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ABSTRACT TEMPLATE

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TITLE: The Effect of Oral Bisphosphonates on Acute Kidney Injury, Gastrointestinal Events and Hypocalcaemia in Patients with Chronic Kidney Disease

BACKGROUND

Oral bisphosphonates (oBP) are contraindicated in patients with severe chronic kidney disease (CKD), but there is a lack of data on the safety in this area.

OBJECTIVES

To study the association between oBP use and risk of acute kidney injury (AKI), gastrointestinal events (GIE) and hypocalcaemia (HC) in patients with moderate-severe CKD.

METHODS

Patients with stage 3B+ CKD (eGFR<45) were identified in two primary care records databases from the United Kingdom (CPRD) and Spain (SIDIAP) linked to hospital inpatient data. Patients with CKD exposed to oBP were identified and matched to up to 5 patients from the same database using propensity score matching. Confounders included a priori defined variables: age, gender, concomitant diseases and medications. Missing data within covariates (creatine (SIDIAP), BMI, alcohol use, and smoking) were imputed using multiple imputation. First AKI, GIE and HC events were identified for each patient as the outcomes of interest. Analyses were undertaken for each outcome and each database separately. Patients were censored at the event, death, end of study or database, or 210

days after the final prescription whichever came first. Cox regression models were used. Absolute rates were calculated per 10,000 person years.

RESULTS

In CPRD there were 10,701 exposed patients matched to 42,489 unexposed patients. In SIDIAP the numbers were 4,143 and 20,165. For AKI there were 1,848 events in CPRD and 1,456 in SIDIAP; HR (95% CIs) were 0.94 (0.82, 1.08) in CPRD and 1.08 (0.93, 1.25) in SIDIAP with absolute event rates of 116.9, 113.2, 166.2 and 153.1 for exposed and unexposed in CPRD and SIDIAP respectively. This gave a pooled HR (95% CI) of 1.00 (0.91, 1.11). For GIE there were 891 events in CPRD and 178 events in SIDIAP, with HRs of 1.07 (0.87, 1.30) and 1.53 (1.01, 2.32) respectively with absolute event rates of 62.9, 53.3, 25.2 and 17.3. This gave a pooled HR (95% CI) of 1.14 (0.96, 1.37). Finally, 150 HC events were identified in CPRD, and 6 in SIDIAP; HRs were 0.82 (0.50, 1.34) in CPRD, but not calculated in SIDIAP due to low HC events. Absolute event rates were 8.9, 9.1, 1.4 and 0.5.

CONCLUSIONS

oBP use was not associated with increase the risk of AKI in patients with moderate-severe CKD in both datasets. A 50% excess risk of GIE is seen in one of the databases but not in the other. HC was extremely rare and not associated with oBP use.