INCREASED BONE TURNOVER IN OBSESE POSTMENOPAUSAL FEMALES

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Bone loss occurs at an accelerated rate in women, around the time of the menopause. After the menopause, bone resorption increases by 90%, as assessed by markers of bone resorption (β-CrossLaps, Urine NTx), whereas bone formation also increases, but only by 45% as assessed by markers of bone formation (osteocalcin, alkaline phosphatase, N-femoral propeptide of type 1 collagen) (1). The most dramatic endocrine alteration during the menopause involves relative increase in the androgen/estrogen ratio (2). Postmenopausal women manifest this with a shift to abdominal fat distribution (android type of obesity) (3). Furthermore, adipose tissue in postmenopausal women is a source of estrogen and therefore could exert protective effects against bone loss in aging women (4). It has been observed that heavier women after menopause conserve bone mass better than those with lower body weight. Therefore, the protective effect of obesity on bone mass would be ascribed to a high body fat content. The aim of study was to estimate the effect of obesity on bone mass.

Materials and Methods: The total of 161 postmenopausal female patients were divided into three groups based on body mass index (BMI) values. Normal weight group with BMI<25 kg/m2 (57 patients). Overweight group with BMI from 25 kg/m2 to 29.99 kg/m2 (62 patients) and obese group with BMI≥29.99 kg/m2 (62 patients). Patients were also divided into two groups based of percentage of total fat (%FM), with a cut of value %FM=30. Group 1 with %FM<30 counted 76 patients, while group 2 with %FM≥30 counted 68 patients. Waist circumference (WC) and calculated body mass index (BMI) and waist-hip-ratio (W/R) were measured for all patients. Central abdominal obesity was defined as WC>88cm. Ultrasonography was used to estimate visceral (VAF) and subcutaneous abdominal fat (SAF), total fat mass (TFM) and total lean mass (TLM). Serum levels of osteocalcin, total P1NP, β-CrossLaps, were determined using electrochemiluminescence immunoassay, Urine NTx level were determined by chemiluminescent method.

Results. Normal weight group of patients had significantly higher P1NP values (43.95 (33.075, 60.925) mcg/L) when compared to obese group of patients (38.20 (27.05, 52.15) mcg/L) (p=0.004). Osteocalcin levels were significantly higher in normal weight group (26.0 (20.207, 30.375) ng/mL) compared to obese group of patients (20.0 (16.5, 26.8) ng/mL) (p=0.001). Group with normal weight had significantly higher bone formation and bone resorption markers showed correlation with anthropometric parameters; visceral fat diameter showed negative correlation with B-CrossLaps (rho=-0.193; p=0.01), urinary NTX (rho=-0.237; p<0.01), osteocalcin (rho=-0.287; p<0.01) and P1NP (rho=-0.189; p=0.012). Females with increased %FM had significantly lower osteocalcin (21.3 (18.5, 28.7) ng/mL) (p<0.001) and urinary NTX (26.8 (20.207, 30.375) ng/mL) (p<0.001). Group with normal weight had significantly higher P1NP values (43.95 (33.075, 60.925) mcg/L) when compared to obese group of patients (38.20 (27.05, 52.15) mcg/L) (p=0.004).

Our study results showed lower bone turnover in obese postmenopausal females compared to normal weight females suggesting that adipose tissue might exert protective effect on bone loss by lowering bone turnover. However, larger prospective studies are needed to confirm the findings.

References:


Keywords: bone turnover, postmenopausal females, obesity, bone markers

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treatment of furuncles and carbuncles of the maxillofacial region, taking into account the significant prevalence of the pathology of the cardiovascular system and allergic reactions [3]. One of such methods is electroacupuncture, which is during the treatment of various inflammatory diseases has already established itself as a safe, easy-to-use technique leading to the development of a number of therapeutic effects, namely analgesic, vascular, trophic, anti-inflammatory, anti-stress [1,2]. However, the scientific and medical literature does not contain data on the effectiveness of its use in the treatment of furuncles of the maxillofacial region, which indicates the relevance of the study.

Materials and Methods. We examined 20 patients with maxillofacial furuncles, which were divided into two equal groups. The first group of patients underwent standard complex treatment, including primary surgical treatment (PST) of a purulent focus, antibacterial therapy, physiotherapy after acute inflammation. The second group included patients with the same diagnosis, but with reflexology instead of physiotherapy. Evaluation of the effectiveness of treatment was carried out according to the following criteria: the area of the inflammatory infiltrate and the cytological picture of smears from a purulent wound. Thus, the area of the inflammatory process was calculated according to the following formula \( S = \pi r^2 \), where \( S \) is the area of the circle (cm²), the number \( \pi \) is equal to 3.14 and \( r \) is the radius of the circle (cm). For this purpose, a caliper was used, pretreated with an antiseptic solution. For a cytological study of an infectious-inflammatory focus, a smear of the contents of the bottom of the wound was performed on a pre-skinned slide glass. The preparation was then stained with hematoxylin-eosin and examined using a Leica TCS SPE laser scanning confocal microscope with the LAS AF software. The analysis of the obtained images was carried out on the computer using the program LAS F 3.6.

Results. When studying the dynamics of the infectious-inflammatory focus in the first group of patients on the first day, the mean value of the infiltrate area was 6.84 ± 0.35 cm². The average value on the third day of examination of this area was the following: 3.59 ± 0.21 cm². On the fifth day the area of the inflammatory infiltrate was 1.4 ± 1.74 cm². The results of the examination of patients of the second group showed that on the first day after the PST, the mean value of the infiltrate area for the pathology was 7.02 ± 0.24 cm². The same index on the third day of observation was 3.4 ± 1.32 cm². The result of measuring the inflammatory infiltrate for the fifth was 0.8 ± 0.56 cm². Thus, the reduction in the area of the infiltrate of the boils of the maxillofacial area with standard complex treatment was 79.53%, when the reduction in the area of infiltration of the boils of the maxillofacial area at 88.6% was included in the therapy of the electrotechnical apparatus. The results of the cytological study: for the first day of collection of material from the bottom of the purulent focus in all 20 patients with furuncles the ratio of cellular elements corresponded to the inflammatory pattern. On the third day, in 60% of the patients in the first group, the cellular composition of smears was characterized as inflammatory, and in the remaining 40% as inflammatory-regenerative. In patients of the second group in 70%, the cellular composition of smears was characterized as inflammatory, and in 30% as inflammatory-regenerative. The following situation was observed on the fifth day after the purulent foci of the purulent foci: in 100% of patients with maxillofacial furuncles, which underwent standard complex treatment, the ratio of cellular elements corresponded to the regenerative-inflammatory pattern. In patients who received a reflexotherapy course in addition to standard treatment, this ratio of cell elements was observed in 60%. The remaining 40% ratio of cellular elements corresponded to the regeneration pattern.

Prospects for further research. When included in the complex treatment of patients with boils in the maxillofacial area the course of electroacupuncture, there is a more intense relief of the local inflammatory process, namely: a decrease in the area of the inflammatory infiltrate and a positive dynamics of the change in the cytological picture of the purulent focus in comparison with the results with standard therapy. Further research in this area will improve the complex treatment of furuncles in the face area. And this allows us to recommend electroreflexotherapy for a wider use in clinical practice in patients in this category.

References:


Key words: furuncles, maxillofacial area, reflexotherapy.  

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MONITORING OF EXPRESSION OF ONCOMARKERS IN CANCER AND PRE-CANCER OF THE RECTUM

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Cancer of the rectum (CR) remains actual problem of oncology and medicine in general. The importance of adenoma of the rectum in the development of the CR is confirmed in clinical and biological studies [1]. Dysplasia is considered as morphological pre-cancerous changes. Among markers of proliferative activity is Ki-67 antigen. Expression of Ki-67 in highly differentiated adeno-carcinomas of the rectum (G1) is significantly higher than in adenomas with varying degrees of dysplasia. Expression of mp53 is found in 64% of cases of colorectal cancer...