Perioperative Adverse Events following Total Knee Arthroplasty in Patients with Atopic Dermatitis (Eczema): A Matched Cohort Analysis

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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). However, perioperative outcomes of those with AD have not been characterized.

METHODS:

Adult patients undergoing primary TKA for OA indications were identified in a 2015-Q1 2021 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.

Patients with AD were identified based on International Classification of Diseases (ICD) coding. Patient age, sex, Elixhauser Comorbidity Index (ECI) were assessed. Those with AD were matched to those without 1:4 based on age, sex, and ECI. Ninety-day adverse events were then assessed and compared with multivariable logistic regression. Significance was set at $p < 0.05$. AD patients were then stratified by medication status (related medications within two years prior to TKA) and similar adverse event analysis was performed for the resultant subcohorts.

RESULTS:

A total of 721,686 TKA patients were identified, of which AD was noted for 4,165 (0.6%). After matching, 4,150 with AD were compared to 16,597 without. Upon multivariable analysis of the matched populations, patients with AD were at increased odds ratio (OR) 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 as well as emergency department visits (ED visits, OR=1.65) ($p<0.0001$ for each, Figure).

On subanalysis, those with AD who were on related medications, were at increased odds relative to those without AD of: AAE (OR=1.46), MAE (OR=1.59), pneumonia (OR=2.27), UTI (OR=1.94), and ED visits (OR=1.68) ($p<0.0001$ for each). Those with AD not on related medications were at increased odds relative to those without AD of MAE (OR=1.34, $p=0.0008$), urinary track infection (OR=1.75, $p<0.0001$), and ED visits (OR=1.58, $p<0.0001$).

DISCUSSION AND CONCLUSION:

Patients with AD undergoing TKA for osteoarthritis were at increased odds of a number of defined 90-days adverse outcomes. Interestingly, these findings were similar to those on related medications, while those not on related medications were not at increased odds of as many adverse outcomes. These findings suggest that the related medications (or severity of disease for those on medications) may be contributory to the adverse outcomes observed with AD. Surgeons who are managing patients with AD for TKA should be aware of these increased risks, council patients accordingly, and consider risk-mitigation strategies.

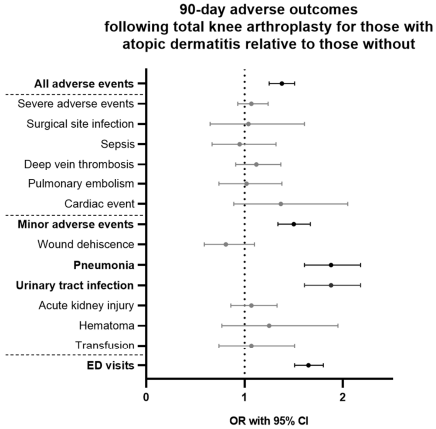

Figure. Forest plot of odds ratios (OR) from multivariable analysis of 90-day outcomes of those with versus without AD following TKA. Black dots and error bars represent significant ORs and 95% confidence intervals (CI), and grey dots and error bars represent non-significant ORs and 95% CI.