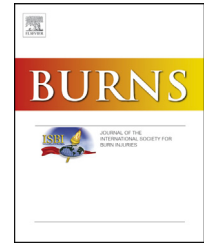




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Life expectancy in elderly patients following burns injury

Sarvnaz Sepehripour^{*}, Sirisha Duggineni, Somaya Shahsavari, Baljit Dheansa

Queen Victoria Hospital, East Grinstead, United Kingdom

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ABSTRACT

Introduction: Burn injuries commonly occur in vulnerable age and social groups. Previous research has shown that frailty may represent a more important marker of adverse outcome in healthcare rather than chronological age (Roberts et al., 2012). In this paper we determined the relationship between burn injury, frailty, co-morbidities and long-term survival.

Methodology: Retrospective data collection from patients aged 75 with burns injuries, treated and discharged at Queen Victoria Hospital. The Clinical Frailty Scale (Rockwood et al., 2005) was used to calculate frailty at the time of admission. The expected mortality age (life expectancy) of deceased patients was obtained from two survival predictors.

Results: The data shows a statistically significant correlation between frailty score and complications and a statistically significant correlation between total body surface area percentage and complications. No significant difference was found between expected and observed age of death or life expectancy amongst the deceased (p value of 0.109).

Conclusions: Based on the data from our unit, sustaining a burn as an elderly person does not reduce life expectancy. Medical and surgical complications, immediate, early and late, although higher with greater frailty and TBSA of burn, but do not adversely affect survival in this population.

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1. Introduction

Burn injuries commonly occur in vulnerable age and social groups [1]. In the elderly loss of physiological reserve and co-morbidities may increase risks associated with burn injury [2]. Current burns outcome prediction tools utilise age and total burn surface area as two major factors contributing to mortality risk [3-5]. However previous studies suggest that frailty may represent a more important marker of adverse outcome and mortality in healthcare rather than chronological age [6,7]. As the population shows increasing longevity and a higher proportion of people are living with more complex

healthcare needs [7-10], we wished to further examine the relationship between burn injury and long-term survival.

Certain conditions such as fractured neck of femur have been associated with a reduced survival in the elderly population and this has led to significant changes in the management of this injury [11,12]. As many burns injuries in the elderly occur in those with poor mobility, multiple medical conditions and increased frailty it could be hypothesised that burns injury in this population may be associated with a reduced life expectancy. Review of the literature revealed that there is no current data available in this field unlike the multiple studies in the orthopaedic literature related to hip fractures.

^{*} Corresponding author at: Queen Victoria Hospital, Holtye Rd, East Grinstead RH19 3DZ, United Kingdom.

E-mail address: sarvnazsephri@googlemail.com (S. Sepehripour).

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Our study aimed to determine: (a) the impact of burns injury in the elderly and 5 year survival and (b) the correlation between frailty and co-morbidities with life expectancy after a burn injury.

2. Patients and methods

We aimed to document the actual 5 year survival rate of all elderly patients sustaining a burn injury treated at Queen Victoria Hospital, a regional burns unit covering a population of 4million. The burns service has a dedicated multidisciplinary team including elderly care physicians. Patients aged 75 year and over, with burn injury as their only presenting complaint, with an inpatient stay of greater than 48h and discharge from Queen Victoria Hospital, in 2009 and 2010 were included in the study. Data from patients at Queen Victoria Hospital was collected retrospectively, from hospital notes, National Burns database and Primary Care records. The exclusion criteria were polytrauma, patients transferred to other units, death as in-patient and patients with inadequate notes.

The Clinical Frailty Scale [13] was used to calculate frailty at the time of admission (Fig 1). This validated objective scoring tool was used by two physicians who independently scored each patient and the mean was obtained. The expected mortality age (life expectancy) of deceased patients was obtained from two survival predictors. Riskprediction.org.uk which calculates life expectancy based on National Statistics Data and applies to the UK population only [10] and the NHS Life Expectancy Calculator [14,15]. The mean of the two values was obtained and used.

Complications were defined as any unanticipated clinical problem that resulted in patient readmission, delayed discharge or further treatment or interventions. All immediate,

early and late complications, medical and surgical complications were recorded. Mortality was defined as death from the time of discharge to 5 years follow up.

3. Results

One hundred and thirty six patients age 75 years and over were discharged over the course of the study period. Of these 3 people were excluded due to insufficient records, 2 were transferred to other units and 2 excluded due to presence of other injuries. Overall 129 patients were included in the study (Male: 68, Female: 61). Of these 68 patients (53%) had died within 5 years (Male: 38, Female:30). The Mean age of death was 83.32 years (Standard Deviation – SD– 5.76). The mechanisms of burn injury included scalds (46%) contact (28%), flame (18%), chemical (4%) and electrical (4%). TBSA range from 0.5% to 43%. Over all the Mean TBSA was 5.01% (SD 5.88) and amongst the deceased Mean TBSA was 5.06% (SD 6.40).

Overall Mean frailty score was 5.91 (SD 2.11) and Mean score of the deceased was 6.08 (SD 1.04). The range of complications were from 0 to 5 and this was the same amongst the deceased patients. Complications were medical and surgical and ranged from partial graft failure, cellulitis, reduced mobility to cardiac arrhythmias, deep venous thrombosis and acute kidney injury (Appendix A). Fig. 2 demonstrates the relationship between frailty score and complications. Pearson correlation coefficient was used to measure the linear correlation between frailty score and complication. Using Microsoft Excel 2015, Pearson correlation generated a p value of 0.034 (significant value is $p < 0.05$) demonstrating a significant correlation between frailty score and complications. Fig. 3 demonstrates the relationship between TBSA and complications. The generated

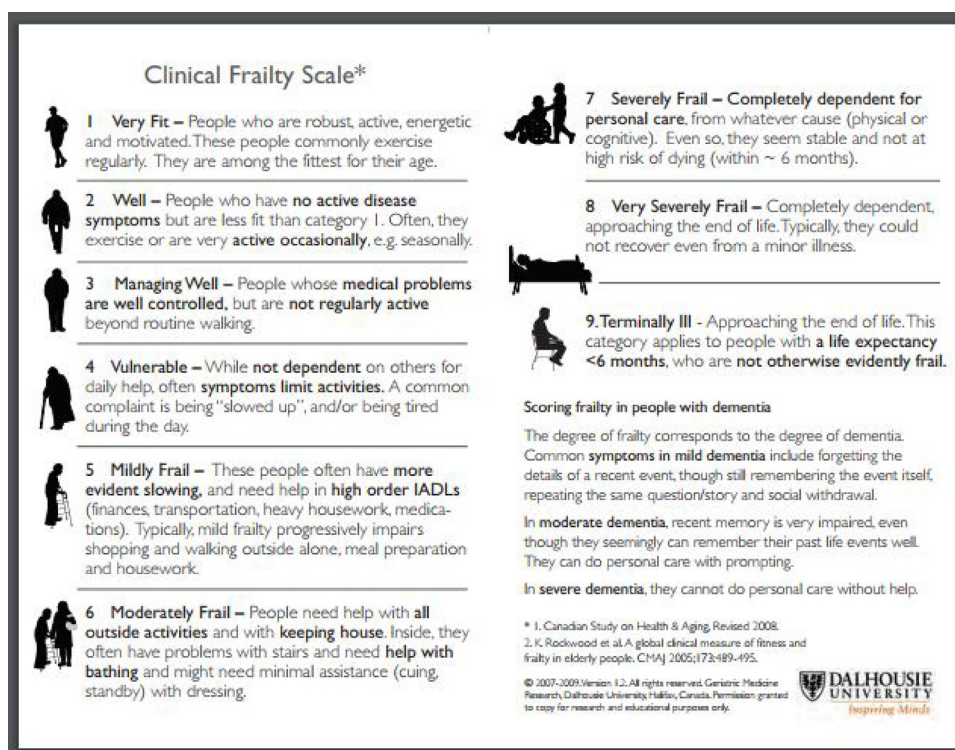


Fig. 1 – Clinical Frailty Scale [13] — Validated tool used to calculate frailty.

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