Thromboembolic Prophylaxis in Cancer Patients Undergoing Arthroplasty for Radical Resection: Aspirin Provides Adequate Coverage while Decreasing Complications

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INTRODUCTION:
As the number of patients living with cancer increase and survival rates continue to improve, there will be a parallel increase in cancer patients requiring total joint arthroplasty. Malignancy is notoriously known as a promoter of thromboembolic disease. Both total hip and knee arthroplasty are known high-risk surgeries for venous thromboembolism (VTE). Currently, there are no studies looking at appropriate prophylaxis in this high-risk population and they have often been excluded from previous prophylaxis studies due to this increased risk. Conducting randomized control trials on this topic can be problematic given low VTE incidence and difficulty with obtaining an appropriate sample size within this specific population. However, large nationwide healthcare databases provide access to larger sample sizes which may not be possible with a prospective study. We aimed to evaluate cancer patients undergoing arthroplasty to establish improved recommendations for VTE prophylaxis in cancer patients undergoing total joint arthroplasty. We asked does aspirin alone as VTE prophylaxis in cancer patients undergoing total joint arthroplasty (TJA) increase risk of deep vein thrombosis (DVT) or pulmonary embolism (PE)?
METHODS:
Using a nationwide database, we retrospectively collected data on patients with cancer undergoing total joint arthroplasty from 2010 to 2021. Patients over the age of 18 were identified by utilizing the CPT codes for total hip arthroplasty and total knee arthroplasty combined with the CPT code for radical resection of tumor. Exclusion criteria included history of VTE. Patients with single-agent VTE chemoprophylaxis (direct factor Xa inhibitor [DOAC], aspirin, warfarin, or low-molecular weight heparin [LMWH]) within 30 days postoperatively were included. Multivariate regression assessed 30-day and 90-day postoperative deep vein thrombosis, pulmonary embolism, and non-thromboembolic complications (NTC) which included infection, incision drainage, hematoma, and hemorrhage.

RESULTS: There were 4,682 patients who met inclusion criteria. There were 2,233 males (47.6%) and 2,449 (52.3%) females. At 30 days, there were 44/4,682 (0.94%) DVT and 32/4,682 (0.68%) PE. At 90 days, there were 36/4,682 (0.77%) DVT and 15/4,682 (0.32%) PE. For the NTC, at 30-days there were 868/4,682 (18.54%) and at 90-days 251/4,682 (5.36%). At 30 and 90-days, there was no statically significant difference in risk for PE or DVT between the different forms of prophylaxis. At 30-days, aspirin was found to decrease the risk of non-thromboembolic complications (OR 0.69, 95% 0.49-0.70 p= 0.02). Warfarin was found to increase risk of non-thromboembolic events (OR 1.76, 95% CI 1.38-1.95 p=0.01). There was no statistically significant difference of NTC complications identified at 90-days between the groups. In all cases, an increase in the Charlson Comorbidity Index (CCI) was found to statistically increase risk of DVT and PE.
DISCUSSION AND CONCLUSION: The rate of VTE in this study was found to be low and similar to the current literature of patients undergoing primary TJA. Although malignancy has been shown to increase risk of thrombotic events it likely only does to a mild degree. An increase in comorbidities may provide more insight into their risk of developing VTE. Aspirin did not increase risk of VTE in patients with cancer undergoing lower extremity arthroplasty while decreasing risk for NTC at 30-days. Warfarin was found to increase risk of NTC at 30 days.