

Histopathology, salivary flow and ultrasonography of the parotid gland: three complementary measurements in primary Sjögren's syndrome

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- PMID: 34672336
- DOI: [10.1093/rheumatology/keab781](https://doi.org/10.1093/rheumatology/keab781)

Abstract

Objective: The involvement of salivary glands in primary Sjögren's syndrome (pSS) can be assessed in different ways: histopathology, salivary flow and ultrasonography. To understand the relative value of these different approaches, it is crucial to understand the relationship between them. As we routinely perform these three modalities in the parotid gland for disease evaluation, our aim was to investigate the construct validity between these modalities in one and the same gland.

Methods: Consecutive sicca patients underwent a multidisciplinary diagnostic work-up including parotid gland biopsy, collection of parotid gland-specific saliva and parotid gland ultrasonography. Patients who were classified as pSS according to the ACR-EULAR criteria were included. Construct validity was assessed using Spearman's correlation coefficients.

Results: The 41 included pSS patients completed a full work-up within mean time interval of 2.6 months. Correlations between histopathological features and stimulated parotid salivary flow were fair ($\rho = -0.123$ for focus score, and $\rho = -0.259$ for percentage of CD45+ infiltrate). Likewise, poor correlations were observed between stimulated parotid salivary flow and parotid ultrasonography ($\rho = -0.196$). Moderate to good associations were found between the histopathological items focus score and percentage of CD45+ infiltrate, with parotid ultrasound scores (total ultrasound score: $\rho = 0.510$ and $\rho = 0.560$; highest for homogeneity: $\rho = 0.574$ and $\rho = 0.633$).

Conclusion: Although pSS associated ultrasonographic findings did correlate with histopathological features, the three modalities that evaluate salivary gland involvement assess different (or at best partly related) constructs. Therefore, histopathology, salivary flow and ultrasonography are complementary measurements and cannot directly replace each other in the work-up of pSS.

Keywords: Primary Sjögren's syndrome; biopsy; histopathology; parotid gland; salivary flow; ultrasonography.

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