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Mapping the Nasal Response to Acoustic Nasal Therapy: Symptoms, Airflow, Immunity and Nasal Microbiota

Jude Alao (PhD) Faculty of Health & Environmental Sciences

Hay fever and chronic sinus disease can make breathing uncomfortable and affect sleep, energy, concentration, mood and wellbeing. Although antihistamines and nasal sprays are useful, symptoms can persist, and surgery for medication-resistant chronic sinus disease is invasive. Acceptable non-drug approaches therefore need careful study. This poster will present a visual overview of a research programme investigating acoustic nasal therapy, delivered through a small intranasal device that applies low-frequency sound vibration inside the nasal cavity during breathing. Audience members will see how patient symptoms, breathing measurements, blood immune markers and nasal microbiota are being combined to describe the response to treatment and plan future controlled trials. Thirty adults with hay fever, chronic sinus disease, or both took part in a longitudinal study. Participants were assessed before treatment, after four weeks of device use, and after stopping treatment. Nasal airflow was assessed using peak nasal inspiratory flow (PNIF). Symptoms and wellbeing were measured using the Sino-Nasal Outcome Test-22 (SNOT-22). Blood samples were analysed for allergy-associated immune markers, while nasal swabs were collected to profile the nasal microbiota, meaning the bacteria and fungi living in the nose. Preliminary results show that two-thirds of participants achieved a clinically meaningful reduction in SNOT-22 symptom burden, defined as at least a 9-point improvement, after four weeks of active treatment. Improvements were seen across nasal symptoms, sleep, daily function and emotional wellbeing. PNIF findings were more variable and did not closely match symptom improvement. Initial systemic immune results showed no clear change in immune markers attributable to device use. The next stage will assess whether nasal microbiota profiles differ after treatment. The poster will highlight how these linked measurements provide a framework for studying non-invasive, drug-free nasal therapies.

Keywords
Rhinitis, Allergic, Seasonal, Sinusitis, Nasal Obstruction, Quality of Life, Cytokines, Microbiota