies of burns in older populations have been reported [3–14]. However, it may not be appropriate to consider burns in all patients over the age of 65 to be homogeneous. Given that the relationship between age and length of inpatient stay following burns may follow a linear relationship [15], it might be expected that the very elderly may show quantitative or qualitative differences from 'younger' elderly patients. The outcome of burns in those aged over 80 has been studied [16,17], though this may still describe a broad range of ages, comprising further different subgroups. Office of National Statistics data demonstrates that there were 430,000 United Kingdom (UK) residents within their 10th decade of life in 2011, with this predicted to rise further. This study reviewed the aetiology, treatment and outcome of burns sustained by patients over 90 years old (described hereafter as

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http://dx.doi.org/10.1016/j.burns.2014.06.013

'very elderly') at one UK regional burns centre, and draws comparison with literature describing 'elderly' patients, who were typically over 65 years of age.

2. Methods

This project consisted of a retrospective service evaluation of burns in patients over 90 years old, treated at the regional burns centre at Pinderfields Hospital in Wakefield, UK. Under UK National Research Ethics Service (NRES) guidance, this project was exempt from requiring research ethics committee approval (Health Research Authority, 2013) [23].

Patients were identified from the Burns Centre database. Inclusion criteria for the study were burns;

- requiring inpatient admission to the Regional Burns Centre at Pinderfields General Hospital for at least one night
- sustained in patients over the age of 90 years at the time of injury
- sustained between 1998 and 2013.

Details of demographics, burn aetiology, inpatient stay, treatment (including surgery) and outcome were extracted from the database and from clinical notes. Where relevant, details describing mortality were also recorded. Analysis was performed using GraphPad Prism 6.0 for Mac. Statistical significance (p) was set at 0.05. Where appropriate, F tests were performed to examine the variances of different groups. If variances were not significantly different as determined by the F test, then an unpaired t test was used. If variances were significantly different between groups, then Welch's t test was used.

3. Results

Twenty-two very elderly patients met the inclusion criteria (Chart 1). Data describing all 22 were obtained. Fifteen were women and 7 were men. The mean age at injury was 94, with a range of 91–103. The mean percentage of total body surface area (%TBSA) burned that was documented after clinical examination was 9%, with a range from 1% to 43%.

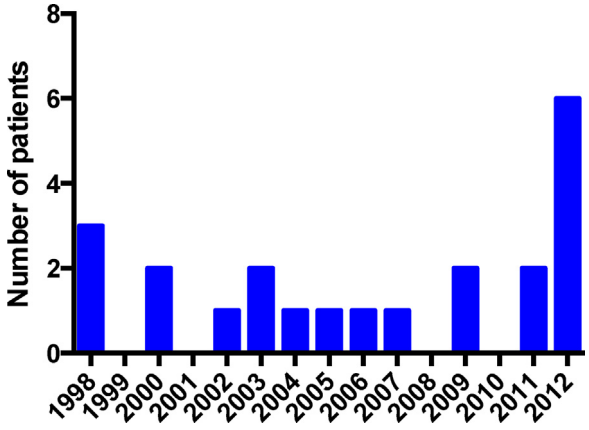

Chart 1 – Pattern of admissions over time period of study.

3.1. Length of stay and mortality

As per the European Standard guidelines, patient with over 10% and patients who require special social and emotional or long term rehabilitative support were admitted. Sixteen patients survived and 6 patients died during their period of admission. Two were not resuscitated at the time of admission after consideration of the patient's best interests and discussion with their relatives and put on the Liverpool Care pathway. One was not resuscitated after a cardiac arrest during their inpatient admission. The other 3 of the 6 died due to sepsis and underlying co-morbidities. One of the two patients who were not initially resuscitated involved a 43%TBSA full thickness resulting from a cooker explosion and the other involved a 15% full thickness flame burn sustained by a 103 year old who had fallen into an electric fire. The mean age of the 6 who died was not significantly different to the 16 who survived (mean of 96 years versus mean of 93 years, $p = 0.0624$, unpaired t test). Those who died had statistically significantly larger burns than those who survived (mean of 19%TBSA versus mean of 5%TBSA, $p = 0.0356$, Welch's t test).

In those who survived, the mean length of inpatient stay on the burns unit was 30 days (95% confidence intervals: 18–42 days). The mean ratio of length of stay per percentage burn was 8 days/% (95% confidence intervals: 6–10 days/%). This was highly significantly longer than the goal of one day per percentage burn [18] ($p < 0.0001$, one sample t test), as shown in Chart 2. Of the 16 survivors, three were transferred to the Care of the Elderly inpatient ward following discharge from the burns unit, for ongoing inpatient care. Another was transferred to a rehabilitation unit. The remainder were discharged from hospital either to their own home, or to community-based care establishments.

3.2. Aetiology

Twenty patients were admitted from their own homes and two from residential care. There was a statistically even spread of aetiology between scalds (7/22), contact burns (4/22) and flame burns (11/22) ($p = 0.549$, two tailed binomial test).

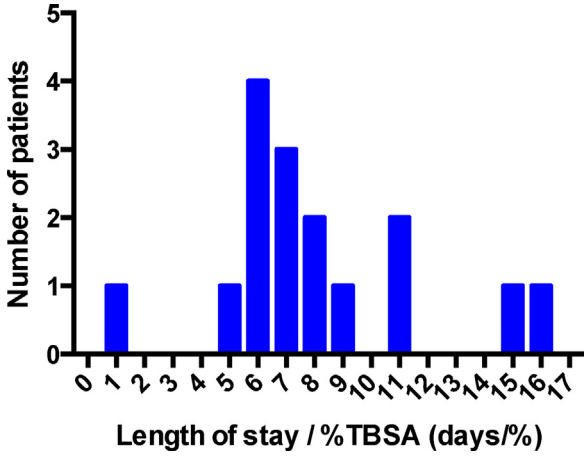

Chart 2 – Histogram of length of stay per percentage TBSA burn in those who survived to discharge.