

Psychological Stress Induced Xerostomia and Hyposalivation: The Case Study in Indonesian Female Patient

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Abstract

Xerostomia is a subjective complaint of dry mouth associated with objectively measured hyposalivation. The Chronic xerostomia significantly increasing the oral diseases incident that may negatively affect quality of life.

66-years-old female patient came with chief complaint of dry mouth, burning mouth sensation, difficult to swallow, speech and halitosis for one year. Patient had a menopause history and admitted in stress condition. Intra-oral examination showed foamy unclear with thick and sticky saliva consistency. A minor single ulcer 2 mm in sinistra vestibulum with a necrotic and erythema area was found. Diagnose of xerostomia and hyposalivation detected by means of Unstimulated Saliva Flowrate (USF) examined using Sialometry (<0,1ml/min). Patient referred to Psychiatrist for further psychological examination by means of Depression Anxiety Stress (DAS) test.

Patient reflected a hyposalivation condition (USF <0.1ml/min, SF < .5ml/min). DAS test showed Depression Severe (23> n=9), Anxiety Moderate (12> n=7), Stress Moderate (18> n=9). The patient was prescribed with Chlorine Dioxide Lemon Mint oral rinse as an antiseptic, anti-halitosis, anti-inflammation and saliva secretion stimulator. Moreover, the patient was instructed to drink water daily, use the mouthwash regularly, increase the oral hygiene and manage the stress condition.

Initial evaluation of patients with xerostomia should include a detailed health history to facilitate early detection and identify underlying cause. Thus, it can relieve xerostomia that can improve the patient's quality of life.

Case report (J Int Dent Med Res 2019; 12(1): 216-219)

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Introduction

A state of mental or emotional strain or tension resulting from adverse or very demanding circumstances. The lifetime prevalence of depression, anxiety, and stress among adolescents and young adults around the world is currently estimated ranging from 5% to 70%. Stress plays a significant role in determining Quality of Life (QoL).^{1,2} Xerostomia might be caused and induced by stress, anxiety, depression.³

Xerostomia is the subjective complaint of dry mouth, and hyposalivation remain a

significant burden for many individuals. Prevalence of xerostomia in the population ranges from 5.5% to 46%.^{4,5} Xerostomia has been unresolved common complaint especially among the geriatric population. Saliva has important role to maintain oral cavity moisture, self-cleansing, anti-microbial substance and neutralize the acids that are produced by plaque. Xerostomia which left untreated that can increase risk of tooth decay, periodontal diseases and oral manifestation. Thus, xerostomia can negatively affect the Oral-Health-Related Quality Of Life (OHRQoL) of the patient.^{3,6}

Case Report

Visit 1: Day 1. A 66-years-old female patient attended Dental Hospital (Rumah Sakit Gigi dan Mulut, RSGM), Faculty of Dental Medicine, Universitas Airlangga, Surabaya with chief complain of dry mouth, Burning Mouth Sensation (BMS), difficult to swallowing, chewing

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and speech, sometimes with painful sensation. Patient also complained halitosis for one year. Patient had a menopause history and admitted in stress condition. Intra oral examination showed foamy, unclear, thick consistency, and sticky saliva when examined by means of mouth mirrors. Minor oral ulcer about \pm 2mm, Geographic Tongue, dental caries, plaque and calculus was found (Figure 1).

Patient was examined by means of Unstimulated Saliva Flowrate (USF) and Stimulated Salivary Flowrate (SSF) (SSF <0.5ml/min) using Sialometry (<0.1ml/min).⁷ Patient was showed a hyposalivation condition (USF <0.1ml/min, SSF <0.5ml/min) (Figure 2). Furthermore, Patient was referred to a Psychiatrist at Soetomo General Hospital Surabaya to underwent the psychological test by means of Depression Anxiety Stress Scales (DAS) and counseling.⁸ DAS test result was showed Depression Severe (23>n=9), Anxiety Moderate (12> n=7), Stress Moderate (18> n=9). The patient was prescribed with non-alcohol mouthwash Lemon-Mint Power Rinse Mouthwash containing stabilized Chlorine Dioxide (Oxygene®, Oxyfresh, USA) which is an antiseptic, anti-inflammation, and saliva stimulator oral rinse. Moreover, the patient was instructed to manage the stress, drink water daily, use a prescribed mouthwash regularly, and increase the oral hygiene.

Second Visit, Control 1: Day 28. Patient showed a healing condition of hyposalivation and xerostomia (USF >0.1ml/min, SF >0.5ml/min) (Figure 3). Oral ulcer and geographic tongue were healed. Halitosis and BMS were reduced subjectively. Intra Oral examination was performed and showed clear, serous consistency, and unsticky saliva when examined with mouth mirrors (Figure 4). Patient being referred to a psychiatrist at Soetomo General Hospital Surabaya to re-take the DAS test and counseling again. DAS result showed Depression Moderate (14>n=9), Anxiety Mild (8> n=7), Stress Mild (16> n=9). Thus, the patient was referred to the others dentistry department for the further treatments.

Discussion

The dry mouth or xerostomia defined as a subjective sensation and the most common

complaint in the oral cavity.⁹ Xerostomia has been reported its prevalence about 0.9% to 64.8% worldwide. Xerostomia is more frequently related with older age, especially in populations over 60 years old. Xerostomia is more common among women supported by Thomson et al. reported that xerostomia to be 1.62 times more likely to occur in women than in men.^{10,11} Xerostomia considerable impact on patients' Health Related Quality of Life (HRQoL). Many patients have a difficulty while eating dry or hard consistency food. Furthermore, they are forced to adjust their diet to soft diet consistency. Mastication process sometimes can become uncomfortable or even painful at the most xerostomia patient. Xerostomia patient frequently need to sips of water while eating or swallowing. Thus, taste discrimination can be compromised due to taste bud compromised in xerostomia condition.⁶

Low salivary flow which occurred in xerostomia was known as hyposalivation. Hyposalivation is defined as an objective reduction in the salivary flow rate. Saliva is usually categorized USF reflects the basal flow rate that protect and lubricate the oral cavity. It has been reported USF range from about 0.29 ml/min to 0.4l ml/min. SSF helps the mastication and digestion among 1-2 ml/min. SSF and USF can be influenced by DAS with a significant relationship in adults. About 41.9% patient with xerostomia had psychological disorders. Depression can reduce saliva secretion by stimulation of anticholinergic mechanisms. In stress, that salivary cortisol levels increased during stress that negatively affected saliva secretion in result of salivary gland hypofunction. Bergdahl and Bergdahl evaluated 1202 individuals in three groups and it similarly showed that USF <0.1 mL/min. Xerostomia was more frequently in patients with higher DAS. Stress and depression play a significant role in decreased salivary flow rate and increased incidence of xerostomia. Depression condition and sleep disorder has a significant relation with reduced salivary flow rates. Women with depression have more xerostomia than men.^{6,12-14}

The aims of xerostomia management are to reduce and relieve patients' symptoms and/or increase salivary flow. Easy management of xerostomia is proper rehydration and increase the oral cavity humidity at night-time by drinking a

water before sleep. Intraoral topical agents are among the most common recommended treatments for xerostomia management. In addition, Mouthwash contained Sodium Chloride and xylitol may be effective in improving xerostomia. In this present case study, we used non-alcohol mouthwash Lemon-Mint Power Rinse Mouthwash Which contain stabilized Chlorine Dioxide, Alcohol free, Xylitol, Zinc Acetate that effective to treat the xerostomia or hyposalivation patient. The alcohol free oral rinse is recommended because alcohol can dry out oral cavity. Zinc Acetate act as potential deodorizing effect of the oral cavity that can maintain the oral cavity humidity and moisture. Xylitol act as an antimicrobial substance that can decreased the risk of periodontal disease, dental caries and others oral manifestation in xerostomia. Stabilized chlorine dioxide can help to maintains normal pH of the oral cavity. Oral rinse may stimulate and increase the saliva flowrate or temporary replace the lost saliva secretions in order to control the development of caries and treat specific oral infections such as oral candidiasis.¹⁵⁻¹⁸

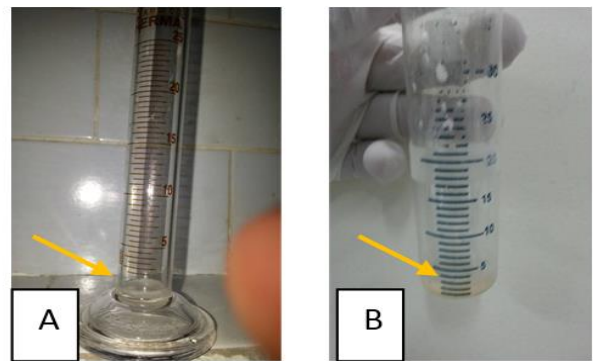


Figure 2. Sialometry result of 66th-years-old Xerostomia patient at the first visit. A. USF <0.1ml/min and B. SSF <0.5ml/min (yellow arrow).

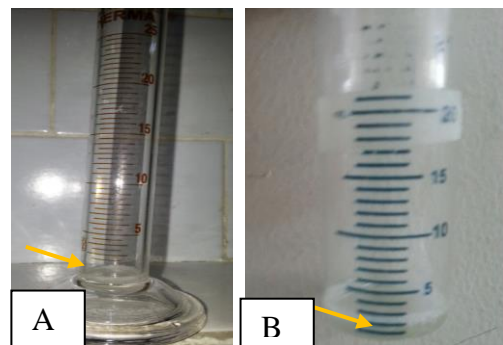


Figure 3. Sialometry Result of 66th-years-old Xerostomia patient at the first visit. A. USF >0.1ml/min and B. SSF >0.5ml/min (yellow arrow).

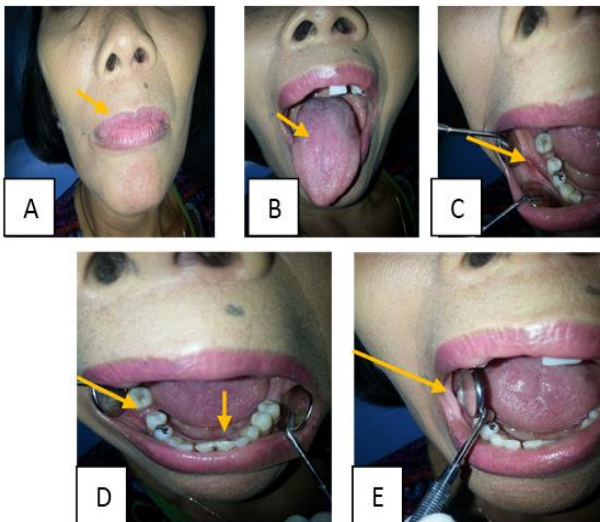


Figure 1. Intra-oral examination of 66th years old Xerostomia patient at the first visit. A. Patient's Lips Condition; B. Geographic Tongue; C. Oral Ulcer; D. Dental caries, plaque and calculus, and foamy, mucous, thick consistency, unclear Saliva; E. Sticky Saliva (yellow arrow).

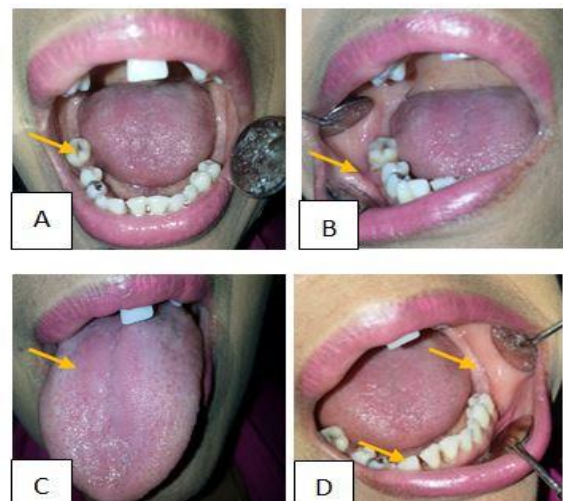


Figure 4. Intra oral examination of 66th-years old Xerostomia patient at the second visit, first control, Day 28. A. Dental Caries and Calculus, B. oral ulcer was healed; C. Geographic Tongue was healed; D. serous, unsticky and clear saliva.

Conclusions

Xerostomia is a common problem oral problem. Neglecting xerostomia can negatively affect to Oral-Health-Related Quality of Life (OHRQoL) of the patient. Dentist can help to minimize the effect of xerostomia-stress related through holistic approach such as proper dental health education, prevention, referral to Psychiatrist, prompt assessment and appropriate treatment. Thus, it can improve overall patient Quality of Life.

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Declaration of Interest

The authors declare that we have no competing and conflict of interests.

References

1. Abdel Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. *Alexandria J Med.* 2017;53(1):77-84.
2. Beiter R, Nash R, McCrady M, et al. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *J Affect Disord.* 2015;173:90-6.
3. Millsop JW, Wang EA, Fazel N. Etiology, evaluation, and management of xerostomia. *Clin Dermatol.* 2017;35(5):468-76.
4. Orellana MF, Lagravère MO, Boychuk DGJ, Major PW, Flores-Mir C. Prevalence of xerostomia in population-based samples: A systematic review. *J Public Health Dent.* 2006;66(2):152-8.
5. Horacio IG, Aida BY, Miguel ÁFB, et al. Relationship of hyposalivation and xerostomia in Mexican elderly with socioeconomic, sociodemographic and dental factors. *Sci Rep.* 2017;7.
6. Niklander S, Veas L, Barrera C, Fuentes F, Chiappini G, Marshall M. Risk factors, hyposalivation and impact of xerostomia on oral health-related quality of life. *Braz Oral Res.* 2017;31(0).
7. Kara SC, Nair GK, Gogineni SB. Sialometry, sialochemistry and oral manifestations in type 2 diabetes mellitus patients—a clinical and biochemical study. *Int J Diabetes Dev Ctries.* 2015;35(4):573-7.
8. Parkitny L, McAuley J. The Depression Anxiety Stress Scale (DASS). *J Physiother.* 2010;56(3):204.
9. Malathi L, Rajesh E, Aravindha Babu N, Jimson S. Saliva as a diagnostic tool. *Biomed Pharmacol J.* 2016;9(2):867-70.
10. Thomson WM. Vale John Spencer. *Community Dent Oral Epidemiol.* 2015;43(1):1.
11. Murray Thomson W, Chalmers JM, John Spencer A, Slade GD, Carter KD. A longitudinal study of medication exposure and xerostomia among older people. *Gerodontology.* 2006;23(4):205-213.
12. Gurvits GE, Tan A. Burning mouth syndrome. *World J Gastroenterol.* 2013;19(5):665-72.
13. Bergdahl M, Bergdahl J. Low unstimulated salivary flow and subjective oral dryness: Association with medication, anxiety, depression, and stress. *J Dent Res.* 2000;79(9):1652-8.
14. Bergdahl J, Bergdahl M. Environmental illness: Evaluation of salivary flow, symptoms, diseases, medications, and psychological factors. *Acta Odontol Scand.* 2001;59(2):104-10.
15. Nugraha AP, Ernawati DS, Parmadiati AE, et al. Prevalence of candida species in oral candidiasis and correlation with CD4+ Count in HIV/AIDS Patients at Surabaya, Indonesia. *J Int Dent Med Res* 2018; 11(1):81-5.
16. Nugraha AP, Ernawati DS, Parmadiati AE. Et al. Study of drug utilization within an anti-fungal therapy for HIV/AIDS patients presenting oral candidiasis at UPIPI RSUD, Dr. Soetomo Hospital, Surabaya. *J Int Dent Med Res.* 2018; 11(1):131-4.
17. Seo EY, Song JA, Hur MH, Lee M kyoung, Lee MS. Effects of aroma mouthwash on stress level, xerostomia, and halitosis in healthy nurses: A non-randomized controlled clinical trial. *Eur J Integr Med.* 2017;10:82-89.
18. Oxyfresh Cooperation. Oxyfresh Pro Science. Available on <https://oxyfreshpro.com/scientific-studies-research/> Accessed on March March 2018.