Primary Sjögren's Syndrome

CASE REPORT

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Abstract:

Columbia University's Salivary Gland Center (SGC) has examined more than 6,000 patients with a variety of concerns stemming from salivary gland disease and/or salivary secretory dysfunction. Not unexpectedly, the most common patient complaint centers around symptoms associated with dry mouth. Such patients are usually first seen by the dental practitioner. Because Sjögren's syndrome (SS) causes dry mouth, and because it is a relatively common entity—encountered in about three million Americans—and because the dental profession has become aware of its classic manifestation of xerostomia, patients experiencing SS are referred in increasing numbers to the SGC for evaluation. Therefore, the authors wish to call attention to the methodology used in accurately diagnosing SS and to illustrate its signs and symptoms with a case report.

SJÖGREN'S SYNDROME (SS) is a chronic, systemic autoimmune disease characterized by mononuclear cell infiltrations that create destructive lesions in exocrine glands, primarily the lacrimal and salivary glands.[1] Multiple systemic organs may be involved. Both primary and secondary forms of SS exist. Primary SS involves the lacrimal and salivary glands without the presence of any systemic autoimmune disease. Secondary SS exists in the presence of a systemic autoimmune disease, such as rheumatoid arthritis, lupus erythematosus, scleroderma and polymyositis.[1]

Clinically, women in the fourth and fifth decades of life are most susceptible, but men, the elderly and children are not exempt. Because SS does not have one distinguishing feature that facilitates diagnosis, a European study group was established to itemize those clinical and laboratory signs and symptoms that would define SS.[2] Six criteria were established, four of which are necessary to clinch a diagnosis of primary SS.

A determination of secondary SS requires a less exacting diagnostic profile because of the presence of a pre-existing systemic autoimmune disease. The enumerated six components have been classified to include ocular symptoms, oral symptoms, ocular signs, salivary gland involvement, histopathology and presence of serum autoantibodies.

It isn't often that a patient with a disease process, whose diagnosis is based upon various combinations of many signs and symptoms, is examined and found to demonstrate all the elements related to the disease. The Salivary Gland Center (SGC) at Columbia University School of Dental and Oral Surgery was fortunate to have the opportunity to examine a patient whose symptomatology encompassed the total spectrum of primary SS. Therefore, the case is being reported here, because it conclusively illustrates all the manifestations of primary SS. Consequently, the dentist will become more aware of the disease's symptomatology, initiate oral therapy and refer the patient for the required medical care.

Case Report

P.C., a 62-year-old female, was referred by her dentist to the SGC because for the past 10 months her mouth has been very dry. Her visit was prompted by a recent intensification of the xerostomia.

A medical history showed that the patient had no systemic diseases or associated autoimmune disorder. She is being seen by a psychiatrist for the treatment of depression, and Celexa® and Ambien® have been prescribed. Because she has had a five-month

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complaint of itching eyes, she visited her ophthalmologist, and artificial tears were prescribed.

Questioning revealed that she has had difficulty swallowing food. She has to moisten her food before she ingests it. There is no history of any salivary gland swelling. Glossodynia has been present for the past three months.

Extraorally, no salivary gland swelling was evident, and palpation revealed that all salivary glands were painless and normal in tone. Cervical lymphadenopathy was not present. Intraorally, the mucosa appeared dry and slightly erythematous. Milking of the salivary glands produced minimal salivary returns at the duct orifices. The dentition was in an excellent state with no evidence of active caries.

Stimulated salivary volume was measured individually from the right and left parotid ducts via a Carlsen-Crittenden collector. Decreased volumes were obtained. The right parotid gland produced .3cc in one minute, while the left produced .4cc in one minute (normal is .5 – 1.0cc per minute per gland). Salivary chemistry (sodium, chloride, phosphate, lactoferrin, IgA) was also performed. The results—elevated sodium, chloride, IgA, lactoferrin and decreased phosphate—are consistent with the existence of autoimmune disease.

Although the findings pointed to SS, an absolute diagnosis required further study. Consequently, a left parotid sialogram and a minor salivary gland lip biopsy were performed. The sialogram revealed the pathognomonic picture of sialectasis (Figure 1). The lip biopsy was positive, testifying to the requisite presence of one or more than one foci of mononuclear cells per $4mm^2$ of gland tissue (Figure 2).

A phone call to the patient's ophthalmologist confirmed that he had performed a tear volume study using the Schirmer test. It showed a definite decrease in tear volume.

The evidence of ocular symptoms and signs, oral symptoms, salivary gland involvement—as depicted by the sialogram—and the histopathology all clearly pointed to the presence of SS. The patient was referred to a rheumatologist. A subsequent call to him disclosed that a blood study was positive for the presence of classic SS autoantibodies. This final piece of information served to substantiate a case of primary SS whose presentation encompassed the totality of the disease process.

Discussion

Without adequate tear production, eyes become irritated and tend to burn and itch. The lubricant action of artificial tear drops acts to ameliorate these symptoms. The Schirmer test measures tear volume by placing a strip of litmus paper in the inner canthus of the eye. If less than 5mm of the strip is moistened in five minutes, the test is considered positive for decreased tear production. With the loss of tear lubrication, unique conjunctival ulcerations develop. Their presence can be uncovered with a rose Bengal test, which was not performed by the ophthalmologist in this case.

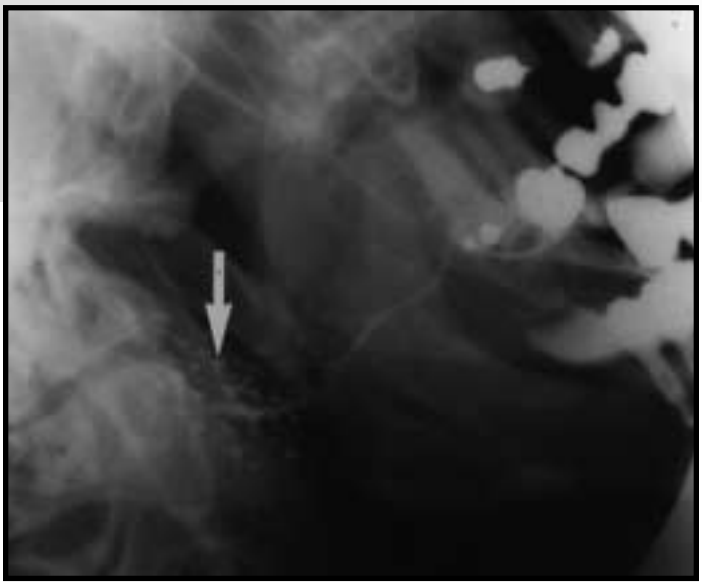

Figure 1. Left parotid sialogram clearly demonstrates sialectasis (droplets of dye in gland).

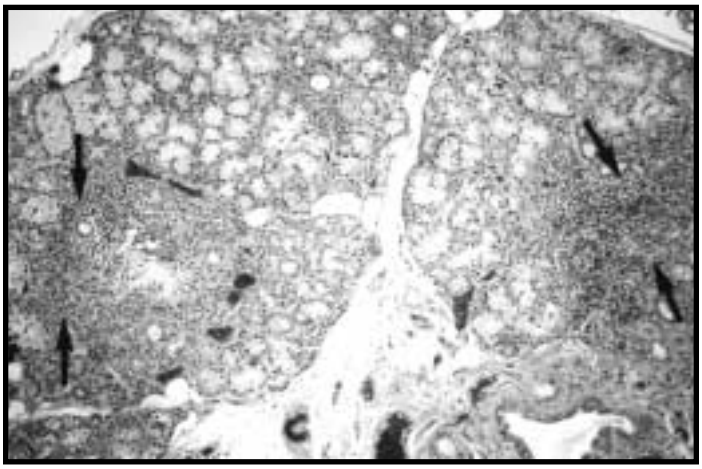

Figure 2. Microscopic appearance labial gland biopsy. Two lymphocytic foci indicated by arrows (Hematoxylin—eosin stain x 100).

As a rule, the onset of primary SS results in a xerostomia. Inherent in the disease process is the proliferation and infiltration of mononuclear cells into the lacrimal and salivary glands, resulting in a gradual replacement of secreting parenchyma. This is assumed to be the explanation for the dry eye and dry mouth. The labial gland biopsy showed microscopic proof of the process. At least one focus, defined as 50 or more mononuclear cells, must be seen in each $4mm^2$ of gland tissue to confirm a diagnosis of SS.

Quantitation of salivary volume can substantiate the loss of secreting cells in SS. Inadequate lubrication and salivary diminution were ascertained from the patient's subjective complaints of glossodynia and swallowing difficulties, as well as our volume study. Admittedly, although a loss of salivary lubrication can cause

the glossodynia, it is also possible that the complaint can be related to the patient's depression.

Because the Celexa® and Ambien® used by the patient have anti-sialogogic properties, their role in the xerostomia complaint must be determined. Such medications act only when the glands are at rest. When the glands are stimulated, this inhibition is overcome, and a normal return should be obtained. Therein lies the means to differentiate xerostomia caused by medication—dry only at rest but not when stimulated—or xerostomia caused by SS—dry at rest and when stimulated.

Saliva is necessary to protect teeth. With its loss, rampant caries supervenes. No such dire outcome was present in our patient, either because the SS was in an early state and/or the salivary volume did not approach the minuscule levels associated with extensive caries. With progression of SS, salivary flow will diminish, and excessive caries can be anticipated if preventive measures are not instituted.

The Salivary Gland Center has at its disposal a laboratory that can perform salivary chemistry and uncover the existence of SS. Sodium and chloride are normally secreted into the salivary ducts. As the saliva wends its way through the duct system, a portion of these salts is resorbed. Elevations of salivary sodium and chloride develop in SS because the ducts are pathologically damaged and fail to resorb normal amounts of these salts.

Conversely, phosphate is transported across the duct walls into the saliva. Again, because the ducts are damaged, this dynamic does not occur, and decreased salivary phosphate levels ensue.

Salivary IgA is elevated in SS, reflecting its augmented secretion by the increased glandular infiltration of B lymphocytes.[3] Elevation of salivary lactoferrin, an iron-binding protein that combats bacteria, originates from polymorphonuclear leucocytes responding to an existing inflammation.[4,5]

The sialographic procedure introduces a radio-opaque dye into the parotid duct. It serves as a valuable tool in the diagnosis of SS because the resulting sialogram usually demonstrates sialectasis, a droplet pattern seen in SS. The periductal inflammatory infiltrate associated with SS is thought to cause a proliferation of the epithelial lining of the salivary excretory ducts with a consequent duct lumen narrowing. This creates salivary retention and causes the proximal duct dilations (droplets) visualized on the sialogram (Figure 1).

As part of the SS autoimmune process, cellular antigens (SS-A, SS-B) are released into the serum. Autoantibodies, denoted as anti SS-A and anti SS-B, respond to the presence of these antigens.[1] Patients with primary SS will usually test positive for these serum autoantibodies, as occurred in our patient. This final positive test represented a clean sweep of the six classification criteria for primary SS established by the European study group.

Treatment

The dental practitioner is in the unique position to play a meaningful role in the management of the signs and symptoms of SS. Aggressive fluoride therapy (toothpastes, mouthwash, topical applications, fluoride gels in individualized trays) should be instituted as soon as possible to negate the onset of xerostomia-induced caries. Artificial salivas in the form of aerosol sprays and glycerin mouthwashes are attempts to restore salivary lubrication.

If salivary loss is not severe, simple salivary stimulants, such as sugarless sour candy or chewing gum, can be suggested. When salivary production is significantly reduced, cholinergic medications (pilocarpine, cevimeline) can be prescribed.

Although it is apparent that the dentist can play a very active and essential role in caring for the oral problems caused by SS, a referral for the comprehensive medical attention that is best offered by the rheumatologist is required. ■

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