EVALUATION OF THE EFFECTS OF HORMONAL SUBSTITUTION THERAPY UPON THE PERIODONTAL STATUS IN FEMALE PATIENTS DURING PRE- AND POST-MENOPAUSE

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Abstract

Scope of the study. To evaluate the bone mass loss in women, during menopause and post-menopause (a period associated with a deficit of estrogen) and the effect of the substitution hormonal therapy.

Materials and method. The experimental group included 46 female subjects, evaluated in the beginning of menopause and also at post-menopause, with and without hormonal substitution therapy (in the moment of the consultation). The periodontal clinical (probing depth, CPITN, index of gingival recession, index of dental mobility, index of furcation involvement) and radiological indices were evaluated, on following the evolution of the periodontal status from the first consultation in the 3 years.

Results. It has been demonstrated that, in patients with periodontitis, early onset menopause and the estrogen deficit, the frequency of gingival bleeding on probing and the clinical loss of attachment were higher, comparatively with the patients having followed a hormonal substitution therapy.

Discussion. Apparentely, estrogen has a protecting effect upon the periodontium and also upon the severity of the periodontal disease. More than that, the alveolar bone that may be affected by osteoporosis also contributes to the benefic effects of HT, in preventing osteoporosis, the risk of suffering the negative effects of edentation in post-menopause women who receive HT being lower.

Conclusions. The present study evidenced the increased incidence of both gingivitis and periodontal pathology, of the ratio of edentation in women at menopause, while the absence of the hormonal substitution therapy seems to be associated with the severity of the periodontal disease.

Keywords: periodontal status, substitution therapy, menopause, osteoporosis, life quality.

INTRODUCTION

Menopause represents the moment in which permanent interruption of menstruation occurs, as a result of the loss of ovarian folicular activity. [1] The diagnosis of natural menopause is valid when 12 months of amenorrhea were recorded, in the absence of any pathological association. However, menopause may be also artificially induced (through irradiation, surgery or chemotherapy). [2,3] The oral manifestations possibly connected with the presence of menopause include xerostomia, glossodynia, stomatodynia, stomatopyrosis, glossopyrosis, glossalgia, as well as modifications in the volume of the alveolar bone, in the alveolar bone mineral density, gingival epithelium and chorione. [4] The patients with deficit of estrogen have a higher index of bleeding on probing (BOP), and a higher incidence of gingival recession, exceeding 2 mm, comparatively with those without estrogen deficit. [5] The therapeutical hormone (HT) – estrogen as such (ET) or estrogen with progestin (EPT) – is frequently prescribed for shorth periods, as attenuating the discomfort symptoms associated with the loss of estrogen at menopause. [6-8] Recent clinical studies confirmed the protecting effects of hormonal therapy in preventing osteoporotic fractures. [9-11] The purpose of the present study was to evaluate the loss of bone mass in women at menopause and post-menopause (a period associated with a deficit of estrogen) and the effect of the application of hormonal substitution therapy as a method of slowing down the loss of bone mass, stopping osteoporosis and preventing fractures.

MATERIALS AND METHOD

The experimental group included 46 female subjects selected among those having addressed the clinical Polyclinics of Periodontology of the
Clinical Base of Stomatological Education between 2009-2012.

The criteria for patients’ inclusion in the study were:

- Feminine sex;
- No systemic decompensated diseases;
- Subjects on debut of menopause or during post-menopause;
- Absence of fractures in the pathological bone;
- No acute stage of periodontal inflammation;
- Subjects with no recent history of specific periodontal treatment (in the last 3 years).

The patients have ages ranging between 33 and 68 years, occurring in the debut of menopause and at post-menopause, with and without hormonal substitution therapy (THS) (in the moment of the first consultation) (35 without treatment with THS, 11 with treatment). [12,13]

In a subsequent stage, other 19 patients (out of the total number of 35) followed a substitution treatment. The evolution was followed along three years. The patients could have a hormonal substitution therapy, yet without using any other type of medication that might influence bone metabolism. The written consent of the examined subjects was obtained for: oral examination, filling up of the files of clinical observation, realization of paraclinical investigations – such as dental radiographies, OPG, measurement of bone mineral density by ultrasonographical or DEXA procedures. [14,15]

The patients were selected and classified according to the CPITN index, on following the possible distrophic and degenerative signs at the level of the oral cavity while, at general level, data related to the presence of menopause, of osteoporosis, of the hormonal substitution treatment and of the risk factors for osteoporosis were analyzed.

**The stages had in view** were:

- The first consultation included anamnesis, clinical local and loco-regional examinations, the indices of periodontal health (IP, IT, IS). The patients were given indications on the necessary paraclinical investigations to be performed.
- The second consultation analyzed the paraclinical data obtained and the CPITN index was elaborated. Recommendations were made for the department of osteodensitometry and/or for the initiation of the hormonal substitution therapy.
- The following consultation was dedicated to the local treatment, for tracing the natural factors with microbial charge, sanitizing the oral cavity, supragingival scaling, professional brushing.
- The dentoperiodontogramme measuring the depth of the periodontal bags, gingival recession, pathological mobility and the extent of furcation involvement was filled in.
- According to the individual requirements of the treatment, gingival debridement and subgingival curettage were performed.
- There followed one or several stages of antimicrobial treatment, applied either locally and/or generally.
- The patients were re-evaluated after a few weeks, the new values of the periodontal indices being recorded. In some situations, the surgical component of the treatment had to be resumed.
- The follow-up was realized along 3 years, a period over which the patients were controlled each 6 months. Along all this time, the determinations on bone mineral density and the local clinical exam were repeated, the obtained results being discussed in the following.

**RESULTS**

The duration of the treatment with estrogens influences the risk of possible edentations, a risk however diminishing as long as the duration of estrogen administration is prolonged. [Fig. 1]
It was observed that the risk of losing teeth was similar for all patients using conjugated estrogen doses and all types of hormones (oral estrogen conjugated or not with progestin, patch, a low amount of estrogen with or without progestin, vaginal estrogen and progestin). [Fig. 2]

A more pronounced presence of both bacterial plaque and subgingival scale could be observed in patients at menopause, affected with periodontitis, more intense in those having followed no hormonal substitution therapy. [Figs. 5,6]

![Fig. 2. Evaluation of odontal units condition as a function of the duration of the therapy with estrogen](image1)

In the patients with periodontitis, precocious menopause and deficit of estrogen, the bleeding index was approximately two times higher comparatively with the ones having followed THS [Fig. 3]; a significantly higher bleeding index was also observed in the subgroup of patients at menopause. [Fig. 4]

![Fig. 3. Presence of gingival bleeding in women with periodontitis and early menopause as a function of estrogen level](image2)

![Fig. 4. Presence of gingival bleeding in women with periodontitis and menopause as a function of estrogen level](image3)

![Fig. 5. Presence of bacterial plaque in women with periodontitis and menopause as a function of estrogen level](image4)

The diagnosis of periodontal disease had a higher incidence in the patients at menopause, subjected to no hormonal substitution therapy. [Fig. 7]

![Fig. 6. Presence of subgingival scale in women with periodontitis and menopause as a function of estrogen level](image5)

![Fig. 7. Presence of the periodontal disease in women with periodontitis and menopause as a function of estrogen level](image6)
Considerable higher losses of periodontal attachment and of alveolar bone were observed in the same group of patients (menopause, no THS). [Figs. 8,9]

Fig. 8. Evaluation of the attachment level in women with periodontitis and menopause as a function of estrogen level

Fig. 9. Ratio of alveolar bone loss in women with periodontitis as a function of estrogen level

DISCUSSION

Teeth loss and the periodontal diseases affect the quality of life by modifying the functionality of the dento-maxillary system. Progressive loss of bone support for teeth after menopause may require expensive, uncomfortable, prolonged treatments, which may cause possible edentations and subsequent prosthetic treatments.

Apart from being sensitive to osteoporosis, the alveolar bone also contributes to the benefic actions of HT in preventing osteoporosis; women at post-menopause will be less affected by the negative effects of edentation or they will receive a considerably reduced prosthetic therapy if HT had been administered to them.

The studies devoted to such aspects also demonstrated that THS reduces the loss of mandibular alveolar bone tissue during the menopause and, in some cases, even promotes an increased bone mineral density. Another longitudinal study developed on a group of 41 women at postmenopause, who had received THS for periods between one to two years, evidenced a positive effect of THS as to the loss of mandibular bone mass. [14]

An 1 year longitudinal study, performed on a group of 24 women at post-menopause, with history of periodontitis, assessed this deficiency of estrogen (measured by the levels of estradiol serum) in women with a raw mean loss of density of the alveolar bone, comparatively with those with sufficient amounts of estrogen, who evidenced its raw mean increase.

Such studies suggest that estrogen plays an important role in determining the alveolar bone mass and also that THS affects the maxillary bones in a manner similar with that in which it affects other skeletic sites. [16]

The positive results registered by hormonal therapy applied upon the alveolar bone mass support the conclusions of other observational studies on edentations and periodontal diseases, consolidating the idea that TH increases tooth attachment and improves dental health. Even if the high levels of ovarian hormones during pregnancy and the utilization of oral contraceptives may increase gingival inflammation and also the gingival exudate, menopause – the absence of ovarian steroids – has been related to the alteration of the general gingival health condition, a situation in which the therapy of hormonal substitution may apparently support this tendency.

CONCLUSIONS

The study demonstrated that, during menopause, the deficit of estrogen is one of the most frequent causes of osteoporosis in women, and a possible cause of bone loss.

Mention is also made of the higher incidence of gingivitis and of the periodontal disease, as well as of the ratio of tooth loss in patients at menopause; the absence of TSH seems to be associated with the severity of the periodontal disease, the therapy of hormonal substitution improving this tendency.
References