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Long term outcomes following pretibial injury: Mortality and effects on social care

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Summary

Introduction: Pretibial injuries are common, and those patients requiring hospital admission are often elderly with significant comorbidity. The long term impact on social care and associated mortality seen in this patient group has not been reported previously. It was our impression that pretibial injury is often a marker of increasing social and/or medical needs of the patient, and that a significant proportion of these patients underwent long term changes in social circumstances following injury.
Methods: A review of 109 patients with pretibial injuries over a 3-year period admitted to the Plastic Surgery Unit at Derriford Hospital, Plymouth, UK. Overall mortality and changes in social circumstances within a 6-month period following discharge from hospital were recorded.
Results: The overall mortality was 11%. Twenty-five percent of patients underwent an escalation of their social care requirements immediately on discharge from hospital. At 6 months only 78% of patients who were living independently at home prior to admission had returned home. Increasing age, cardiovascular comorbidities, length of time to operation were significantly associated with deterioration in social circumstances and death.
Conclusions: Mortality following pretibial injury is higher than that expected for the population. A sizeable proportion of patients with pretibial injuries can be expected to need significant long term changes in social input after injury. Whether this change is directly due to injury, or is a reflection of underlying medical and social deterioration identified by the hospital admission process is unclear. In either respect, close liaison with medical and social care teams is essential to facilitate optimum care in this patient group.

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Introduction

Pretibial injury is a common condition in the elderly, affecting 0.4—0.7/1000 population per year with the majority of patients being female and aged 70—89.[11] Patients admitted to hospital for treatment of pretibial injury could be compared to those admitted with fractured neck of femur; both groups are commonly elderly females, injured following a fall, requiring surgical treatment. In fractured neck of femur patients there is a recognised high mortality, quoted at 5—24% at 90 days[17] and 33% by 12 months.[10] This mortality increases with age,[12] comorbidity and preoperative delay.[2,8] Pneumonia, heart failure and myocardial infarction are the commonest causes of death in these patients.[15] It has also been shown that following admission with fractured neck of femur there is a reduced return to the community[1] associated with age, low activities of daily living score on admission, dementia and the use of regional anaesthesia, reflecting premorbid condition.[6] Surprisingly, however, despite obvious similarities in the two groups, mortality and long term effects on social requirements have not been previously published in patients following pretibial injury.

Wound debridement and skin grafting is recommended for pretibial flap lacerations likely to progress to necrosis.[9,16] Hospital admission in the elderly is known to be associated with functional decline despite cure or repair of the condition for which they were admitted, as a result of immobility and sensory deprivation.[5] Patients confined to bed after skin grafting for pretibial injury have been shown to have a subsequent reduction in their mobility.[4] There are obvious reasons, therefore, why patients with pretibial lacerations may undergo changes in their social circumstances immediately on discharge. Early mobilisation following skin grafting does not have an adverse effect on complete healing time,[13,14,18] and reduces hospital stay.[4] Even with this policy, however, a proportion of patients appear to need long term changes in social care and this is less easily explained as a direct consequence of the injury. Pretibial injury in some, therefore, may be an underlying reflection of deteriorating medical and social state identified by the hospital admission process.

We were, therefore, interested to discover if pretibial injury has an associated long term mortality above that which could be normally expected for this population and if there was reduced return to community post operatively with long term changes in social support requirement. In addition, if this were the case we were interested to examine any factors that could aid the early identification of those patients that were likely to need extra medical or social input.

Methods

We performed a retrospective case note review over a 3-year period, from 1/1/02 to 31/12/04, of those patients admitted with pretibial injury to Derriford Hospital, Plymouth. Patients were identified via the operating theatre coding system, records kept by a specialist nurse acting as trauma coordinator over this period, and the plastic surgery discharge summary database.

For each patient we recorded: age; sex; past medical and drug history; conservative vs. surgical treatment; time to operation; length of hospital stay; social circumstances on admission, discharge and 6 months following discharge (either living at home, in residential or nursing care); overall mortality at 6 months and cause of death if this occurred. Where 6 month follow-up data was not available in the notes we contacted the General Practitioner of the patient. The mortality rate was compared with published standardised mortality data for patients of the same age and sex in the region over the same period.

Comorbidity was classified as respiratory (chronic obstructive pulmonary disease/recent pneumonia), cardiac (atrial fibrillation, previous myocardial infarction, angina, hypertension), or neurological (previous stroke, dementia). The medications recorded were those likely to complicate pretibial injury: anticoagulants and antiplatelet agents (aspirin, clopidogrel, warfarin) and steroids.

Statistical analysis

We used two-tailed *t*-tests to determine the association of prolonged time to operation, or length of hospital stay with deterioration in medical/social circumstances and mortality. Factors potentially contributing to overall decline including death were examined using both univariate and multivariate analysis. A Mann—Whitney test was used for age, and Chi-squared tests (with continuity correction) or, if small numbers, Fisher's exact test for the categorical variables (comorbidity and drugs). Logistic regressions were used to simultaneously investigate the relationship between the potential contributory factors and the outcomes of either decline (including death) or death alone. Both forward selection and backward elimination logistic regression were used. SPSS Version 15 was used for these analyses.