

Inpatient Outcomes of Colorectal Cancer Patients with and without Concomitant Osteoporosis: A Population Based Propensity-Score Matched Analysis

Authors: Amrita Chawla, Faiz Afridi, Reza Hashemipour, Sushil Ahlawat

Background

Low serum calcium and vitamin D levels elevate the risk of colorectal cancer (CRC) and may be a prognostic factor for CRC patients. Calcium metabolism and vitamin D levels are key factors in osteoporosis (OP). Prior studies have shown an association of bisphosphonates with reduced relative risk of CRC. This study aims to examine inpatient outcomes in CRC patients with OP.

Methods

Primary and secondary diagnoses of malignant CRC with and without OP were identified from the 2001-2014 Nationwide Inpatient Sample. Baseline characteristics were analyzed. Cases of CRC with OP were propensity score matched 1:1 against controls across clinical covariates. Multivariable adjusted Poisson, gamma, and logistic regression were used to measure primary outcomes of length of stay (LOS), charge, mortality, and disposition. Secondary outcomes of complications rates and procedures performed were analyzed.

Results

Among 2,660,301 cases of CRC, 69,165 cases of OP with CRC were identified. Pre-match, cases of CRC with OP were older (79 IQR: 72-85 vs 68 IQR: 57-78, $P < 0.001$), more likely to be female (91.5% vs 48.7%, $P < 0.001$), white (71.5% vs 60%, $P < 0.001$), and have uncomplicated hypertension (53.8% vs 42.5%, $P < 0.001$). After matching, cases of CRC with OP had lower charges (-5%, 95% CI -7% to -2%, $P < 0.001$), LOS (aIRR: 0.96, 95% CI 0.94-0.98, $P < 0.001$), and mortality (aOR: 0.71, 95% CI 0.61–0.83, $P < 0.001$). CRC with concomitant OP had lower rates of mechanical ventilation (aOR: 0.69, 95% CI 0.6-0.8, $P < 0.001$), acute kidney injury (aOR: 0.66, 95% CI 0.57 – 0.75, $P < 0.001$), peritonitis (aOR: 0.58, 95% CI 0.48-0.7, $P < 0.001$), and septicemia (aOR: 0.66, 95% CI 0.56-0.78, $P < 0.001$).

Conclusions

Inpatients with CRC with OP have lower total charges, LOS, and overall mortality and complication rates. Future studies should examine the potential impact and role of bisphosphonates and other OP treatments on CRC prognosis.