Diagnostic Accuracy of the Ultrasonographic changes in Major Salivary Glands with Sjogren's syndrome (Iraqi Sample)

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Abstract

Background: There are major well-defined diagnostic findings in Sjogren's syndrome, however there is no one uniform worldwide set of image-based criteria. Scintigraphy and sialography have long been adopted as imaging modalities used for the evaluation of the salivary gland function in patients suspected as having Sjogren's syndrome. In addition to these standard tests, other methods have been studied such as ultrasonography, magnetic resonance imaging and computed tomography. Among them, ultrasound of the major salivary glands seems the most attractive as a non-invasive, inexpensive and non-irradiating investigation.

Aims of the study: This study was undertaken to evaluate the accuracy of ultrasonography as a diagnostic tool for Sjogren's syndrome and to evaluate the reproducibility and diagnostic value of a proposed semi quantitative scoring system for the ultrasonographic changes of major salivary glands in Sjogren's syndrome.

Subjects Materials and Methods: This study was conducted on 66 Iraqi participants, who attended Baghdad Teaching Hospital/Medical City in Baghdad from September 2009 to April 2010, with age range from 30-73 years.

The subject sample was composed of control group with 33 adult volunteer subjects and Sjogren's syndrome cases group with 33 Sjogren's syndrome patients who were attending to the Rheumatology Division, Department of Internal Medicine.

For each participant both parotids and submandibular glands were examined in transversal and longitudinal planes.

Five parameters were assessed semiquantitatively in both paired parotid and submandibular glands for each participant according to a novel semi-quantitative

scoring system. These five parameters were the echogenicity, inhomogeneity, presence of hypoechogenic areas, the hyperechogenic reflections and clearness of the borders of the salivary glands.

Results: The parotid and submandibular glands at the same side of the neck were concordant in the grading severity of the five ultrasononographic findings; also there was bilateral concordance of each one of them (parotid and submandibular glands) in the grading severity of the ultrasonographic findings. The total score of the control group ranged 0-15, while in the Sjogren's syndrome cases group the total score ranged 9-43. The mean of the total score of the Sjogren's syndrome cases in the present study was (25.8) which was significantly higher than that of controls (4.1).The mean of total ultrasonic score in the Sjogren's syndrome cases was highest (30.2) in the duration above 10 years.

The diagnostic performance for the total score by receiver operating characteristics curve was 0.986 with P <0.001 and by using 15 as the cut-off score in this study, the diagnostic sensitivity for Sjogren's syndrome was 81.8% and specificity 97.0%. By multiple logistic regression model, it was found that for each one unit increase of "inhomogeneity score" there was significantly increase in the risk of having the disease by 2.3 times and for each one unit increase of "Presence of hypoechogenic areas score" significantly increases the risk of having the disease by 3.5 times after adjusting for the other independent variable included in this model.

Conclusion: Ultrasound of major salivary glands could be used as a first-line imaging diagnostic tool in the evaluation of oral involvement in patients suspected of having Sjogren's syndrome and the semi-quantitative scoring system of major salivary glands shows higher diagnostic value in the evaluation of this oral involvement.