210 Associations of Community and Environmental Factors with 6-month Transition States of Chronic Rhinosinusitis

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RATIONALE: Chronic rhinosinusitis (CRS) is a burdensome and prevalent inflammatory disease of upper airways whose pathophysiology is driven by host-environment interaction. However, associations of community and environmental factors with CRS transition states have not been previously examined.

METHODS: We mailed a CRS symptom questionnaire to 23,700 primary care patients in Pennsylvania and 6-month follow-up questionnaire to 7801 responders. We defined CRS based on European Position Paper on Rhinosinusitis (EPOS) epidemiologic criteria. We characterized transition states of CRS: persistent CRS if met EPOS criteria for CRS at both time points and non-persistent CRS if met criteria only at baseline; incident CRS if had no history at baseline but met criteria at follow-up and never CRS if never met criteria. We evaluated associations of distance to minor and major roadways (in quartiles), residential greenness index, community type and urbanicity. We performed multivariate survey logistic regression controlling for age, sex, race/ethnicity, Medical Assistance and tobacco use.

RESULTS: There were 4966 responders at follow-up; 558 had persistent CRS, and 83 incident CRS. The fourth quartile of distance to minor roads was associated with reduced odds of persistent CRS compared to non-persistent CRS, OR = 0.38; 95% CI = 0.17-0.81 and there was a trend of decreasing odds across all four quartiles ($p < 0.01$). Similar association was seen for incident CRS versus never CRS for the third quartile of distance.

CONCLUSIONS: Patients residing the farthest from minor roads had a reduced risk of persistent CRS. Residential greenness, major roadways, and urbanicity were not associated with transitions.

211 Sleep Disruption in Chronic Rhinosinusitis: Risk Factors Predictive of Worse Sleep Quality

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RATIONALE: It is known that some patients with chronic rhinosinusitis (CRS) have poor sleep, which is associated with impaired quality of life. However, the CRS-related factors conferring worse sleep quality are not known. This study aimed to identify these risk factors.

METHODS: We used the Pittsburgh Sleep Quality Index (PSQI), a 19-item validated measure of sleep quality, in a cohort of 141 refractory CRS patients and 43 controls. Patient charts were reviewed for CRS characteristics, including nasal polyps, histopathology of the sinus tissue (neutrophilic inflammation, eosinophilic inflammation, fibrosis, edema, basement membrane thickening), Lund-Mackay Score (LMS) which is a radiographic score of CRS severity, and comorbid diseases (asthma, AERD, allergic rhinitis, GERD). PSQI scores were compared in association with these variables to determine factors predictive of poor sleep in CRS.

RESULTS: After excluding obstructive sleep apnea (OSA), 128 CRS patients and 41 controls were included. CRS patients had significantly worse sleep quality compared to controls (PSQI mean$\pm$SD of 7.44$\pm$3.7 in CRS vs. 3.31$\pm$3.2 in controls). Higher LMS correlated with greater PSQI (Pearson $r=0.56$, $p=0.002$). CRS without nasal polyps (CRSsNP) demonstrated a trend towards higher PSQI (8.14$\pm$3.6 vs. 6.36$\pm$3.2 in CRSsNP and CRSwNP respectively, $p=0.10$). Sinus histopathology variables and comorbid diseases did not correlate with PSQI scores.

CONCLUSIONS: PSQI correlated positively with sinonasal inflammation suggesting that severity of CRS is a predictor of poor sleep in CRS. CRS patients should be assessed for sleep related issues, especially those with severe disease and CRSsNP, as this is crucial to prevent long-term health consequences of sleep disruption.

212 Prospective Evaluation of Omalizumab Treatment for Patient Symptom Control of Chronic Rhinosinusitis

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RATIONALE: Recently, anti-IgE monoclonal antibody has emerged as a potential therapy for CRS. However, evidence for its efficacy in this patient population is sparse. The purpose of this study was to evaluate the clinical effect of omalizumab therapy on patient symptoms of recalcitrant CRS.

METHODS: A non-concurrent prospective cohort study with 25 patients diagnosed with CRS having failed surgical and/or medical therapy on omalizumab and five control patients who met omalizumab therapy indications but could not access coverage. Data extraction targeted demographic details, asthma, environmental allergy and CRS specific disease related data. Change in overall and each of the major symptoms of CRS were rated on a 10 cm visual analogue scale (VAS). The Mann-Whitney test was used to compare symptom improvement between groups.

RESULTS: Mean treatment duration was 19 months. 76% of omalizumab treated patients had CRS with polyps, 33% had AERD. Omalizumab therapy provided a mean overall symptom improvement of 69.5% (individually: facial pain 78.5%, nasal obstruction 69.8%, rhinorrhea 56.2%, and olfaction 55.8%). For the control group, mean overall symptom improvement since omalizumab screening was 16.8%: nasal obstruction 15.2%, rhinorrhea 16.4%; there was no improvement in olfaction or facial pain. Symptom improvement was significantly higher for omalizumab treated patients in every category ($p<0.05$).

CONCLUSIONS: Omalizumab treatment provided significant improvement in every major clinical symptom of CRS in the treated cohort of patients with severe recalcitrant CRS in comparison to the control cohort. A well-designed randomised clinical trial is needed to further assess the efficacy and safety of omalizumab treatment for CRS.