

Diabetic foot burns: A retrospective analysis of epidemiology and protocols

Dr Jason Diab¹, Dr Andrea Issler-Fisher¹, Mrs Miranda Pye¹, Ms Christine Parker¹, Prof Peter Kennedy¹, Prof Peter Haertsch¹, Dr Justine O’Hara¹, Professor Peter Maitz¹

¹ Concord Burns Unit, Concord Hospital, NSW, Australia. jdmisciali@gmail.com [Concord Research Travel Scholar]

INTRODUCTION

Diabetic foot burns pose a clinical challenge for teams to manage effectively.

The growing trend of Diabetes in our populations is compounded by the microvascular effects of diabetes control resulting in peripheral neuropathy, poor oxygenation and inflammation, all culminating to poor healing wounds [1].

A retrospective audit from 2014 – 2019 at Concord General Repatriation Hospital Burns Unit summarised patient demographics, burn injury, diabetic status, operations and length of stay. All foot burn injuries from 2014 – 2019 of all ages and gender that attended Concord burns hospital were included in this study.

Results

There were 113 patients [n = 22 female, n= 113 male] whom suffered foot burns representing 15.2% of all foot burns to the unit in the in and out patient setting.

- Average age was 60.25 years +/- 12.61 SD ranging from 21 – 87 years.
- Average TBSA was 1.78% with 36 patients requiring grafting.
- Winter was the most affected season for diabetic foot burns [n=45], followed by summer [n=33].
- In winter, contact and scald represents the most common mechanism of injury [n=14 respectively], however contact burn is the most common for summer [n=25].
- The right foot was more affected than the left foot with deep dermal / full thickness injuries representing the most common injury for each foot respectively [n=53, n=51].
- The most common mechanism of injury was contact (38.5%), followed by scald (34.1%), radiant (16.3%), flame (7.4%) and chemical (3.7%).
- These injuries commonly occurred at domestic residences (79.3%).
- Inadequate first aid with water greater than 20 minutes represented 72.6% cases.
- Post op complications: 6 patients had wound infection, 1 patient had sepsis, 8 required amputations [3 BKA, 1 AKA, 1 mid foot, 2 toes, 1 ray].
- The average length of stay for patients was 17.44 days, but the most common presentation was to outpatient clinic with no admission [n=68, 50.3%].
- Seasons and mechanism of injuries are dependent and statistically associated from the data [χ^2 (12df) = 45.875, $p < 0.001$; Cramer’s V = 0.337, $p < 0.001$]. however when controlling for gender the relationship between seasons and mechanism of injury is no longer statistically significant overall. However, a partial association remains for male respondents is present. [χ^2 (12df) = 43.457, $p < 0.001$; Cramer’s V = 0.358, $p < 0.001$].
- Multiple regression analysis was run to predict length of stay from age, gender, TBSA, MOI, sensory modality, seasons. TBSA, sensory modality and sex were statistically significant for length of stay $F(5,53) = 4.707, P=0.001, R^2 = 0.308$.
- Multiple regression analysis was run to predict number of operations from age, gender, TBSA, MOI, sensory modality, seasons. TBSA and seasons were statistically significant for number of operations $F(6,128) = 4.244, P=0.001, R^2 = 0.166$.

Discussion

- Diabetic foot burns is complex care that requires multidisciplinary care across medical, surgical and allied health divisions for optimal outcomes.
- Early intervention with diabetic educators, occupational therapists and endocrinology is central.
- Educational awareness of symptoms and thermal injuries during seasonal change is particularly important in the out patient setting. This has shown to be associated with length of stay and operations.
- Discharge planning with allied health, specialities and GPs should be finalised on discharge for patients.

REFERENCES

1 Sainsbury E, Shi Y, Flack J et al. Burden of diabetes in Australia: it’s time for more action. 2018. Novo Nordisk.

