

BONE

Hip fracture: how can outcome be improved?

Findings reported in three independent studies provide important insights into the causes of mortality after hip fracture in frail, elderly individuals and identify management approaches that might hold the key to improved outcomes for these vulnerable patients.

In the first year after injury, 20% or more of patients with hip fracture die, and mortality after hip fracture may be increased for up to a decade after the fracture, although reports of the extent and duration of excess mortality after hip fracture vary. A team from Australia has now shed light on the duration and causes of excess mortality after hip fracture. The nested case-control study involved 2005 institutionalized elderly men and women who were followed up for hip fracture and death for at least 5 years. The investigators identified 229 cases of hip fracture, and matched these to controls by sex, age, institution type and follow-up period.

Excess mortality in hip fracture cases was greatest in the first 3 months after the fracture, but the increased risk disappeared around 9 months after injury. Specifically, hazard ratio of death (adjusted for sex, age and institution type) for cases compared with controls was 3.34 (95% CI 2.01–5.55), 1.87 (95% CI 1.11–3.13), and 1.00 (95% CI 0.74–1.36) for the first 3 months, 3–9 months and >9 months after hip fracture, respectively. Cardiac diseases in both men and women and infections in women were the main causes of excess mortality during the 9-month period.

“Interventions to reduce mortality need to be targeted during this early period after hip fracture,” points out lead researcher Philip Sambrook of the Kolling Institute of Medical Research (Bone and Joint Research), University of Sydney, Australia. “Another interesting finding was that bisphosphonate treatment was associated with reduced



© Dreamstime

mortality. This has previously been shown for zoledronate but not other bisphosphonates.”

The findings of Friedman and co-investigators also emphasize the importance of special care for patients with hip fracture. Their retrospective study compared the outcome of patients with hip fracture treated by normal care with those treated by a comanagement approach involving geriatricians and orthopedic surgeons at a Geriatric Fracture Center in the US. A program of care that incorporates geriatric and orthopedic comanagement, standardized protocols and total quality management has shown proven benefits for patients in other countries, but the approach has rarely been replicated in the US. The researchers found that patients treated at the Geriatric Fracture Center benefited from reduced lengths of stay, reduced time to surgery, and fewer cardiac complications or cases of thromboembolism, delirium or infection.

Optimistically, Brauer and co-investigators reveal that incidence of hip fracture and mortality after hip fracture declined in the US between 1985 and 2005 and suggest possible reasons for the reductions. The large, observational study, in which data from 786,717 patients ≥ 65 years of age with hip fracture were analyzed, identified two distinct eras of hip fracture incidence and mortality. An initial era (1986–1995) when incidence of hip fracture increased but mortality after hip fracture fell, and a second era (1995–2005) when incidence of hip fracture fell but mortality after hip fracture remained predominantly unchanged. The researchers suggest that the increased use of bisphosphonates in this latter period may provide one reason for the decreased incidence of hip fracture, but concede that this factor cannot explain the decrease in men, who had very low use of these agents. The observed reductions in mortality after hip fracture probably relate to improvements in surgical and medical management and a shift towards discharge to nonacute health-care settings rather than to self-care at home. Nevertheless, the investigators acknowledge that the reason for the plateau in mortality in the later part of the study is a mystery.

Alarming, the investigators also found that comorbidities among patients with hip fracture have increased over the 20-year period. This observation highlights the ongoing need to optimize management of hip fracture in a world with a rapidly aging population.

Carol Wilson

Original articles Cameron, I. D. *et al.* Hip fracture causes excess mortality due to cardiovascular and infectious disease in institutionalized older people: a prospective five-year study. *J. Bone Miner. Res.* doi:10.1359/jbmr.091029 | Friedman, S. M. *et al.* Impact of a comanaged Geriatric Fracture Center on short-term hip fracture outcomes. *Arch. Intern. Med.* 169, 1712–1717 (2009) | Brauer, C. A. *et al.* Incidence and mortality of hip fractures in the United States. *JAMA* 302, 1573–1579 (2009)