

A population based assessment of the risk of fragility fracture associated with the use of adjuvant hormonal therapy for early breast cancer in older women.

Enright K, Trudeau M, Taback N, Krzyzanowska M

Background: Change in bone density is one of the most commonly reported long-term sequelae of adjuvant hormonal therapy for the treatment of early breast cancer (EBC), although the magnitude and direction of change varies with the type of hormonal therapy. Compared with tamoxifen (TAM), the use of aromatase inhibitors (AI) has been associated with an increased risk of fragility fracture, but it remains unclear how much of this increased risk is attributable to the protective effect of TAM versus the detrimental effects of the AIs. We sought to determine the population based risk of fragility fracture associated with the use of adjuvant hormonal therapy using linked administrative databases in older women with EBC compared with non-cancer controls.

Methods: All incident EBC patients >66y diagnosed between Jan/01-Dec/08 in Ontario, Canada were identified from the Ontario Cancer Registry. Patient records were linked deterministically to multiple provincial health care databases to provide comprehensive medical follow-up. Two treatment cohorts were identified based on the exclusive use of either TAM (5,704) or AI (4,760). Using a propensity score matching method, a non-cancer control group was created for both the TAM (n = 16,322) and AI (n = 13,063) cohorts, controlling for age, year of diagnosis, comorbidities, prior fractures, bisphosphonate use and socioeconomic status. Cox proportional hazard models were used to determine the association between each hormonal therapy and the development of a fragility (hip, wrist, spine) fracture.

Results: After a median observation time of 5.1 years in TAM users, and 2.8 years in the AI users, 11.5% of the TAM and 7.5% of the AI users developed a fragility fracture. Compared with matched controls (Table), TAM users had a significantly lower adjusted risk of fracture, while AI users had a higher risk of fracture.

Conclusions: Fragility fractures are a concern in older women with EBC on adjuvant hormonal therapy, and bone health should be monitored closely, particularly with the use of AI's.

Table.

Hazard Ratio (HR) for fragility fracture associated with hormonal therapy for EBC

Group	N	Fragility Fractures (%)	HR	95% CI	P Value
Tam	5704	647 (11.5%)	0.91	0.83-0.99	0.03
Tam Non-Cancer Control	16,322	2115 (13.0%)	1.00		
AI	4760	356 (7.5%)	1.12	0.99 – 1.26	0.07
AI Non-Cancer Control	13,063	963 (7.3%)	1.00		