

Periodontics: Den 1217

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Case type: 45 year-old female has *Sjorgens syndrome* and *poorly controlled type II diabetes*. Her medication includes *Hydroxychloroquine (Plaquenil)*, *Methotrexate (Trexall)*, and *Metformin*

Suzie Crabgrass is a 45 year old new patient. ASA II, B/P: 134/82, Pulse 86. Medical history shows type II Diabetes and Sjogren's syndrome. The patient reports taking Plaquenil, Trexall and Metformin. Patient was unaware of her correct dosage on said medications. She complained of a metallic taste in her mouth, and indications of halitosis. She had a complaint that it hurt to open her jaw and her joints in general gave her aches and pains. Consulting our pharmacology text, Plaquenil and Trexall is used to treat Sjogren's syndrome and rheumatoid arthritis, however when interviewed, she was unaware which medication was for what. The patient noted practicing charters method when brushing using a manual toothbrush. She stated it was painful to bend her arm sometimes to complete her oral hygiene routine. Her last dental visit and physical reported over a year ago with no dental images taken. She states more than 5 years ago a panoramic image was taken. When asked about her HbA1c score, she was unaware of her current status. We needed this reading to ensure that going forward with any dental work was not going to be harmful to the patient. Using a blood glucose test strip, her test results gave a score of 260 mg/dl, thus treatment was terminated for day and a referral was given to visit a primary care physician for her poorly controlled diabetes. Once the contraindication of dental treatment was explained regarding her poorly controlled diabetes, she mentioned that she has not been keeping up with her medication daily. We recommended rescheduling her dental visit after she had consulted her physician.

A month after her initial visit, Suzie came back to our clinic after being cleared by her physician. We acquired the documentation from her doctor so that we could move forward with her dental treatment.

The patient seemed eager to get in the dental chair. She appeared to have visibly shed some weight, which was possibly due to taking metformin as directed. After her vitals and her HbA1c score cleared her for any dental treatment contraindications, we initiated her assessments. Assessments for extraoral exam revealed chapped lips due to xerostomia. Intraoral exam included oral ulcerations possibly due to the side effects of methotrexate therapy and poor functioning salivary glands with generalized xerostomia resulting from the patient's Sjogren's syndrome. Dental charting included bilateral class one occlusion, overjet of 2mm and overbite of 20%, extracted third molars and several suspicious caries lesions with generalized attrition. Perio charting indicated generalized 5-6mm pocket depth, 2mm generalized recession, grade II mobility, and BOP. This indicated that we should expose a FMS. These radiographs indicated up to 30% alveolar bone loss, which categorized her as perio type III. Her gingiva is described as having generalized, moderate, marginal redness, rolled marginal gingiva, cratered interdental papilla, spongy, smooth and shiny appearance. A full mouth calculus detection was completed and she was assessed to have a medium case type, with mostly subgingival calculus.

Dental hygiene diagnosis: Case type: Medium/type III Periodontitis, generalized inflamed tissue with generalized gingivitis due to systemic implications and poor home care. Procedure for intervention would include informing patient of the combined negative effects of Type II Diabetes and Sjogren's syndrome, and introducing and motivating her to perform meticulous homecare to accommodate her oral needs.

Treatment planning will include 3 short visits, 7-10 days apart, scheduled early in the morning to reduce the chance of a hypoglycemic episode. We must watch for signs of Hypoglycemia, which includes sweating, hunger, weakness, or palpitations. We must keep fast acting glucose snacks around the office and monitor blood glucose every visit. We will offer her dark glasses to use while treating her to combat eye sensitivity to light due to her medication, Hydroxychloroquine. The use of saliva suction is contraindicated due to xerostomia, and patient will be kept in semisupine position throughout her entire

visit due to suspected joint inflammation. The medications she noted taking, coupled with her complaints of pain in the joints and jaw lead us to suspect she may have indications of rheumatoid arthritis as well.

The patient will be also placed on shorter recalls to evaluate oral health every 3 months.

- **Visit one:** Obtain clearance from patients PCP, complete vital signs and blood glucose level, complete assessments, OHI of electric toothbrushing, scale UR, LR quadrants with cavitron and hand instruments as necessary, 20% benzocaine topical and 2% lidocaine local infiltration
- **Visit two:** review medical history, take blood glucose level, OHI of floss holders, reevaluate previously scaled areas, scale UL, LL quadrants with cavitron and hand instruments, 20% benzocaine topical and 2% lidocaine local infiltration , after cleared by dentist; arestin applied for deep pockets as necessitated, and impressions taken for at home fluoride trays
- **Visit three:** Dentist gives prescription for PreviDent, deliver fluoride trays and give instructions, instruct recall every 3 months

Treatment Day 1: Patient education on first visit included a dialogue to inform patient about plaque, antimicrobial and anticaries effects of saliva, the effect of Sjogren's syndrome on the salivary levels of the oral cavity. Next, a plaque index score was conducted with a score of 2.4. OHI taught was electric toothbrushing which allowed the patient to brush more thoroughly due to her decreased joint mobility. We instructed the use of an alcohol free, xylitol based mouth rinse in her home care regimen which has the potential to combat her bad breath and dry mouth by stimulating saliva. Patient education for first day was followed by debridement, deep cleaning and root planing on the right side of the mouth with the use of a 20% benzocaine topical and 2% lidocaine local infiltration injection. Careful consideration around

mobile teeth were implemented. Xylitol mints/lozenges/gum were then offered to the patient to stimulate saliva production and help with caries resistance along with the use of a fluoride dentifrice.

Treatment Day 2: Patient education for second visit included a reevaluation of the patient's understanding of Sjogren's syndrome on oral health, informed the patient briefly on her Type II diabetes, and why it's important to maintain her diabetes. She was advised that, practicing good oral hygiene and having professional deep cleanings done by Dental Hygienist's can help lower HbA1c score. Following the explanation we inquired how the patient feels about the implemented mouth rinse and performed a second plaque score. PI shows improvement of 1.8 due to the use of the electric toothbrush. Subsequent OHI was taught using floss handles to reach interproximal plaque due to limited dexterity of the patient. Previously scaled areas were then reevaluated, reduced marginal redness were evident. The two remaining quadrants received debridement, deep cleaning, and root planing on the left side of the mouth with careful consideration around mobile teeth. Alginate impressions were then taken to make an at home trays for fluoride application. The patients xerostomia is allowing for multiple caries activity which needs to be sustained. The patient was instructed to come back in 3 days to receive those trays. Instructions are as follows: Upon that last visit, her gingiva was re-evaluated and she was instructed to come for 3 month recalls.

Part II

Sjogren's Syndrome and Medication.

Sjögren's syndrome is an autoimmune disease that affects the glands that make saliva. This means that our immune system would target parts of our own body. It most often leads to dryness in the mouth and eyes, but it can also cause dryness in other places that need moisture such as the nose, throat, and skin.

Saliva plays an essential role in numerous functions of the mouth. Xerostomia is caused by Sjögren's syndrome and other factors such as medications, chronic diseases, and medical treatments, such as

radiation therapy and bone marrow transplant. Xerostomia can eventually lead to difficulty in swallowing, severe and progressive tooth decay, or oral infections. Despite having excellent oral hygiene, individuals with Sjögren's syndrome have elevated levels of dental caries, along with the loss of many teeth, early in the disease. PI, GI and BOP were found to be increased with patients with Sjögren's syndrome. Sjögren's syndrome negatively affects the periodontal condition with gingival inflammation and that plays a role in periodontal disease. Sjögren's Syndrome is maintained by Hydroxychloroquine and Methotrexate, their uses are as follows:

Methotrexate: It belongs to a class of drugs known as antimetabolites. It is an immunosuppressive drug, used in conjunction with chemotherapy to treat cancer, rheumatoid arthritis, psoriasis and some autoimmune disorders such as Sjögren's syndrome. It works by slowing or stopping the growth of cancer cells and reducing further joint damage in rheumatoid arthritis. Oral health and hygiene are important for us, but especially so for those people taking methotrexate. They may experience oral problems such as gum bleeding (periodontal diseases) and inflammation of the lining of the mouth (mucositis); which can lead to oral ulceration as a possible side-effect of methotrexate, especially if methotrexate is taken in high doses. However, folic acid or folinic acid supplement could be used to reduce this type of inflammation. Also, the other type of inflammation of gum could be caused by methotrexates, which can lead to gum bleeding, or worse, periodontal diseases. This happens more frequently among patients who have rheumatoid arthritis. We must be aware of its FDA black box warning NSAIDs should not be used with methotrexates because it may decrease the body's ability to fight with infections and stomach or intestinal diseases (such as bleeding)

Hydroxychloroquine (Plaquenil): This is an immunosuppressive drug and anti-parasitic. Plaquenil (hydroxychloroquine) is a medication that has been used for many years to help musculoskeletal symptoms and fatigue in patients with autoimmune conditions such as rheumatoid arthritis, lupus and Sjögren's syndrome. Plaquenil has an inhibitory effect on toll-like receptors that are

proteins involved with inflammation. Hydroxychloroquine targets the immune system without causing an increase in the risk of infection or cancer that can be seen with other immunosuppressant medications. Hydroxychloroquine Plaquenil treats many symptoms of Sjögren's including fatigue, joint symptoms of arthritis and arthralgias (joint pain), dry mouth and dry eyes.

Type 2 Diabetes and Medication

This is the most common type of diabetes, it is a disease that occurs when your blood glucose, also called blood sugar, is too high. Blood glucose is your main source of energy and comes mainly from the food you eat. Insulin, a hormone made by the pancreas, helps glucose get into your cells to be used for energy. In type 2 diabetes, your body doesn't make enough insulin or doesn't use insulin well. Too much glucose then stays in your blood, and not enough reaches your cells. Diabetic patients are more likely to develop periodontal disease, which in turn can increase blood sugar and diabetic complications. People with diabetes are more likely to have periodontal disease than people without diabetes. In fact, periodontal disease is often considered a complication of diabetes. People who don't have their diabetes under control are especially at risk. Research has suggested that the relationship between diabetes and periodontal disease goes both ways. Periodontal disease may make it more difficult for people who have diabetes to control their blood sugar. Severe periodontal disease can increase blood sugar, contributing to increased periods of time when the body functions with a high blood sugar. This puts people with diabetes at increased risk for diabetic complications.

When diabetes is poorly controlled, high glucose levels in mouth fluids may help germs grow and set the stage for gum disease. Uncontrolled diabetes type II can impact a person's quality of life, but it can also be life threatening. Managing blood sugar levels can reduce the risk of complications. People who do not manage their diabetes are at risk of dangerously high blood glucose. This can trigger a cascade of symptoms, ranging from mood changes to organ damage.

Type II diabetes is maintained using Metformin.

Metformin

Metformin is a medication that is used to maintain Type II Diabetes, which is an antidiabetic agent, Biguanide. For non-insulin dependent patients. It is an oral antihyperglycemic agent and insulin sensitizer. When a patient's hyperglycemia cannot be managed with diet and exercise alone this drug is used. It will increase glucose tolerance. This specific drug has limited side effects to the oral cavity. One being taste dysfunction, or a metallic taste in the mouth. Another could be Angioedema, which is swelling under the skin, that can affect the mucosa, and submucosal tissues. Additionally, it may cause muscle weakness which is not as prevalent but can possibly impair a patient's ability to keep up with their oral hygiene and that can exacerbate an already weakened oral cavity. Generally, in a diabetes patient, high levels of sugar in saliva caused by type 2 diabetes causes increased risk of cavities. As with this disease, there is the high risk of periodontal disease and impaired or delayed wound healing, as well as chance of hypoglycemic episode.

Information regarding medications:

Hydroxychloroquine and Metformin: Careful monitoring of blood glucose is recommended when hydroxychloroquine and Metformin, are coadministered. A decreased dose of Metformin may be necessary as severe hypoglycemia has been reported in patients treated with both of these medications.

Methotrexate and Metformin: should not always be taken together because this might cause hepatotoxicity. When this medication comes with radiation, it will increase the risk of tissue damage and bone damage. In addition, patient has mucosal ulcers and therefore topical is need to relieve the pain because we need to retract patient's mouth. Finally yet importantly, avoid traumas as we scale on patient because she has type II diabetes and takes the methotrexate, gingival tissue will takes longer time to heal or it will not heal.

Reference

Periodontal Disease and Sjogren Syndrome: A Possible Correlation?

https://www.researchgate.net/publication/26788579_Periodontal_Disease_and_Sjogren_Syndrome_A_Possible_Correlation

Periodontal Conditions of Individuals With Sjögren's Syndrome

https://www.researchgate.net/publication/24170556_Periodontal_Conditions_of_Individuals_With_Sjogren's_Syndrome

Periodontitis and diabetes: a two-way relationship

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3228943/>

Diabetes and Periodontal Disease

<https://www.webmd.com/diabetes/periodontal-disease#1>

Effects of Hydroxychloroquine on Symptomatic Improvement in Primary Sjögren Syndrome

<https://jamanetwork.com/journals/jama/fullarticle/1887760>

Effect of Hydroxychloroquine on the Retinal Layers: A Quantitative Evaluation with Spectral-Domain Optical Coherence Tomography

<https://www.hindawi.com/journals/joph/2016/8643174/>

Effects of Hydroxychloroquine on Symptomatic Improvement in Primary Sjögren Syndrome

<https://jamanetwork.com/journals/jama/fullarticle/1887760>

Oral Hygiene and RA: Protect Yourself Against Periodontal Disease

<https://rheumatoidarthritis.net/living/oral-hygiene-protect-yourself-against-periodontal-disease/>

RA medication and the mouth

<https://www.nras.org.uk/ra-medication-and-the-mouth>

Canker Sores (Causes, Home Remedies, Treatment, and Prevention)

https://www.medicinenet.com/canker_sores/article.htm

methotrexate - oral

<https://www.medicinenet.com/methotrexate-oral/article.htm>

Metformin ameliorates methotrexate-induced hepatotoxicity

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3487273/>