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Tear fluid and serum levels of Cathepsin S and its endogenous inhibitor Cystatin C as biomarkers for Sjögren's

LAY ABSTRACT

The Lay Abstract is for publicity purposes and should use simple language summarizing the proposed research and its significance.

Sjögren's syndrome (SS) is an autoimmune disease that affects the glands that produce tears and saliva, causing dry eye, dry mouth, fatigue, and other symptoms that reduce quality of life. It takes ~3.9 years for SS diagnosis, largely due to the lack of a simple, reliable method for its early detection. We recently found in preliminary studies that one protein in tears from SS patients was increased, while another related protein was decreased, suggesting their potential use for early identification of SS patients. We propose to expand these studies by collecting tears and sera, to see if there a local versus a systemic change in the same proteins in SS patients versus patients with other autoimmune diseases and healthy people. These measurements may represent a new diagnostic tool for SS patients, and also enable more effective treatment by quantifying the extent of local (exocrine gland) versus systemic disease.

SCIENTIFIC ABSTRACT

The Scientific Abstract is written for SSF reviewers and a professional audience.

Sjögren's syndrome (SS) is an autoimmune disease that affects the exocrine glands, resulting in dry eye and mouth. Symptoms overlap with other diseases, making diagnosis difficult. We previously showed that SS patients have elevated cathepsin S (CTSS) activity in tears. Pilot studies show that cystatin C (CysC), the endogenous inhibitor of CTSS, is decreased in SS-patient tears. Our hypothesis is that there is an imbalance in secretion of these two proteins in the inflamed lacrimal gland that produces a change characteristic of SS-mediated lacrimal gland inflammation. Further, we propose that this imbalance may occur systemically in the circulation of SS patients (and those with other autoimmune diseases), and that its detection in serum may denote systemic inflammation distinct from lacrimal gland inflammation in SS. In this study we will collect tears and serum from SS and other autoimmune disease patients and healthy controls, and analyze their CTSS and CysC levels.