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Case Report

Evaluation of the periodontal status of a patient diagnosed with Sheehan syndrome: A case report

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Abstract

Aim: Some immunological changes occurring in mothers during pregnancy increase their susceptibility to infections, including periodontal infections. Sheehan syndrome (SS) is a disease that occurs because of severe postpartum hemorrhage causing ischemic pituitary necrosis. The presence of multiple hormonal deficiencies leads to the impairment of bone microarchitecture, which can cause osteopenia and even osteoporosis. Osteoporosis and periodontitis are both chronic diseases characterized by bone loss. Moreover, recent studies have shown that there is a relationship between menopause, osteoporosis, alveolar bone resorption, and tooth loss. This case report aims to evaluate the oral and periodontal status of a patient with SS and to raise awareness about dental and periodontal problems that may occur in such patients.

Methodology: A 63-year-old female patient diagnosed with SS in the endocrinology clinic was referred to the periodontology clinic with complaints of multiple tooth loss, mobility in her teeth, and gingival bleeding. In the clinical and radiographic examination of the patient, it was determined that all teeth had horizontal bone resorption; moreover, there was mobility in the mandibular anterior teeth and hemorrhage in the gums. When the patient's laboratory results were examined, it was seen that the basal plasma levels of free triiodothyronine (T3) and thyroxine (T4), growth hormone (GH), prolactin (PRL), follicle stimulating hormone (FSH), luteinizing hormone (LH), progesterone, and total testosterone values were significantly lower, and the anterior pituitary elevation was significantly decreased in pituitary magnetic resonance (MR) imaging.

Conclusion: The periodontium is the target tissue of sex and other hormones. Hormonal changes may affect the inflammatory-immune tissue responses of periodontal tissues. Many studies have shown that thyroid and sex hormones affect oral and especially periodontal tissues. The degradation of hormonal hemostasis may induce a series of pathological events in the oral environment, resulting in inflammatory changes in gingival tissues, periodontal attachment losses, and destruction of the alveolar bone. Systemic diseases that affect hormonal conditions, such as SS, must be considered in the evaluation of oral health. Medical physicians should refer their patients to the dentist for consultation when evaluating patients' hormonal status and planning their treatment.

Keywords: Sheehan syndrome, hormones, periodontal status.

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Introduction

The periodontium is a tissue targeted by sex and other hormones. Indeed, hormonal changes may affect the inflammatory-immune tissue responses of periodontal tissues. Moreover, the degradation of hormonal hemostasis may induce a series of pathological events in the oral environment, resulting in inflammatory changes in gingival tissues, periodontal attachment losses, and the destruction of alveolar bone. The relationship between female sex hormones (estrogens) and periodontal disease in women during puberty, pregnancy, and menopause, as well as when taking oral contraceptives, has been widely reported (1,2).

Pregnancy is associated with remarkable changes in both endocrine function and immune reaction (3). Sheehan syndrome (SS), also known as postpartum pituitary necrosis, is a rare condition; it was first reported in 1937 by Sheehan et al. (4), who described a case of postpartum pituitary necrosis and insufficiency. The incidence of SS is 0.2 to 2.8 cases per 100,000 women in developed countries (5). This syndrome, which is caused by postpartum necrosis of the anterior lobe of the pituitary gland, can manifest clinically and pathologically in various ways, including agalactorrhea, amenorrhea, hypothyroidism, weakness, fatigue, dizziness, libido and weight loss, dry skin, pallor, hypoglycemia, adrenal crisis, and coma. The most common finding in SS is lactation that is difficult or fails to occur because of prolactin (PRL) deficiency. Furthermore, in many cases with SS, there is a sequential loss of somatotropic, gonadotropic, adrenocorticotropic, and thyrotropic functions (6). In this case report, we evaluate the periodontal status of a patient with SS who applied to our clinic because of periodontal problems.

Case Report

The patient was a 63-year-old woman of 158 cm in height and 60 kg in weight; she had been diagnosed with SS in the endocrine department and referred to the periodontology clinic of Gülhane Faculty of Dentistry with complaints of gingival recessions, tooth loss, and gingival bleeding. In the intraoral examination of the patient, mobility was observed in some anterior teeth, with dense dental plaque accumulation and gums that were hyperemic and edematous. The patient declared that she was nonsmoking and that she brushed her teeth once a day but did not use an interface brush. First, medical and dental histories were taken. It was learned from the patient's medical history that she had had four children, and she was 18 when she initially gave birth; this baby had low birth weight. After the first birth, the patient had three more children who also had low birth weight. The patient told us that after her last birth, she was hospitalized for a while because of heavy bleeding. Following this heavy bleeding, the patient entered menopause at the age of 32. The patient lived for years without being diagnosed with SS, but in 2018, she had to receive inpatient treatment at the Hacettepe University internal medicine clinic because of excessive fatigue, anorexia, and psychological depression. She was diagnosed with SS based on laboratory findings, pituitary magnetic resonance (MR) inspection, and her medical history.

After medical and dental histories were taken, extraoral and intraoral examinations were performed. In the patient's intraoral examination, it was observed that five teeth had been extracted, and there was migration and attachment loss in her teeth because of previous periodontal disease. Periodontal indexes, including the Plaque Index (PI), Gingival Index (GI), Bleeding on Probing (BOP), Periodontal Pocket Depth (PPD), Clinical Attachment Loss (CAL), and Recession Degree (RD), were recorded. The data containing all the patient's periodontal parameter values are given in Table 1. On panoramic radiography, it was revealed that there was a tooth root embedded in the bone in the posterior region of the left mandibula. It was observed in the radiographic examination of the patient that horizontal bone resorption occurred on the teeth, especially in the premolar region. From the clinical and radiological examination of the periodontal tissues, the patient was diagnosed with Stage IV, Grade C periodontitis (Figs. 1 and 2).



Figure 1. Patient's intraoral photographs.



Figure 2. Patient's panoramic radiography.

To control the patient's systemic condition, she was sent to the Endocrinology Clinic of Gülhane Medical Faculty, and a consultation was requested. As shown in the patient's laboratory results in Fig. 3, basal plasma levels of free T3 and T4, growth hormone (GH), PRL,

follicle stimulating hormone (FSH), luteinizing hormone (LH), progesterone, and total testosterone were significantly lower. In the pituitary MR examination, the pituitary gland was in the normal location, and the pituitary anterior gland height was found to be 1.1 mm, representing a significant decrease (Table 2).

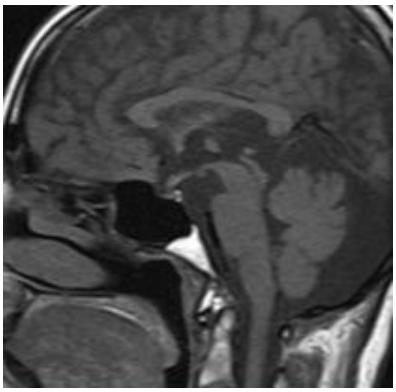


Figure 3. MR image of the patient's pituitary gland.

Oral hygiene training was given to the patient after periodontal measurements. Scaling and root planning procedures were performed. The patient was called for control after 1 month and attended regular checkups at 3 and 6 months.

Table 1. Patient' s clinical periodontal parameter value.

Periodontal Parameter Values		
Full mouth	PI	2.06
	GI	1.83
	BOP (%)	65.53
	PPD	2.31
	CAL	2.90
	RD	0.59

PI: Plaque İndex, GI: Gingival Index, BOP: Bleeding on Probing, PPD: Periodontal Pocket Depth, CAL: Clinic Attachment Loss, RD: Recession Degree.

Table 2. Patient's laboratory results.

Laboratory Results		
Test	**Results**	**Normal range**
*Free T3	1.43	2.3-4.2
*Free T4	<0.40	0.78-1.48
Thyroid-Stimulating Hormone (TSH)	1.263	0.55-4.78
Estradiol	<10	<32.2(menopause)
*Follicle-Stimulating Hormone (FSH)	0.43	9.7-111 (menopause)
*Luteinising Hormone (LH)	0.38	15.9-54 (postmenaupose)
*Prolactin	1.51	2.8-29.2
*Progesterone	<0.1	<0,73(postmenaupose)
Parathormone (PTH)	36.4	15-65
*Growth Hormone	<0.05	<8
Adrenocorticotropic hormone (ACTH)	12.53	0-46
25 Hydroxy Vitamin D	61.89	25-80
*Somatomedin-C	<15	63.4-223
*Total Testosterone	<0.13	0.14-0.76

Discussion

The relationship between female sex hormones and periodontal disease in women during puberty, pregnancy, and menopause, as well as those taking oral contraceptives, has been widely reported (1,2). The presence of multiple hormonal deficiencies leads to the impairment of bone microarchitecture, which can cause osteopenia and even osteoporosis (7). Osteoporosis and periodontitis are both chronic diseases characterized by bone loss. Potential associations are of great clinical importance because of the multifactorial etiology and common risk factors of these diseases. Indeed, recent studies have shown that there is a relationship between menopause, osteoporosis, alveolar bone resorption, and tooth loss (8,9). The progression of periodontal inflammation is regulated by systemic and oral environmental factors, including changes in physiological hormone levels during post-menopause (10).

In the past, postmenopausal osteoporosis was attributed solely to declining estrogen levels. In addition, estrogen replacement therapy was found to be effective in protecting against systemic bone loss and decreased alveolar bone loss (11). Reduction of

estrogen levels may affect the oral cavity epithelium, salivary gland function, and propensity for inflammatory processes related to periodontal tissues to emerge (12). Many researchers have demonstrated increased alveolar bone resorption involving estrogen deficiency (13,14).

PRL has been reported to be an important calciotropic hormone responsible for the provision of additional calcium during reproductive periods (15). One study demonstrated that at a lower PRL concentration of 10 ng/mL, PRL appeared to directly regulate human periodontal ligament fibroblast differentiation, as indicated by an upregulated mRNA expression of periost, the specific periodontal ligament differentiating marker involved in remodeling (16).

T3 and T4 are hormones secreted by the thyroid gland, and they have been shown to be fundamental to normal bone turnover (17). Thyroid dysfunctions are common health problems in the population and determining the influence of thyroid hormone imbalance in periodontitis may be important for the prevention of morbidity related to this condition when the association is present. The decrease in the levels of these hormones may promote a less competent immunogenic response to the infection induced by experimental periodontitis (18).

GH acts directly on the immune system, such as by priming monocytes for enhanced production of hydrogen peroxide and stimulating neutrophils to secrete superoxide anions associated with enhanced phagocytic activity (19). Therefore, deficiency in GH secretion by the pituitary gland or impaired function of its receptor could facilitate bacterial infections and cause tissue degradation, as occurs in periodontitis.

Conclusions

Systemic diseases that affect hormonal conditions, such as SS, must be considered in the evaluation of oral health. Periodontitis that is exacerbated by or associated with systemic diseases is an important topic that must be considered and discussed in depth. Medical physicians should refer their patients to the dentist for consultation when evaluating patients' hormonal status and planning their treatment.

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