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Incidence and epidemiology of tibial shaft fractures

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ABSTRACT

Introduction: The literature lacks recent population-based epidemiology studies of the incidence, trauma mechanism and fracture classification of tibial shaft fractures. The purpose of this study was to provide up-to-date information on the incidence of tibial shaft fractures in a large and complete population and report the distribution of fracture classification, trauma mechanism and patient baseline demographics.
Methods: Retrospective reviews of clinical and radiological records.
Results: A total of 196 patients were treated for 198 tibial shaft fractures in the years 2009 and 2010. The mean age at time of fracture was 38.5 (21.2SD) years.

The incidence of tibial shaft fracture was 16.9/100,000/year. Males have the highest incidence of 21.5/100,000/year and present with the highest frequency between the age of 10 and 20, whereas women have a frequency of 12.3/100,000/year and have the highest frequency between the age of 30 and 40. AO-type 42-A1 was the most common fracture type, representing 34% of all tibial shaft fractures. The majority of tibial shaft fractures occur during walking, indoor activity and sports. The distribution among genders shows that males present a higher frequency of fractures while participating in sports activities and walking. Women present the highest frequency of fractures while walking and during indoor activities.
Conclusion: This study shows an incidence of 16.9/100,000/year for tibial shaft fractures. AO-type 42-A1 was the most common fracture type, representing 34% of all tibial shaft fractures.

Introduction

The epidemiology of fractures of the tibial shaft has been addressed in a number of studies [1–8]. The incidence of tibial shaft fractures is reported in the literature with variation over years and between different countries and cultures [1,3–5,7]. Weiss et al. [6] reported a decreasing incidence in Sweden over a 6-year period from 18.7/100,000/year in 1998 to 16.1/100,000/year in 2004.

Most epidemiological studies are conducted without a geographically well-defined and complete population. Denmark has a unique opportunity to conduct population-based studies due to a civil registration number register. This registration number is used on all health-related contacts, and is required by law. This system provides researchers with a complete registration of all health-related issues on an individual and population-based level.

Most studies lack validated fracture classification and information concerning trauma mechanism. Only one study has included both trauma mechanism and validated fracture classification [3]. Variation in trauma mechanism and the distribution of fracture classification over time and among genders have never been studied.

The literature lacks up-to-date population-based epidemiology studies on the incidence of tibial shaft fractures based on a complete population, validated fracture classification and trauma mechanism.

The purpose of this study was to provide up-to-date information concerning the incidence of tibial shaft fractures in a large and complete population and report the distribution of fracture classification, trauma mechanism and patient baseline demographics.

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Materials and methods

A population-based epidemiological study of all patients treated for a tibial shaft fracture was carried out over a 2-year period from 2009 to 2010.

The study was conducted at Aalborg University Hospital, Denmark, in the North Denmark region, and was based on an average population of 580,072 citizens (Fig. 1). The region is served by Aalborg University Hospital (level 1 trauma centre) and six minor hospitals. All patients in the region treated for a tibial shaft fracture in 2009 and 2010 were included after search in the medical records.

Denmark has a unique opportunity to do population-based studies. All patient contacts with hospitals and clinics in Denmark are registered in the Danish National Patient Register (DNPR) [9] and is required by law. The Central Person Register (CPR) number

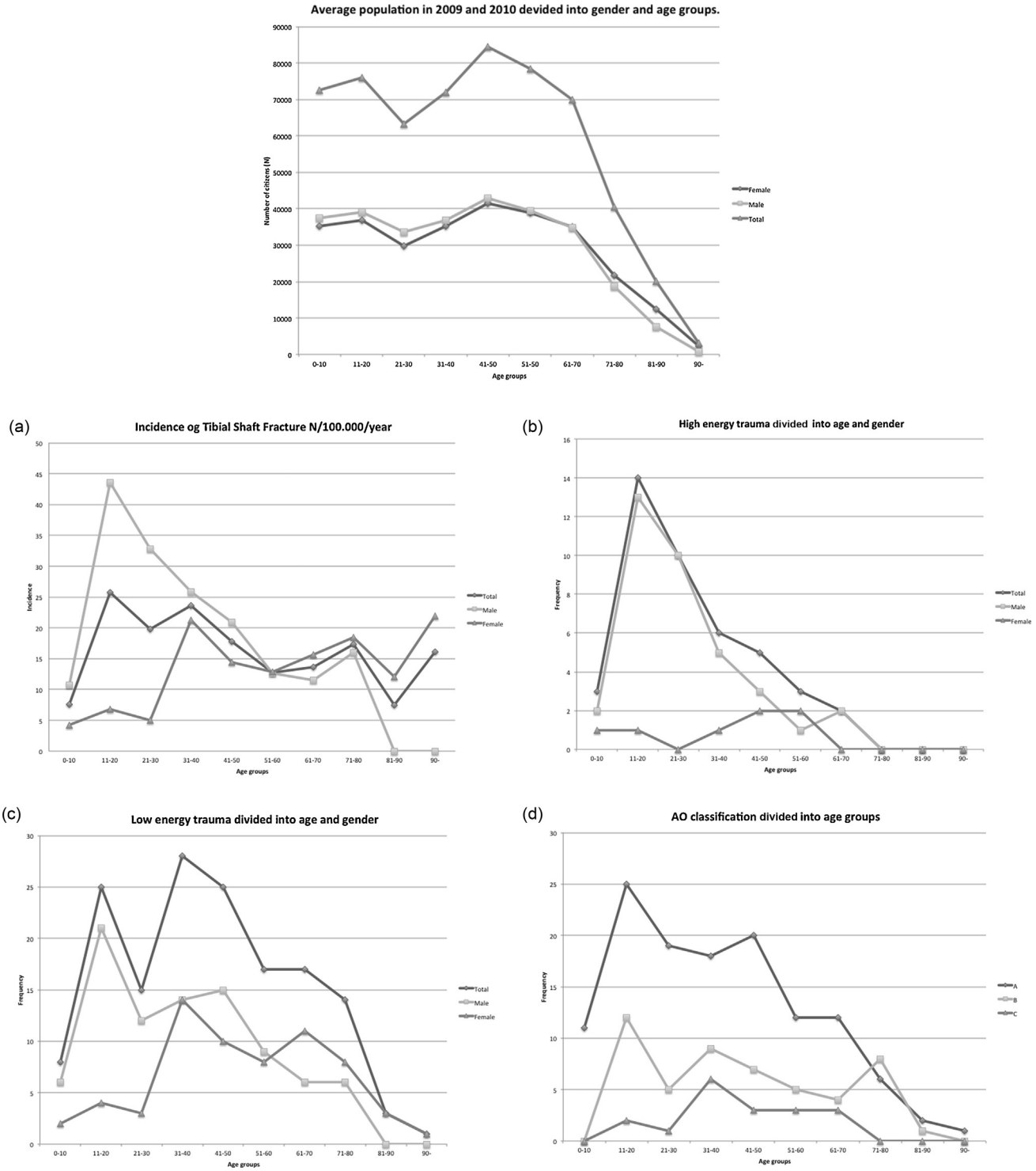

Fig. 1. Average population in 2009 and 2010 divided into gender and age groups. (a) Incidence of tibial shaft fracture *N*/100,000/year. (b) High-energy trauma divided into gender and age groups. (c) Low-energy trauma divided into gender and age groups. (d) AO-classification divided into age groups.