

EASD Abstract 71

Alendronate use and risk of type 2 diabetes: a Danish population-based case-control study

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Background and aims: There has been proposed a link between glucose homeostasis and bone metabolism. Bisphosphonates are first line treatment of osteoporosis and we aimed to investigate if the risk of developing type 2 diabetes was altered by previous use of alendronate.

Materials and methods: We conducted a population-based case-control study through access to all discharge diagnoses (ICD-10 system) from the National Danish Patient Registry and all redeemed drug prescriptions (ATC classification system) from the Health Service Prescription Registry. All cases with a diagnosis of type 2 diabetes between 2008 and 2018 were matched on sex and age with 3 randomly selected controls by incidence-density sampling. Exposure was defined as ever use of alendronate and further grouped as effective and compliant use. ORs were calculated by conditional logistic regression analysis with adjustment for several confounders and test for trend for dose-response relationship.

Results: A total of 163,588 patients with type 2 diabetes and 490,764 matched control subjects were included with a mean age of 67 years and 55% male subjects. The crude OR of developing type 2 diabetes after alendronate use was 0.93 (95% CI 0.90-0.96) and decreased further after adjustment (multiple adjusted OR: 0.64 [95% CI 0.62-0.66]). The adjusted OR decreased to 0.47 (95% CI 0.40-0.56) among those with more than 8 years of alendronate use. A test for trend suggested a dose-response relationship between longer effective use of alendronate and lower risk of type 2 diabetes ($p=0.002$).

Conclusion: These results suggest a possible protective effect of alendronate in a dose-dependent manner against development of type 2 diabetes with a potential 50% risk reduction after 8 years of alendronate use. We propose future clinical research to investigate if alendronate impacts on glucose homeostasis, e.g. insulin sensitivity and glycemic control, and if it differs among people with and without pre- or type 2 diabetes.

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