Association of Glucagon-like Peptides-1(GLP-1) Agonists on Femur Fractures in a Real-World Cohort

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INTRODUCTION: Glucagon-like peptides–1 (GLP-1) agonists such as Semaglutide have exploded in popularity over the last few years to help control patients' A1C in those afflicted with Type 2 Diabetes Mellitus (T2DM). Our purpose was to evaluate if GLP-1 agonist medications had an impact on the incidence of various femur fractures relative to other antidiabetic drugs.

METHODS: We utilized the TriNetX United States Collaborative Database to identify two cohorts of patients between 2017-2023. The first cohort consisted of patients diagnosed with T2DM who were initially and only prescribed GLP-1 agonists. The second cohort consisted of patients diagnosed with T2DM and who were prescribed any other diabetic drug excluding GLP-1 agonists. Outcomes included a group that consisted of subtrochanteric, pertrochanteric, and intertrochanteric fractures along with a second group with the outcome of femoral neck fracture. Outcomes were analyzed for up to five years after patients started taking antidiabetic drugs. RESULTS:

Propensity score matching was run to balance the baseline characteristics of each cohort and 37,099 were identified in Cohort #1 and 37,013 in Cohort #2 after matching. Cohorts were matched according to age, gender, race, and BMI, along with the diagnosis of chronic kidney disease, Vitamin D deficiency, and osteoporosis. The GLP-1 agonist group (Cohort #1) was found to have a lower incidence of subtrochanteric, intertrochanteric and pertrochanteric fractures when compared to the non-GLP-1 group (Cohort #2) (0.032% vs. 0.340%) (p<0.0001) with a risk ratio of 10.524 (95% CI, 5.823–19.023). Additionally, for femoral neck fracture incidence the GLP-1 group had a lower incidence compared to the non-GLP group (0.032% vs. 0.205%) (p<0.0001) with a risk ratio of (0.158) (95% CI, 0.086-0.290). DISCUSSION AND CONCLUSION:

This study demonstrates that patients taking GLP-1 agonists after diagnosis of T2DM had an extremely significant reduction in subtrochanteric, intertrochanteric, and pertrochanteric fracture incidence compared to patients taking other antidiabetic medications not including GLP-1 agonists. While this is a limited database study that does not delve into the specifics of each patient, this indicates that GLP-1 agonists may have a protective effect which is consistent with previous studies that show that GLP-1 agonists have a positive influence on bone formation and density.