

Aspects of fracture prevention

The role of fracture liaison services and alendronate

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Carl Kylberg, Medicinaregatan 7B, fredagen den 27 november 2020, klockan 9.00.

av Kristian F. Axelsson

Fakultetsopponent:
Professor Bo Abrahamsen
The University of Southern Denmark

Avhandlingen baseras på följande delarbeten

- I. **Axelsson K F**, Jacobsson R, Lundh D, Lorentzon, M.
Effectiveness of a minimal resource fracture liaison service
Osteoporosis International, **2016**. 27(11): p. 3165 - 3175.
- II. **Axelsson K F**, Johansson H, Lundh D, Möller M, Lorentzon M.
Association Between Recurrent Fracture Risk and Implementation of Fracture Liaison Services in Four Swedish Hospitals: A Cohort Study.
Journal of Bone and Mineral Research, **2020**. 35(7): p. 1216 - 1223.
- III. **Axelsson K F**, Wallander M, Johansson H, Lundh D, Lorentzon M.
Hip fracture risk and safety with alendronate treatment in the oldest-old.
Journal of Internal Medicine, **2017**. 282(6): p. 546 - 559.
- IV. **Axelsson K F**, Nilsson A G, Wedel H, Lundh D, Lorentzon M.
Association Between Alendronate Use and Hip Fracture Risk in Older Patients Using Oral Prednisolone.
JAMA, **2017**. 318(2): p. 146 - 155.

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- The role of fracture liaison services and alendronate

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Abstract

In an ageing population, osteoporotic fractures become more common and cause increased morbidity, mortality and societal cost. This thesis aimed to determine the potential role of fracture liaison services (FLS) and alendronate treatment on fracture risk in those with a recent fracture, in the elderly and in those treated with oral prednisolone.

All four papers in this thesis are retrospective cohort studies. In the first two papers, we used regional electronic health records to study patients 50 years or older with a recent major osteoporotic fracture. Patients in FLS hospitals were compared to historic controls or patients at non-FLS hospitals. The chance of receiving examination with dual-energy X-ray absorptiometry (DXA) and osteoporosis medication was investigated as well as the risk of sustaining a recurrent fracture. In the last two papers, we used national registers to study the risk of fracture after alendronate treatment in elderly and prednisolone users respectively versus propensity score matched controls without alendronate treatment.

Implementation of FLS was associated with an 18% reduced risk of recurrent fracture. Also, implementation of a minimal resource FLS increased the proportion of patients being investigated with DXA and the chance to receive osteoporosis medication after fracture reached levels comparable to FLS types using conventional coordinator-based models. Alendronate prescribed to older patients (≥ 80 years) with prior fracture was associated with reduced risk of hip fracture by 38% with sustained safety. Alendronate prescribed to patients 65 years or older treated with oral prednisolone was associated with a 65% reduction in hip fracture risk.

Preventive efforts such as FLSs and alendronate treatment in elderly and prednisolone users are associated with reduced risk of fracture. An increased use of FLSs and alendronate treatment would reduce fracture incidence, thereby mitigating suffering and costs resulting from fractures.

Keywords: Osteoporosis, prevention, fracture, fracture liaison service, alendronate, elderly, prednisolone.