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The increasing trend in alcohol-related burns: It's impact on a tertiary burn centre

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ABSTRACT

Introduction: The incidence of alcohol-related hospital admissions is a worldwide problem and currently costs the UK National Health Service approximately 4% of its annual budget. 40% of men and 22% of women drink over the recommended UK weekly allowance. The purpose of our study was to examine the trend in alcohol-related admissions to a tertiary burns unit over a 5-year period.

Methodology: All patients admitted were documented for alcohol-related burn, and history of alcohol dependence.

Results: 1293 patients admitted between 2003 and 2008 were included in the study. The number of alcohol-related burns were as follows: 2003: 6%; 2004: 10%; 2005: 16%; 2006: 9%; 2007: 19%; 2008: 19%. This increasing trend was highly significant ($p < 0.0001$). Alcohol-related burns had a higher incidence of flame injury (60%) and a subsequent longer length of stay (12.5 vs. 7.9, $p = 0.04$). Alcohol dependence was noted in 54% of all alcohol-related burns and in 5% of the non-alcohol-related burns.

Discussion: The number of alcohol-related burns admitted to a tertiary burn unit is increasing and now comprises of nearly 20% of all admissions. This highlights the growing burden of alcohol on health and the need to address it at both a national and regional level.

1. Introduction

Alcohol causes 1.8 million deaths a year, approximately 3.2% of all deaths worldwide [1]. Alcohol is the third most common cause of death in developed countries. Globally, alcohol consumption has increased over the last decade, especially in the United Kingdom. The UK is the worlds 18th largest consumer of alcohol, and recent statistics show that alcohol was responsible for a 9% increase in hospital admissions over the previous year [2], an increase higher than any other medical condition and responsible for 4% of its annual health expenditure [3,4].

In light of these findings the World Health Organisation (WHO) has recently launched an ambitious programme to tackle alcohol abuse, urging members to use the 2005 framework convention on tobacco control as its model [5,6].

The adverse relationship between alcohol and trauma is well established [7] and the association between alcohol and burn injury has been extensively studied [8,9]. Nevertheless, no study has attempted to look at the change in incidence over time. The purpose of our study was to look at the trend in alcohol-related burn admissions to a tertiary burns centre over a 5-year period.

2. Methodology

Data was compiled from the National Burn Injury Database. This is a national database that was set up in 2001 following

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recommendations by the National Burn Care Review for the British Isles [10]. It was designed to capture information about burns severe enough to require assessment or admission to specialised services with the aim to facilitate analysis pertaining to burn research and service development and delivery. A corresponding international Burn Database was set up in 2004. The database contains nine separate domains that are recorded each patient assessed. Data was collected prospectively for every burn admission into our unit from April 2003 to April 2008.

2.1. *Measuring alcohol intoxication and alcohol dependence*

Patients scored positive for an alcohol-related burn if on direct questioning, they fulfilled any of the following criteria:

1. Alcohol directly caused the burn.
2. Alcohol was a significant factor.
3. Intoxicated at time of injury.

Patients scored positive for alcohol dependence if they admitted to drinking more than twice the United Kingdom's recommended weekly allowance (14 units for women, and 21 units for men), consistent with hazardous drinking [11] (1 unit corresponds to 8 g of pure ethanol, the equivalent of 70 ml of 14% ABV (alcohol by volume) white wine). Patients also scored positive if their case notes contained documented evidence of alcohol-related morbidity. This included previous alcoholism, admission for alcohol-related problems, or documented alcoholic liver disease and/or its sequelae.

2.2. *Other parameters*

In addition we looked at the following parameters: age, gender, type of burn, TBSA (total body surface area) % burn, mechanism of injury, and length of stay. Determination of TBSA was made from adult Lund and Browder charts completed by the most senior receiving burns doctor. Length of stay was calculated from the day of admission to the day of discharge.

2.3. *Statistical analysis*

Data were analysed using SPSS (SPSS©, version 14.0, SPSS Inc.). Chi-squared test was performed for categorical data, and student's Wilcoxon t-test for quantitative data.

3. Results

3.1. *Inclusion criteria*

A total of 1538 patients were admitted to our unit between 2003 and 2008. 245 patients were excluded: 190 were non-acute admissions, mostly post-burn reconstructions, 2 were under the age of 16, and 53 patients had insufficient or missing data. 1293 patients were therefore included in the study (see Fig. 1).

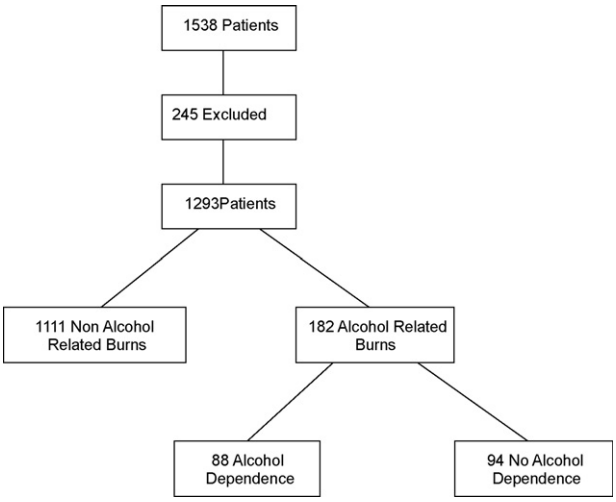

Fig. 1 – Evaluation of 1538 burn unit admissions between 2003 and 2008.

3.2. *Incidence of alcohol intoxication*

Of the 1293 patients included in the study, 182 were alcohol-related burns. For each year, the number of alcohol-related burns were as follows: 2003: (12) 6%; 2004: (17) 10%; 2005: (41) 16%; 2006: (18) 9%; 2007: (44) 19%; 2008: (50) 19%. This increasing trend was highly significant ($p < 0.0001$) (see Fig. 2 and Table 1).

3.3. *Incidence of alcohol dependence*

Of the 182 alcohol-related burns, 51% (94 patients) scored positive for alcohol dependence compared to 4.5% ($n = 65$) of the non-alcohol-related burn group ($p < 0.0001$).

Looking at all burn admissions over the 5-year study period, the number of patients that had evidence of alcohol dependence also significantly increased ($p = 0.02$).

3.4. *Age and gender*

There was no statistical difference in gender distribution between the alcohol-related burns and the non-alcohol-

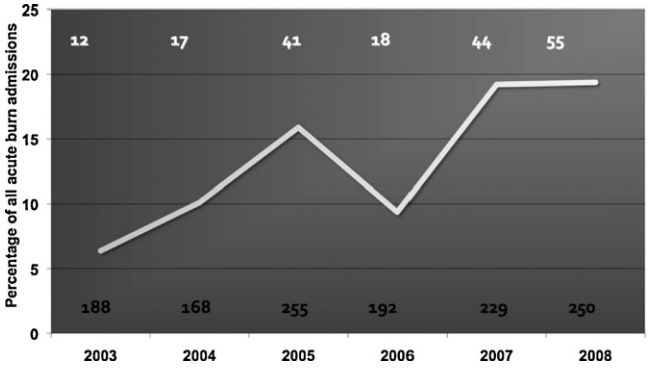

Fig. 2 – Graph detailing % number of alcohol-related admissions per year $p < 0.0001$. Number is in white correspond to *n*. Numbers in black correspond to total number of acute admissions.