CASE REPORT

Effect Of Biopsychosocial Factors On Median Rhomboid Glossitis Patient With A History Of Contraceptive Use: A Case Report

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ABSTRACT

Social media use is a trigger for psychological disorders among women, namely self-diagnosis which can be psychosomatic and associated with median rhomboid glossitis (MRG). This case report aims to discuss of biopsychosocial factors in MRG patients with a history of contraceptive use. A 37-year-old woman with tongue complaints after switching contraceptives 9 months ago. This condition led her to seek information through social media platforms and several dentists. Clinical examination showed depapillation on the median dorsum of the tongue. Additional examinations were performed to confirm the diagnosis of MRG associated oral contraceptive. Non-pharmacological treatment consisting of education about the complaint and oral hygiene, advice to discontinue oral contraceptive use, and consultation with a psychologist is recommended. Pharmacological therapy includes the use of chlorine dioxide gel and multivitamin tablets. MRG improved significantly within one month. These results suggest that dentists' identification of biopsychosocial factors and a multidisciplinary therapeutic approach positive results.
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INTRODUCTION

Biopsychosocial approach (stress diathesis) is a comprehensive method for understanding health, illness, and treatment. In addition, it comprises biological, psychological, and social factors that interact with each other. Several studies have shown that psychological factors play a significant role in the development of mental health disorders. In Indonesia, the prevalence of mental health disorders is 11.6%, with a higher incidence occurring among adult women and 0.17% of cases being severe. Social factors, such as the use of social media, have also been reported to have the potential to affect mental health. The trend of self-diagnosis of health problems through social media can lead to the emergence of psychosomatic disorders that comprise both biological and psychological factors. (1) In line with previous reports, mental health problems, such as depression, anxiety disorders, and stress can be caused by chronic illness. For example, median rhomboid glossitis (MRG) is influenced by psychosomatic factors and can become a chronic condition. This condition occurs less frequently in women (1:1.5 ratio), typically manifesting in the third decade of life and often asymptomatic. The etiology of MRG has been reported to be associated with chronic fungal infections. In addition, less than 20% of cases are associated with other factors, such as micronutrient deficiencies, abnormalities in hematological factors, diet, use of inhalers, trauma, inflammation, and allergies. (2) Previous studies have suggested a possible association between contraceptive use and benign migratory glossitis. However, the mechanism behind this association remains unexplored. Based on previous findings, there are no case reports on the influence of biopsychosocial factors on contraceptives use. Therefore, this case report aimed to discuss the effect of biopsychosocial factors in MRG patients with a history of using contraceptives. The case is particularly interesting because the incidence of

MRG is rare in women and has many potential triggers.

CASE REPORT

A 37-year-old female patient came to the Oral Medicine Department with complaints of 'tongue falling out,' baldness, and a burning sensation when eating spicy and hot food, which were relieved by the chewing of ice cubes. In addition, the onset of symptoms occurred approximately 9 months ago after discontinuing the use of an intrauterine device (IUD) for 7 years and switching to oral contraception containing the hormone progestin. The patient experienced anxiety, stress, and depression due to the condition of the tongue and requested advice from several dentists as well as information on various social media platforms. Medical intervention was administered by a specialist in oral medicine for the last 3 months. The current medication regimen included folic acid (400 mcg once daily in the morning), vitamin B12 (50 mcg twice daily), zinc (20 mg once daily in the morning), and 1% povidone-iodine mouthwash (10 ml twice daily). The patient had a smoking history of approximately 20 years and consumed packaged sugary drinks, as well as fried, spicy, and hot foods daily, with little consumption of fruit and vegetables. A habit of brushing the teeth 3 times a day without the tongue was also observed.

Intraoral examination showed shows the depapilation on the median dorsum of the tongue, red, oval-shaped lesions with well-defined borders, approximately 5x3 cm in size, with a yellowish- white plaque on the margin and dorsum of the tongue, which can scraped off without leaving an area of erythema.(Fig.1a) Figure 1c shows a similar red lesion with the median dorsum of the tongue of the hard palate. The lesion on the tongue was painful, while that of the palate was less painful.

Additional investigations included a potassium hydroxide (KOH) test for lesion on the dorsum of the tongue, which gave a negative result for fungal infection. Blood laboratory tests revealed high levels of hematocrit, erythrocytes, and platelets, while mean corpuscular hemoglobin concentration (MCHC), eosinophils, and serum Fe were low. The DASS-21 test indicated extremely severe depression (score of 28), anxiety (score of 36), and stress (score of 36). The diagnosis was MRG may be by contraceptives, accompanied by a Miyazaki third scale, a coated tongue, and kissing lesions. Topical pharmacological therapy consisted of applying chlorine dioxide gel to the reddish part of the tongue 3 times a day. The patient continued consuming folic acid, vitamin B12, and zinc once a day. Non-pharmacological therapy included education about the condition, instructions to brush the teeth and tongue twice a day with a soft-bristled toothbrush, stopping the consumption of packaged sugary drinks and fried, spicy, and hot foods, and reducing smoking. Consultation of an obstetrician and gynecologist to temporarily discontinue oral contraceptives and a psychologist to manage mental health were recommended.

Table I: Complete blood test results

PARAMETER	RESULT	NORMAL
Hemoglobin	15 g/dL (N)	11,7-15,5 g/dL
Hematocrit	47,1% (H)	35-47%
Erythrocytes	5,54Ч10⁶/µL (H)	3,38-5,2Ч10⁶/µL
MCV	85,0 fL (N)	80-100 fL
MCH	27,1 pg (N)	26-34 pg
MCHC	31,8 g/dL (L)	32-36 g/dL
RDW-CV	13,5% (N)	11,5-14,5%
Platelets	469×10³/µL (H)	150-440×10³/uL
Serum Fe	49 µg/dL (L)	50-170 µg/dL

MCV: Mean Corpuscular Volume, MCH:Mean Corpuscular Haemoglobin, MCHC: Mean Corpuscular Haemoglobin Concentration, RDW-CV: Red Distribution Width, Fe: Ferritin, N: Normal, H: High, L:Low

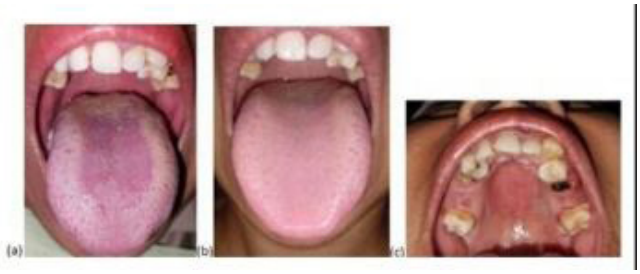

Figure 1. The clinical picture patient. The initial visit showed a depapillated tongue on the median dorsum of the tongue, red, oval, well-defined edges, about 5x3 cm in size, and the same lesion on the palate (a and c), significant improvement on the dorsum of the tongue after one-month follow- up (b).

At the second visit, the condition of the tongue did not compared to from the first visit. In addition, the patient did not follow the instructions to clean the tongue due to fear of the organ becoming bald or falling out, which could cause a severe and shiny appearance. The use of contraceptives was stopped, while multivitamins were consumed once a day after meals as a supportive therapy. The next visit assessed by mobile phone message as the patient's husband did not allow a face-to-face visit. Figure 1b showed clinical improvement after a one-month visit, improved depapillation, the absence of a burning tongue, and improvement on the Miyazaki scale for the coated tongue.

The patient still did not follow the instructions for regular tongue cleaning due to fear and also had not visited yet a psychologist. Until this case report, there was no regular cleaning of the tongue due to the same reason, and information about the tongue's condition was continuously searched through social media.

DISCUSSION

This case report discussed the impact of biopsychosocial factors on the efficacy of contraceptives had oral condition. The KOH examination results for this patient did not indicate a fungal infection, ruling out the diagnosis of the oral lesion with candida albicans

etiology. Kissing lesions were significantly associated with HIV, but the patient's family declined HIV testing. These lesions could be caused by inflammation induced by smoking and occurred when the tongue was in contact with the palatal mucosa during swallowing and in the rested position. In addition, the development of MRG was directly associated with biological factors, such as contraceptive use and deficiency nutrition. Several studies had also shown that it was indirectly related to psychological and social factors, including social media, employment, and family support.(3–5).

A potential explanation lied in the impact of oral contraceptives, particularly those containing the hormone progestin which could affect psychological conditions. Hormonal contraceptives, especially those containing progestin, could disrupt the neurochemical balance of the brain, which reduced the activity of neurotransmitters, such as gamma-aminobutyric acid, serotonin, and dopamine, thereby contributing to the psychological state of individuals. (3)

MRG could be linked to the usage of oral contraceptives, which could induce psychological stress. However, psychological stress had been shown to interfere with the distribution, transportation, and absorption of iron from the diet, leading to decreased iron levels in the blood.(4) Fe or iron deficiency in this patient could also be attributed to poor diet, as evident from the infrequent consumption of vegetables and fruit. Iron intake could be obtained from animal products, vegetable products, green vegetables, and fruits.(4) In general, iron was essential for maintaining the normal function of oral epithelial cells. Fe deficiency caused an alteration in the epithelial cells of the oral mucosa characterized by a reduction in the cytoplasmic area and an increased ratio of the nuclear area to the cytoplasmic area more rapidly. This led to atrophy or immaturity of the mucosa, causing a burning sensation, numbness, and taste dysfunction. (5)

The patient's hematological parameters including Hb, MCV, and RDW were within normal range, and the decrease in serum ferritin ruled out iron deficiency anemia. The main determinants of the anemia, such as Hb, MCV, serum ferritin, and transferrin saturation, were all normal, and there was an increase in total iron-binding capacity and soluble transferrin receptor. High hematocrit values and erythrocytes counted in the patients could be associated with erythropoiesis induced by smoking habit. Smoking could also directly contribute to the formation of MRG through reproducitve hormones, in addition to having an impact on iron deficiency. Nicotine present in cigarettes influenced follicle-stimulating hormone (FSH), leading to decreased estrogen and progesterone levels. This triggered the maturation of oral mucosal epithelial cells, cell division in the basal layer was disturbed, and the keratinization process on the dorsum of the tongue was inhibited especially the filiform papillae.(5)

Social factors contributed to the occurrence of MRG including employment, social media, and family support. In this case, the patient lacked support from immediate family for recovery, leading to the seeking of support from other sources, such as social media. The patient's social media activities were facilitated by playing the role of a housewife. Several studies had shown that social media users in Singapore, Thailand, Malaysia, and Indonesia were predominantly housewives. Subsequently, the patient utilized social media to access health information and sought support for the condition. However, this behavior led to self-diagnosis, which could lead to mental health disorders, such as depression, anxiety, and stress. As previously explained, psychological stress could affect iron deficiency and contributed to the development of MRG. Figure 2 presented the biopsychosocial concept model in this case report.

Figure 2. The biopsychosocial concept model in this case report. The various biopsychosocial factors present in the patient in this case report are summarized in the biopsychosocial model.

The patient's pharmacological therapy regimen included daily administration of folic acid, vitamin B12, and Fe used to regulate amino acid metabolism necessary for cell division and DNA synthesis. Zinc was employed to facilitate the repair of papilla sensitivity function, while chlorine dioxide gel provided an oxygenating effect on epithelial tissue. Chlorine dioxide also contains zinc which has anti-inflammatory properties by inhibiting cytokine activation, as an antioxidant accelerating wound healing by increasing protein and nucleic acid synthesis. Stable chlorine dioxide is a strong oxidant that can prevent further tissue damage. Aloevera which ontains chlorine dioxide as antioxidant. Significant improvements were seen within the duration of 1 month of both pharmacological and non-pharmacological treatment. Several studies had also shown that chlorine dioxide gel provided an oxygenating effect on epithelial tissue.

CONCLUSION

In conclusion, MRG could occur due to oral contraceptive use, which was associated with psychological stress leading to Fe deficiency. This deficiency could also be caused by smoking, inadequate diet habits, and various social factors that caused psychological stress. The dentist's recognition of biopsychosocial factors and application of a multidisciplinary therapy approach led to positive outcomes for the patient.

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