Application of beta-blockers and fracture risk.

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Abstract

According to studies, the sympathetic nervous system depletes bone tissue. Adrenergic agonists induce bone desorption in mouse calvarias organ culture, according to in vitro evidence. Guanethidine, a sympathetic neurotoxic substance, is used in chemical sympathectomy to suppress preosteoclast development and disrupt osteoclast activation in adult rats. Additionally, in female rats with ovariectomies, the beta-blocker propranolol promoted bone growth. These findings imply that blockers may prevent postmenopausal women from losing bone mass. In fact, usage of blockers was linked to increased bone mineral density at the hip and forearm in women over 50, and use of beta-blockers was linked to a 30% reduction in fracture risk in a recent observational trial with 569 fracture case and 775 control patients. By lowering urine calcium excretion, thiazide diuretics are suggested to protect against bone loss. Numerous epidemiologic studies indicate that thiazide exposure is linked to a lower risk of fracture. To our knowledge, no studies have examined the relationship between -blocker use and the risk of fractures in men and young women or the combination of beta-blocker and thiazide diuretic use. In this extensive population based investigation, we investigated the relationship between the use of blockers with or without concurrent use of thiazides and the risk of fracture in men and women between the ages of 30 and 79.

Keywords: Diuretic, Beta-blockers, Adrenergic agonist, Thiazide diuretics, Sympathetic nervous system.

Introduction

Population Analysis and Data Source

Data were obtained from the General Practice Research Database, which is headquartered in the UK and has been extensively discussed elsewhere. Selected general practitioners in the United Kingdom who utilise office computers and have consented to share data for study have more than 3 million patients registered. General practitioners have received training in the use of standardised, anonymous forms to record medical information, such as demographic information, medical diagnoses, specifics of hospital stays, and fatalities. Direct computer use by doctors to create prescriptions results in information being automatically entered into the computer system. Medical diagnoses are entered using a modified version of the Oxford Medical Information System classification, and prescriptions are recorded using a coded medication lexicon based on the UK Prescription Pricing Authority definition. The recorded information on drug exposure and diagnoses has been validated and proven to be of high quality [1].

Numerous observational studies, including investigations on fractures and antihypertensive medication, have come from the GPRD. The validity of fracture diagnoses in the GPRD is high, with a confirmed proportion of at least 90% after comparing computer-recorded diagnoses with hospital discharge letters and/or information provided by general practitioners in questionnaires, according to previous record reviews by ourselves18 and others. The GPRD's Scientific and Ethical Advisory Group gave the study their blessing [2].

Analysis of beta-blockers

For all cases and controls, we established exposure to -blockers and thiazide or thiazide-like diuretics before the index date. The following criteria were used to evaluate exposure to study medicines as well as a number of other substances. Patients were labelled as current users if their most recent prescription for a study drug was filled between 1 and 59 days prior to the index date, recent users if it was filled between 60 and 119 days prior to the index date, and past users if it was filled at least 120 days prior to the index date. The remainder were regarded as nonusers. As a supplementary evaluation of exposure length, we looked at the quantity of computer-recorded prescriptions made before the index date [3]. One prescription equated to roughly one to three months of treatment for the medications of interest. For the primary analysis, we identified categories of people who only used -blockers, thiazides, or a combination of the two. We made adjustments to this study to account for the usage of many other medications that may increase fracture risk in addition to other antihypertensive medications. Users of both beta-blockers and thiazide diuretics were those who

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either took them in a predetermined combination or who had separate prescriptions for each medication. If both -blockers and thiazides were prescribed within the previous 60 days of the index date, they were considered to be current users [4].

Analysis of the Data

Using SAS version 8.1, we performed conditional logistic regression analysis. The odds ratios for risk estimates are shown together with the 95% confidence intervals. P values were regarded as statistically significant if they were less than 05. Age, sex, practise, calendar time, years of history in the GPRD prior to the index date, smoking status, body mass index, number of visits to the practise prior to the index date, medical conditions linked to an increased fracture risk, drug exposure to other antihypertensive medications, benzodiazepines, antipsychotics, antidepressants, corticosteroids, antiepileptic drugs, hormone therapy, calcium, and other potential confounders were all taken into account when The study considered missing values for smoking and BMI as a separate category. This may be a coincidental discovery, although it is not always consistent with a linear duration impact. We divided the 20 or more prescription group into three strata: 20 to 29, 30 to 39 and 40 or more prescriptions to examine if the OR tended to increase with exposure time. In all longer-term use strata, the risks remained stable and ranged around 0.8 [5].

Conclusion

The results of this substantial population-based case-control study offer additional proof that current -blocker use is linked to statistically significant lower fracture risk in both men and women. While short exposure did not significantly change the fracture risk, users of three or more prescriptions started to notice the risk reduction. According to the findings, those who currently use 3 to 19 -blocker medications were at a lower relative risk than those who currently use 20 or more. Furthermore, we cannot rule out the possibility that unidentified risk factors distorted or confused our results. However, we took a number of medical variables into account when performing the analysis, including renal failure, hyperthyroidism, hyperparathyroidism, malnutrition, malabsorption, and diabetes mellitus. We opted not to include these disorders in the final model because adjusting the analysis for them essentially had no effect on the outcomes. In the current study population, the link in long-term users was weaker in women than in men. Many elderly patients with hypertension are at risk of developing osteoporosis, and they may potentially benefit from the beneficial effects of the relatively affordable -blockers and thiazide diuretics on fracture risk, even though more observational studies and controlled trials are required to confirm these potentially significant findings.

References

1. Cherruau M, Facchinetti P, Baroukh B, et al. Chemical sympathectomy impairs bone resorption in rats: a role for the sympathetic system on bone metabolism. Bone. 1999;25(5):545-51.
2. Togari A. Adrenergic regulation of bone metabolism: possible involvement of sympathetic innervation of osteoblastic and osteoclastic cells. Microsc Res Tech. 2002;58(2):77-84.
3. Takeda S, Elefteriou F, Levasseur R, et al. Leptin regulates bone formation *via* the sympathetic nervous system. Cell. 2002;111(3):305-17.
4. Ray W, Downey W, Griffin M, et al. Long-term use of thiazide diuretics and risk of hip fracture. The Lancet. 1989;333(8640):687-90.
5. Feskanich D, Willett WC, Stampfer MJ, et al. A prospective study of thiazide use and fractures in women. Osteoporos Int. 1997;7(1):79-84.

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