Abstract Title: Salivary Gland Biopsy as a Diagnostic Test for Parkinson's Disease

Press Release Title: A Saliva Gland Test for Parkinson’s Disease?

Objective: Determine if biopsies of the submandibular gland and minor salivary gland demonstrate Lewy-type alpha-synucleinopathy (LTS) in Parkinson's disease (PD) patients.

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Background: There is no diagnostic test for LTS in living patients with PD. We have found LTS in autopsied PD submandibular glands and others found LTS in the minor salivary gland.

Design/Methods: Patients with PD for >5 years, responsive to dopaminergic medication, without dementia or known salivary gland disorder were included. Core needle biopsies (18 or 16 gauge) of one submandibular gland were performed percutaneously. Minor salivary glands were removed via a small incision in the lower lip. Tissue was fixed in formalin and serial 5um paraffin sections were immunohistochemically stained for phosphorylated alpha-synuclein and reviewed for evidence of LTS.

Results: To date biopsies from 10 PD subjects (6 female, 4 male) have been fully completed. Mean age was 67.8 yrs (range 61-76) and mean PD duration was 10.4 yrs (range 6-14). We extracted 1-5 core needle samples of submandibular gland (240-535 um thick) and 2-5 minor salivary glands requiring 1-3 stiches. Three patients had one adverse event each: swollen cheek, sore throat, excess fluid expelled from the needle biopsy site after a sneeze. Positive LTS staining was detected in 4/6 submandibular gland biopsies (4 cases did not have sufficient glandular tissue). Only 1/10 minor salivary gland biopsies were positive despite sufficient glandular tissue in all 10.

Conclusions: This feasibility study provides the first evidence for the use of submandibular, but not minor salivary, gland biopsies as a diagnostic test for LTS in patients with PD. Data from 15 cases will be presented. This finding may be of great use when needing confirmatory tissue proof of PD, especially when considering performing invasive procedures (i.e., deep brain stimulation surgery or gene therapy).

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