Atopic Dermatitis (Eczema) And Its Treatment Medication Increases Risk Of Adverse events Following Total Knee Arthroplasty

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INTRODUCTION: Atopic dermatitis (AD, also known as eczema) is a highly prevalent, chronic inflammatory skin disease characterized by pruritis and eczematous lesions. Patients with AD have been shown to have an increased incidence of osteoarthritis (OA) and are thus at increased risk of degenerative knee issues and may be candidates for total knee arthroplasty (TKA). Perioperative outcomes of those with AD following total knee arthroplasty have not yet been characterized.

METHODS: Adult patients undergoing primary TKA for osteoarthritis indications were identified in the 2015 – 2021Q1 PearlDiver M151 administrative database. Exclusion criteria included: age < 18 years, surgical indication due to trauma, infection, or neoplasm, as well as not being active in the database for 90 days following their procedure.

AD patients were matched to those without 1:4 based on age, sex, and Elixhauser Comorbidity Index (ECI). The incidence of 90-day adverse events and five-year revisions were compared with multivariable logistic regression (significance set at $p < 0.0029$). Matched AD patients were then stratified by medication status (history of medications for severe disease within two years prior to TKA) for analysis of 90-day adverse events and five-year revisions between resultant sub-cohorts.

RESULTS SECTION: Among 721,686 TKA patients, AD was noted for 4,165 (0.6%). After matching, 4,150 with AD were compared to 16,597 without. Multivariable analysis revealed that patients with AD were at increased odds of aggregated all adverse events (AAE, OR=1.38), aggregated minor adverse events (MAE, OR=1.50), pneumonia (OR=2.04), urinary tract infection (UTI, OR=1.88), and emergency department visits (ED visits, OR=1.65) ($p<0.0001$ for each, Figure).

Upon secondary analysis stratifying AD patients by medication records, those on any medication for severe disease had similar associations as the primary analysis with increased odds of AAE (OR=1.46), MAE (OR=1.59), pneumonia (OR=2.27), UTI (OR=1.94), and ED visits (OR=1.68). In contrast, those not on medications, while mostly similar, were not found to have elevated odds of post-operative pneumonia.

DISCUSSION: Patients with atopic dermatitis undergoing TKA were at greater odds pneumonia, UTI, aggregated minor and any adverse events, as well as ED visits. There was limited difference to this finding regardless of whether patients were on medications for more severe AD.

SIGNIFICANCE/CLINICAL RELEVANCE: Surgeons who are managing TKA patients with AD should be aware of these increased risks, counsel patients accordingly, and consider risk-mitigation strategies.

IMAGES AND TABLES:

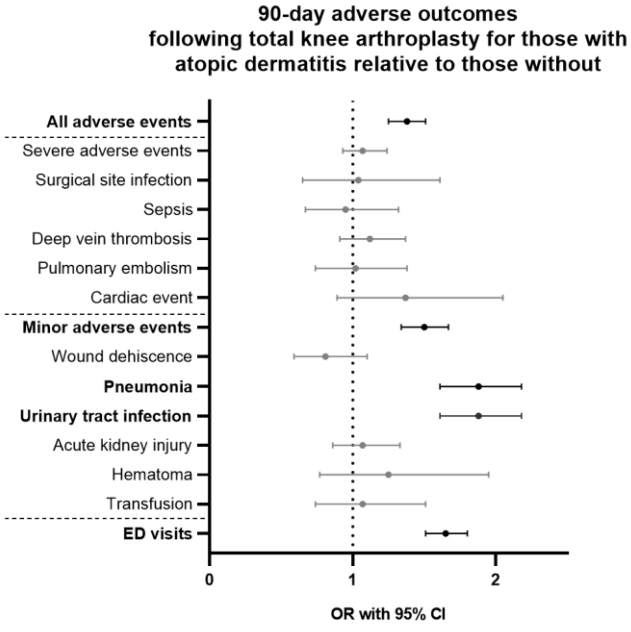

Figure. Forest plot of odds ratios (OR) from multivariable analysis of 90-day outcomes of those with versus without AD following TKA. Black dots and error bars represent significant ORs and 95% confidence intervals (CI), and grey dots and error bars represent non-significant ORs and 95% CI.