

Temporal Trends In Hip Fracture Incidence, Mortality And Co-Morbidity - A Study On The Danish Population From 1996-2012

Orthopaedics / Pelvis, Hip & Femur / Epidemiology, Prevention & Diagnosis

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Introduction

The incidence of hip fractures during the latest decade varies from country to country with some experiencing decreasing and others increasing rates. Studies on comorbidities have found some of these associated with an increased risk of sustaining a hip fracture. Furthermore patients sustaining a hip fracture are subject to an excess mortality evident in both men and women.

Objectives

To investigate the changes in incidence, co-morbidity, 30 day- and 1 year mortality in hip fracture patients in the Danish population during the period 1996 to 2012.

Methods

Using the Danish National Patient Registry we identified all patients aged 18 years or above admitted with a fractured hip (ICD-10 codes DS720, DS721 and DS722) in Denmark during the period 1st of January 1996 to the 31st of December 2012. Information collected included age, gender, time to death and comorbidities (myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease, dementia, chronic pulmonary disease, rheumatic disease, peptic ulcer disease, moderate or severe liver disease, mild liver disease, diabetes without chronic complication, diabetes with chronic complication, hemiplegia or paraplegia, metastatic solid tumor, any malignancy, AIDS/HIV and renal disease). Total number of Danish citizens for the different years was collected from <http://www.dst.dk/da/Statistik/statistikbanken>. All included continuous variables were non-normally distributed and thus analyzed using Mann-Whitney U-test. The Cochran-Armitage trend test was used to test for trends in development in prevalence of comorbidities and mortality. Incidence over time was assessed using Poisson regression analysis.

Results

154.062 patients sustained a hip fracture during the period. From 1996 to 2012 the hip fracture incidence in the whole population declined from 217 per 100,000 to 137 (p=0.0417). The decrease was most pronounced for females (313 to 181 per 100,000,

p=0.0217) compared to males (119 to 93 per 100,000, p=0.0216). For the whole population, 30 day mortality increased from 8.55 % to 10.27 % (p=0.0001), while 1 year mortality remained almost unchanged (26.08 % to 27.42 %, p=0.9823). For males 30 day and 1 year mortality declined from 12.62 % to 12.49 % (p=0.1956) and 32.01 % to 31.25 % (p<0.0001) respectively. In females, 30 day mortality rose from 7.05 % to 9.14 % (p=0.0001), while 1 year mortality increased from 23.88 % to 25.48 % (p=0.2486). For all comorbidities, except hemi- or paraplegia, AIDS/HIV and malignancy in males, a significant increase in prevalence was found (p<0.05 for all). The largest increments was found for congestive heart failure (males: 3.44 % to 10.67 %, females: 3.09 % to 13.05 %), moderate to severe liver disease (males: 0.1 % to 0.66 %, females: 0.05 % to 0.35 %) and renal disease (males: 0.26 % to 1.97 %, females: 0.19 % to 1.06 %).

Conclusions

In summary this observational study shows that incidence of hip fractures for both genders are declining. For 30 day mortality, rates have increased for females even though there are no changes in 1 year mortality. On the contrary, 30 day mortality for males is unchanged whilst 1 year mortality has declined. When these results are compared to the relatively large increase in prevalence of the different comorbidities it does not seem likely that the increased disease burden is affecting neither the incidence nor the mortality.