Lower risks of new-onset hip fracture risks in users of sodium glucose cotransporter 2 (SGLT2) inhibitors versus users of dipeptidyl peptidase-4 (DPP4I) inhibitors: a propensity score-matched analysis

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Funding Acknowledgements: None.

Purpose: This study aimed to compare the effects of sodium glucose cotransporter 2 inhibitors (SGLT2) and dipeptidyl peptidase-4 inhibitors (DPP4I) on new-onset hip fractures.

Methods: This was a retrospective population-based cohort study including type-2 diabetes mellitus patients treated with either SGLT2 or DPP4I between January 1st 2015 and December 31st 2020 in Hong Kong. The primary outcome was new-onset hip fracture and the secondary outcome was all-cause mortality. Propensity score matching (1:1 ratio) using the nearest neighbour search was performed. Univariable and multivariable Cox regression were applied to identify significant predictors. Competing risks models and multiple approaches using the propensity score were performed.

Results: This cohort included 56393 patients with type-2 diabetes mellitus (median age: 62.1 years old [interquantile range, IQR]: 54.2-71.1; 57.45% males), of which 20432 patients ([incidence rate, IR]: 36.23%) used SGLT2I and 35961 patients (IR: 63.77%) used DPP4I. After the 1:1 propensity score matching, 449 (IR: 1.09%) patients had hip fractures, and 2012 patients (IR: 4.92%) died. SGLT2I was associated with significantly lower risks of hip fractures after adjusting for the demographics, past comorbidities, non-SGLT2I/DPP4I medications and laboratory results (hazard ratio: 0.55; 95% confidence interval: 0.42-0.89; P=0.0036). The results were consistent in the competing risk models and the different propensity matching approaches.

Conclusions: SGLT2I was associated with lower risks of new-onset hip fractures after propensity score matching and adjustments.

Figure 1