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SALIVARY GLAND IMAGING IN PATIENTS WITH SJOGREN'S SYNDROME

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ABSTRACT

The purpose of this study was to aspire to get dependable non-invasive methods for imaging salivary glands and to assess programmed function and central nervous system disorders in patients that suffer from Sjogren's syndrome (SS). The patient population for the study comprised of consecutive patients with the primary syndrome (SS) who satisfied the International categorization criteria for SS from the Division of Rheumatology. The study was completed by performing MR imaging and sialography of parotid glands in 27 patients and seven healthy controls and Ultrasonography of salivary glands of 27 patients, 27 healthy controls, and 27 symptomatic controls with salivary gland swellings in the absence of SS.

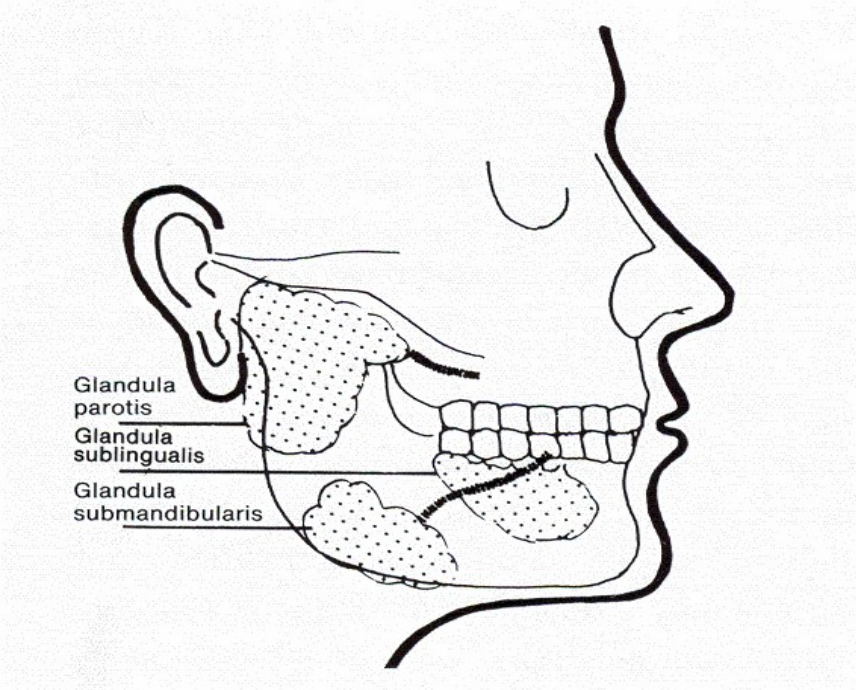
Keywords: Magnetic Resonance Imaging, Sialography, Ultrasonography, Sjogren's Syndrome

INTRODUCTION

Sjögren's syndrome (SS) refers to a chronic autoimmune exocrinopathy which symptoms include dryness of the eyes and mouth and infiltration of mononuclear cells of the exocrine glands. About 30% of patients may show different systemic and visceral manifestations. Other complications of the disease include an escalated threat of lymphoma (Ludlow, Davies-Ludlow, & Brooks, 2014). The disease takes a stable course that is characterized by the mild advancement of symptoms of sicca with a

good prognosis. However, some patients may face the threat of complications that may be life-threatening.

The disease is more prevalent in females (90%) and mostly affects middle-aged women. SS is categorized into two groups: primary and secondary. The primary SS is an independent disease entity while the secondary one is consistent with some other strands of rheumatic diseases. The disease is under-diagnosed, but its prevalence in the world population is between 0.6-4 percent. Its diagnosis follows a blend of objective and subjective symptoms of involvement of salivary and lacrimal glands and serological tests. The radiological diagnostic approach for SS is sialography and minor salivary gland biopsy. Unfortunately, both methods include invasive examinations that may engender troublesomeness and a threat of complications. The complications and risk that they expose, justify the need for new reliable, noninvasive methods (Saito, Sakai, Bauer, Norbash, & Jara, 2013). New techniques like ultrasonography and magnetic resonance imaging to detect diagnostic glandular transformations have therefore been researched. The accelerated technical progress has escalated the dependability and accessibility of these methods in the present years.



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The diagnosis of Sjogren's Syndrome has advanced consistently with the increasing information and understanding of the condition. Forty years after the initial symptoms of Sjogren Syndrome were discovered, Sjogren gave a report of detailed clinical and histological results of 19 individuals with kerato-conjunctivitis sicca and xerostomia. Of those, 13 patients were suffering from chronic arthritis. Morgan introduced the term Sjogren Syndrome in 1954. He identified particular histological resemblance between Mikulicz's disease and SS. The isolation of primary and secondary forms of SS was due to the discovery by Bloch and his colleagues in 1956 that the SS patients with and those without connective tissue disease were different in clinical and serological terms.

METHODS AND RESULTS

A total of 65 consecutive female patients with supposed or a previous diagnosis of primary SS, who went to the Rheumatologic Division were assessed in this study. Forty-eight of them were found with primary SS. International categorization criteria for primary Sjogren's syndrome was used for the diagnosis. Additionally, all the participants also had to have a positive anti-Ro/SSA antibody to confirm the diagnosis. The patients participated separately in the study; the participants were those who had earlier been prequalified at the stage of initiating the investigation. The study did not include pregnant women. Patients (n=54) with sicca signs or salivary gland swellings who did not satisfy the SS criteria for inclusion in the patient group made the symptomatic control class in study 2.

Their diagnoses used included sarcoidosis, idiopathic chronic sialadenitis and Kartagener's triad. Six of them had some known medication that induces sicca signs. Seven patients invited for the study did not turn up for participation. (Alyas et al. 2014). The study used a mixture of volunteer participants and randomly chosen sample for this quantitative investigation. We took into consideration demographic and other diversities for the study.

RESULTS

84 percent of the patients (21) had abnormalities: parenchymal variations in the form of nodularity or the degeneration of the adipose, ductal dilatations and cavities in the parotid glands on the images that were generated by MR. Only one participant with ductal dilatation that was detectible on MR boasted of a normal glandular parenchyma (Sumi, et al. 2012)

The MR imaging results appeared to be equal in 25 of the participants, in 1 participant the parenchymal categorization was different by 1 stage among the contralateral glands. T1- and T2 weighted images revealed a difference in 5 subjects, the grading was stage 1 and 2 in T1 T2 images respectively. The highest stage present (T2) was identified for further investigation after combining T1 and T2.

On the other hand, the MR sialography revealed that 96% of the participants (25) had real changes in their system and thus 63% (18) cavitary abnormalities. Cavitary classification was different by two levels in two patients with the contralateral glands (Ngu et al. 2014). The oral administration of lemon juice brought no visible consequence on the sialography results. Only a single patient and eight controls had normal results in both sets of MR examinations.

The structural form of the parenchyma on the MR images indicated a linear alignment with the ductal system levels ($p < 0.05$), however, there was no correlation with the cavitary levels when MR sialography was used (White & Pharoah, 2014). The changes in the duct for both the external and main internal duct and the respective branches on sialography were connected profoundly with each other ($p < 0.001$). the same goes for the size and number of the cavities.

Table 1

MR classifications	Patients (N = 26)
MR imaging	**5**
Stage 0 = normal	**2**
Stage 1 = fine nodular	**10**
Stage 2 = medium nodular	**2**
Stage 3 = coarse nodular	**7**
Stage 4 = dendritic	
MR sialography, ductal system	**1**
Stage 0 = normal	**17**
Stage 1 = narrowed, shortened, fewer in number	**8**
Stage 2 = dilated > 1 mm	
MR sialography, cavitary system	
Stage 0 = cavities not found	**10**
Stage 1 = cavities ≤ 1 mm in diameter (punctate)	**2**
Stage 2 = cavities 1-2 mm in diameter (globular)	**8**
Stage 3 = cavities > 2 mm in diameter (cavitary)	**6**
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CONCLUSION

MR and US imaging of salivary glands in primary SS indicate nodular changes and adipose degeneration in glandular parenchyma. They shows the shape of the duct, that is the narrowing and dilatations of the principal duct. Parenchymal results have a poor connection with the changes of the ductal system. The results from the parotid glands on the US have a proper correlation between them; however, the degeneration of the adipose is only present in parotid glands (Yerli et al., 2014). Sublingual glands suffer a far much less effect. Among the methods put to test in this study the most effective was sialography, then MR imaging and US respectively.

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