

Comparison of Efficacy of Ultrasound and Sialography in the Diagnosis of Sjogren Syndrome: A Retrospective Study

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ABSTRACT

Background: Sjogren's syndrome (SS) is a chronic autoimmune disorder characterized by lymphocytic infiltrates in the lachrymal and salivary glands. Histology shows lymphocytic infiltration and destruction of the affected glands. Due to hypervascularization of the tissue, diagnosis of acute forms is made possible with the assistance of colour Doppler. Hence; we planned the present study to assess the effectiveness of ultrasound when compared with conventional sialography in the diagnosis of SS patients.

Materials & Methods: The present study included assessment of the patients that underwent diagnostic tests through ultrasound and sialography for the presence of SS. The patients were evaluated with salivary gland ultrasound in addition to conventional sialography. All the results obtained from the both the investigations were gathered compared and correlated with the results from the other investigations. All the data obtained were recorded and analyzed retrospectively.

Results: Out of 67 SS positive patients on ultrasound, 60 patients had SS while SS was absent in 7 cases. Out of 30 cases with negative report in ultrasound for SS, 12 cases had SS while in 18 cases, SS was absent. Out of 64 cases which were positive for SS on sialogram, 60 patients had positivity for

SS while remaining were negative for SS. Out of 38 cases in which SS was negative with sialogram, SS was present in 18 cases while absent in 20 cases. Specificity for ultrasound and sialography was 74.2 and 87.2.

Conclusion: For improvement in the specificity and sensitivity of SS cases, both ultrasound and sialography should be done.

Key words: Sialography, Sjögren syndrome, Ultrasound.

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INTRODUCTION

Sjögren's syndrome (SS) is a chronic autoimmune disorder characterized by lymphocytic infiltration in the lachrymal as well as salivary glands.¹ The main clinical features of the SS are dryness of the eyes (keratoconjunctivitis sicca) and mouth (xerostomia). Histology shows lymphocytic infiltration and destruction of the affected glands.² Patients with no underlying connective tissue disease, SS is considered primary in patients who have no underlying connective tissue disease. Apart from ruling out other connective tissue diseases; and for confirming that the dryness is not due to other conditions such as diabetes mellitus, hypovolemia, sarcoidosis, infection, respiratory or renal insufficiency, smoking, or medications, investigations must also be performed for documenting the ocular and oral dryness.^{3,4}

Recently, a revised version of the European classification criteria for SS was published by the American- European Consensus Group (AECG), in which sialography is identified as an objective criterion.⁵ However, there is now evidence that ultrasound may also be used to image SS; sonographic changes appearing to be

characteristic and correlating with the degree of histological destruction. Due to hypervascularization of the tissue, diagnosis of acute forms is made possible with the assistance of colour Doppler.⁶ Hence; we planned the present study to assess the effectiveness of ultrasound when compared with conventional sialography in the diagnosis of SS patients.

MATERIALS & METHODS

The present study was conducted in the department of radiology and medicine, Rama Medical College and Hospital and Research Centre Hapur, Uttar Pradesh (India) and included assessment of the patients that underwent diagnostic tests through ultrasound and sialography for the presence of SS.

The patients were evaluated with salivary gland ultrasound, using high-resolution ultrasound and small-parts linear probe in addition to conventional sialography. Salivary glands were investigated for different ultrasound variables and arranged accordingly. Characteristic ultrasound features included bilateral decreased

Parotid gland reflectivity, and heterogeneous or nodular parenchyma with a honeycomb appearance. All the results obtained from the both the investigations were gathered compared and correlated with the results from the other investigations. Vitali

et al criteria were used for making the diagnosis of SS.⁷ All the data obtained were recorded and analyzed retrospectively. Univariate and multivariate analysis were used for the assessment of level of significance.

Table 1: Ultrasound results of patients included in the present study

Ultrasound	SS present	Normal	Total
SS positive with ultrasound	60	7	67
SS negative with ultrasound	12	18	30
Total	72	25	97

Graph 1: Ultrasound results of patients included in the present study

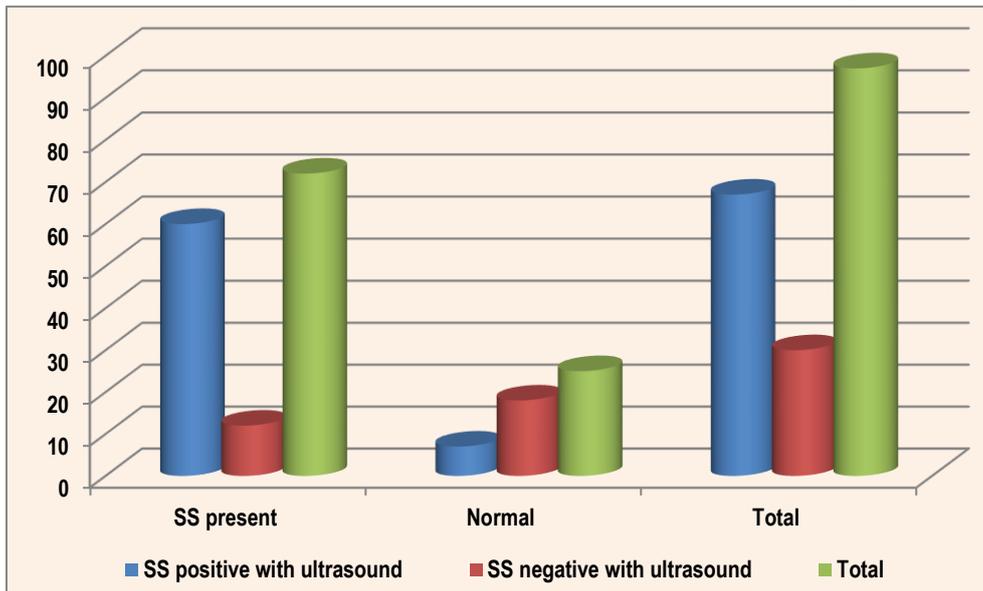
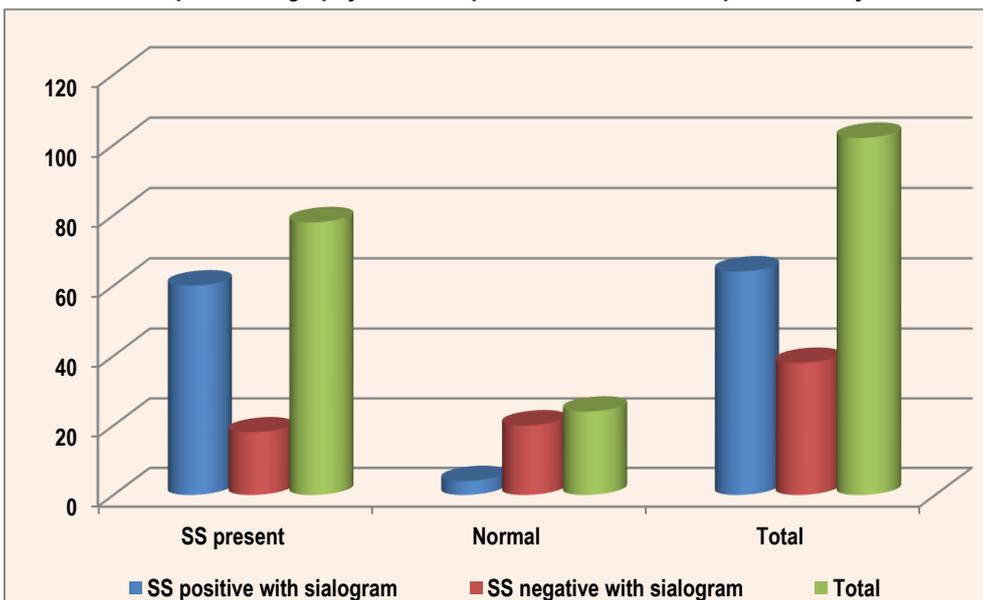


Table 2: Sialography results of patients included in the present study

Ultrasound	SS present	Normal	Total
SS positive with sialogram	60	4	64
SS negative with sialogram	18	20	38
Total	78	24	102

Graph 2: Sialography results of patients included in the present study



RESULTS

Table 1 and Graph 1 shows the ultrasound results of patients included in the present study. Out of 67 SS positive patients on ultrasound, 60 patients had SS while SS was absent in 7 cases. Out of 30 cases with negative report in ultrasound for SS, 12 cases had SS while in 18 cases, SS was absent.

Table 2 and Graph 2 shows the sialography results of patients included in the present study. Out of 64 cases which were positive

for SS on sialogram, 60 patients had positivity for SS while remaining were negative for SS. Out of 38 cases in which SS was negative with sialogram, SS was present in 18 cases while absent in 20 cases.

Table 3 shows the sensitivity and specificity of sialography and ultrasound. Specificity for ultrasound and sialography was 74.2 and 87.2.

Table 3: Sensitivity and specificity of sialography and ultrasound

Parameter	Ultrasound	Sialography
Specificity	74.2	87.2
Sensitivity	85.2	79.1

DISCUSSION

SS is a chronic autoimmune disease characterized by lymphocyte infiltration of the exocrine glands, the symptoms of which are eye and mouth dryness.⁸ Using high-resolution ultrasound, the superficial parts of the parotid, submandibular and sublingual glands can be imaged easily and examined with the highest precision. Obstructive, inflammatory and tumorous lesions can be detected and differentiated by ultrasound.^{9, 10} Ultrasound may further assist diagnosis by guiding needle aspirations for all types of superficial lesions in this region.¹¹ Hence; we planned the present study to assess the effectiveness of ultrasound when compared with conventional sialography in the diagnosis of SS patients.

In the present study we observed that low specificity existed while using the ultrasound technique alone. Similar findings were reported by Poul et al who evaluated the effectiveness of high-resolution ultrasound compared with conventional sialography in the diagnosis of SS and to establish whether less invasive ultrasound could replace sialography as a diagnostic investigation and the study concluded that high-resolution ultrasound is a useful, non-invasive and more sensitive alternative to sialography as a diagnostic test in patients with suspected SS. Accuracy may be increased by supplementing ultrasound with sialography.¹²

Kalk et al explored the clinical value of sialography as a diagnostic tool in SS by assessing its diagnostic accuracy, observer bias, and staging potential and the study showed that the diagnostic value of parotid sialography for diagnosing SS greatly depends on the skills of the observer, implying that sialography lacks general applicability as a diagnostic tool in SS and requires specific expertise.¹³

Guzman et al examined the immunoglobulin heavy chain (IgH) clonal rearrangements in SS patients and healthy control subjects having chronic non-specific sialadenitis, to determine the presence of clonal B cells in minor labial salivary glands (MSG) of SS patients by using polymerase chain reaction (PCR) assays and they concluded that the presence of B cell clonality in MSG can be used as a index of an altered microenvironment favouring the development of lymphoma in SS patients.¹⁴

Jousse-Joulin et al undertook study to look for ultrasound evidence of the effects of rituximab in pSS by comparing patients fulfilling the new American-European consensus group criteria for pSS to controls, using B-mode ultrasound features (parenchymal homogeneity and gland size) and Doppler waveform analysis of the transverse facial artery of parotid glands and they concluded

that salivary gland measurements and blood inflow responses to salivary stimulation as assessed by ultrasound hold promise as objective noninvasive tools for evaluating rituximab effects in patients with pSS.¹⁵

CONCLUSION

From the above results, the authors concluded that for improvement in the specificity and sensitivity of SS cases, both ultrasound and sialography should be done.

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