(A) Clinical Research

Title: Clinical Characterization and Inverse Probability Analysis of Sexually Transmitted Infections in Patients with Seborrheic Dermatitis

Amritpal Kooner, MA[1]; Rawle A. Sekhon, MD[2]; Sheehan Parvez, BS[3], Lindsey Lamb, MA[4]

Background: Seborrheic dermatitis (SD) is a common, chronic skin condition that primarily affects areas with a high concentration of sebaceous (oil-producing) glands, such as the scalp, face, and upper body[1]. It appears as erythematous macules or plaques accompanied by white and yellow scaling and pruritus[2,3]. Given the limited research on the relationship between SD and sexually transmitted diseases (STD), this study will explore their association using univariate and multivariate odds ratio analysis.

Methods: The National Institutes of Health (NIH) All of Us Research Program initiative focuses on including access to diverse biomedical research. Cases of SD were identified using the Systematized Nomenclature of Medicine (SNOMED) code 50563003 and/or the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) code L21.9. To compare demographic and clinical characteristics between cases and controls, we employed Fisher's exact test for categorical variables and unpaired t-tests for continuous variables. Logistic regression models were generated to calculate univariate and multivariate odds ratios, while adjusting for potential confounders.

Results: We identified 11,289 cases of SD with a mean age of 63.1 years (SD 16.3) and 58.0% female. Compared with controls, individuals with SD had a significantly increased likelihood of having C. trachomatis (OR: 1.23, 95% CI: [1.01, 1.49], $p < .01$), N. gonorrhea (1.41[1.12, 1.78], $p < .01$), HSV (2.39 [2.11, 2.70], $p < .01$), HIV (1.88 [1.67, 2.11], $p < .01$), HPV (1.91 [1.67, 2.20], $p < .01$), and syphilis (2.08 [1.73, 2.12], $p < .01$). After adjusting for covariates, seborrheic dermatitis remained associated with C. trachomatis (2.20 [1.78, 2.71], $p = 2.11E-13$), N. gonorrhea (2.02 [1.58, 2.58], $p < .01$), HSV (2.74 [2.41, 3.11], $p < .01$), HIV (2.55 [2.24, 2.89], $p < .01$), HPV (1.98 [1.72, 2.27], $p < .01$), and syphilis (2.58 [2.12, 3.13], $p < .01$).

Conclusion: Dysregulated immune responses mediated through reactive oxygen species and proinflammatory cytokines disrupt cellular barriers, increasing susceptibility for infection. While increased sebum production, a hallmark of SD, provides an ideal environment for microbial culture and promotes pathogenic growth[4,5]. Increased dermatological and infectious screening is needed for patients with SD to improve early detection and management of STD comorbidities. The study is limited due to its reliance on electronic health records and cross-sectional design which are affected by selection bias, misclassification bias, and lack of causal inference.

References:

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