was examined and treated in 124 patients. Patients were divided into two groups: the first group (64 patients) included patients with generalized periodontitis of grade II, the second group (60 patients) – included patients with generalized periodontitis of grade III. The diagnosis and severity of generalized periodontitis were established in accordance with the classification of M. F. Danilevsky (1994). The index assessment of the condition of periodontal tissues: the index of hygiene – (IG) according to Fedorov – Volodkina, the papillary-marginal-alveolar index – (PMA) in the modification of Parma (1960), the bleeding index – IR by H. P. Muchlemann, S. Son (1971). To determine the quality of life, the OHIP-14 dental questionnaire was used.It is shown that in patients with generalized periodontitis of III grade has deeper character of the lesion of periodontal tissues, the formation of defects in the dentition, significantly higher values of the indices of hemorrhage, PMA and hygiene. In the immune system of patients, generalized periodontitis, as the grade of disease increases, immunodeficiency phenomena: T-lymphocytes and T-cytotoxic lymphocytes/suppressors, hyperimmunoglobulinemia and proinflammatory changes with a predominance of TNF-α and CI-β concentrations in the blood serum increase.The presence in patients with generalized periodontitis II and, especially, grade III significantly reduces the quality of life of patients, the ability to eat and communicate normally, and also worsen overall well-being.

Key words: generalized periodontitis, immunity, cytokines, and quality of life.

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G. S. MANASOVA, A. A. ZELINSKY, I. V. SHPAK, I. V. RUDENKO, T. YA. MOSKALENKO

PERINATAL INFECTION MAY WORSE THE STATE OF MATERNAL BONE

Odessa National Medical University <gulsym0911@gmail.com>

To compare structural condition of the bone tissue in the women with verified perinatal infection (VPI) and in healthy pregnant women in the dynamics of gestation. A prospective study in the dynamics of gestation has been performed in 363 pregnant women, 235 of them (Group I – main group) with VPI. Decrease in bone mineral density (BMD) have been identified already in the 2nd trimester. 128 healthy pregnant women formed control group (Group II). Ultrasound densitometry was used for the assessment of the structural state of bone tissue. BMD indexes matched normal only in 18.29 % (subgroup IB) of the pregnant women with VPI in the 2nd trimester of pregnancy. Osteopenia was diagnosed in 71.91 % (subgroup IA) in terms of BDI (78.07 ± 1.16) %, Z-criterion – (–1.20 ± 0.04) SD. At 9.78 % of the women under observation (subgroup IC: Z-criterion (–2.65 ± 0.24) SD, BDI – (56.35 ± 2.21) %) osteoporosis was diagnosed. BDI in VPI patients and normal values of BMD (subgroup IB) was (86.45 ± 0.74) %, Z-criterion – (–0.90 ± 0.04) SD. In the dynamics of gestation there were significant losses of BMD in both groups, at VPI BMD losses were more pronounced. Probably, the syndrome of systemic inflammatory response may cause BMD loss or exacerbate an existing bone pathology.

Key words: pregnancy, perinatal infection, bone tissue, ultrasound osteodensitometry.

Introduction. Infection has a special role in the state of women's reproductive health plays. Its persistency forms systemic inflammatory response syndrome (SIRS) and contributes to the development of secondary immunodeficiency status.

Low pre-pregnancy level of somatic and reproductive women's health is accompanied by significant complications of gestational period, the growth rate of complicated childbirth, maternal and perinatal morbidity and mortality [1, 19].

In general population the prevalence of infectious diseases caused by exposure to an infectious agent still in uterus can reach 2–14 % [3], depending on the type of pathogen.

Persisting inflammatory changes in various target organs, secondary immunodeficiency are accompanied by failure or insufficient power of contra control systems. Excessive release of monocytes and lymphocytes variety of local growth factors and

cytokines (CK), an imbalance between pro- and antiinflammatory CKs lead to numerous damages of healthy tissues and systemic disorders. The point of application of some CKs and growth factors is remodeling of bone tissue: a number of CKs have the ability to activate osteoclastogenesis (interleukin (IL) IL-1, IL-6, IL-11, TNF-α), while the other (IL-4, IL-10, IL-12, IL-13, IL-18) suppress it [2, 4, 10].

SIRS and immunological changes contribute to disruption of bone tissue metabolism. Rheumatic diseases are a striking example of inflammation effect on bone tissue remodeling: a direct correlation between C-reactive protein level, markers of bone resorption rate and BMD of the femoral neck and spine [5, 12, 13].

In the development of osteopenia at persistent inflammation the disruption of the synthesis and metabolism of vitamin D (VD) highlights. Calcitriol level reducing leads to the loss of BMD due to negative calcium balance and damage of bone tissue remodelling. Furthermore, VD deficiency conduces immunopathological process progression [8, 21].

Objective. To compare the structural and functional state of the bone tissue in VPI women (main group) and in healthy pregnant women (control group) in the dynamics of gestation.

Materials and methods. The study was conducted from 2010 to 2013 in the maternity hospital № 5 (Odessa, Ukraine), the clinical base of the Odessa National Medical University.

The main group consisted of 235 VPI pregnant women. In 192 women (subgroup IA and subgroup IC) reduction of BMD had been identified at the initial examination, 43 VPI pregnant (group IB) had normal BMD values at primary examination. The control group (Group II) included 128 healthy women with physiological gestational process. Primigravidas under 18 years old were excluded from the study, since the bone mass acquisition and the formation of the skeleton is still going on at this age.

Patients with assumed genetic factors impact were excluded from the study as well. None of the women under study have ever taken any medications affecting bone metabolism.

All the patients underwent a complete clinical laboratory examination in accordance with the out-patient standards of pregnant women care, adopted in Ukraine.

The selection of pregnant women for special studies began with the separation of risk for fetal infection based on an assessment of risk factors, including somatic data history, job factors, social status, reproductive history.

When collecting history, attention was paid to genitourinary system diseases in mother (cervical erosion, endocervicitis, colpitis, vulvovaginitis, salpingo-oophoritis, pyelonephritis, urethritis, etc.), the use of long-term intrauterine contraception (over 3 years), repeated abortion; a history of spontaneous abortion, missed abortion, indications to congenital malformations, intrauterine growth retardation (IUGR), antenatal fetal death, stigmas of embryogenesis.

A history of the birth canal soft tissue injuries, the operational mode of delivery (caesarean section, forceps), preterm labor, the use of assisted reproductive technologies were taken into consideration, too.

Bacteriological infection was verified through bacteriological and bacterioscopic methods; to detect specific antibodies IgM, IgA, IgG (TORCH – group infectious organisms) ELISA test was used. It was carried out twice using paired sera and determining avidity of the antibodies revealed.

Assessment of the bone tissue structure was performed by quantitative ultrasound densitometry (QUD) of calcaneus by using SONOST-2006 (South Korea). The method is based on measuring the propagation velocity of ultrasonic waves on the surface of the bone, as well as measurement of broadband ultrasonic wave propagation in the tested portion of the bone. The survey was carried out in the second and third trimesters of pregnancy.

According to the recommendations of the International Society of Clinical Densitometry (ISSD, 2005), Z-criterion parameter (the Mean ± standard deviation (SD)) was taken as a basis for the diagnosis of osteopenia (osteoporosis). It characterizes the

deviation from the age bone mass (ABM) and is recommended for use in children and women of reproductive age [6]. Z-scores ≥ –1, SD indicated normal health, while (2,5 SD < Z-scores < –1) SD and (Z-scores ≤ –2.5 SD) indicated osteopenia and osteoporosis, respectively.

In addition to Z-criterion the wave attenuation when passing through tissue (in dB/MHz) and reflecting not only its density, but also the state of trabecular bones (their number, orientation, presence of micro damages) was taken into account. With the software, both parameters were combined in the aggregate index, defined as the «density» of bone (bone density index – BDI) and calculated as a percentage (%).

Computation of osteodensitometer reference base rates by sex and age.

Patient's BMD data are automatically compared with the reference regulatory framework, calculated deviation of the individual values of the middle-aged norm (-Z-criterion); SD allowed quantitatively distinguish variants of the norm, osteopenia or osteoporosis.

Statistical processing was performed by methods of variance and correlation analysis.

For the preparation of primary contingency and clustering tables features standard functions MS Excell 2010 suite (MicrosoftInc., USA.) were used; determination of criterion values and the basic calculations were performed using the statistical package program Statistica 8.551 (StatSoftInc., USA). After confirmation of normality signs and equality of variances (Kolmogorov's and Fisher's criteria) to compare the groups and to test the hypothesis of equality of distribution centers in the samples, representing quantitative data groups (control and experiment), unpaired Student's t-test was used.

Results. In general, the treatment and control group had no significant differences by age, parity of births, the nature of physical problems, social status, occupation and way of life.

56.17 % of the main group patients were involved in mental work (teachers, lawyers, economists, health workers, service workers), 18.72 % of the women under examination had physical activity (wipers, manufacturing, etc.). The rest 25.11 % of the women did not have a permanent job.

In the control group unemployed patients amounted to 18.75 %; the work of 16.4 % of patients has been associated with heavy physical labor, 64.84 % of women have been linked to mental labor. 50 % of women in both groups led sedentary lifestyle.

The average height of the main group pregnant women was (161 ± 1,3) cm, in the control group it was (160 ± 1.4) cm; the average weight of the patients in the main group was (67.3 ± 1.1) kg and in the control group it was (71.2 ± 1.3) kg, (P ≥ 0.05).

More than 70 % of patients in both groups had normosthenic body type. Body mass index (BMI = 18–25 kg/m^2) was normal in the main group at 29.78 % of the women and at 26.56 % (P ≥ 0.05) of women in the control one; pre-obese (BMI = 25–30 kg/m^2) was detected in 30.63 % of the first group patients and in 28.9 % of the control group women. 21.70 % of the I group and 27.78 % of the II group pregnant women (BMI = 30–35 kg/m2) had obesity of slight degree (P ≤ 0.05). In 17.87 % of the main group and 18.75 % (P ≥ 0,05) of the control group women there was underweight (BMI = 16–18), which may be one of BMD [18] decrease reasons.

By parity of labors the groups were peer as well: 54.89 % of the main group women and 44.53 % of the control one were primagravidas (P ≤ 0.05); there were 45.10 % of multiparous women in VPI group, and in the group of healthy pregnant women there were 55.46 % (P ≤ 0,05). One fourth of pregnancies ended with medical or spontaneous abortion in both groups.

In past medical history 11.06 % of the main group women had pregnancy resulted in the fetus' loss in the early and later stages. In the control group women there were 3.12 % (r ≤ 0,01) of such losses. The presence of artificial abortion mentioned 28.33 % of the main and 19.34 % (r ≤ 0,01) of the control group women; in addition, 3.77 % of the main group patients indicated the presence of premature birth, and none from the control group did.

Previous pregnancy were complicated by later preeclampsia in 6.6 % of the I group women, in the II group there were 2.81 % ($r \geq 0{,}05$) of cases. Caesarean section had 8.49 % and 4.22 % of women, respectively to the groups ($P \leq 0{,}05$) (Table).

Characteristics of obstetric and gynecological history of the pregnant under examination

Index	VPI group (n = 235)		Control group (n = 128)		Importance, P
	abs. n	%	abs. n	%	
Nulliparous	129	54.89	57	44.53	≤ 0.05
Primigravidas	97	75.19	42	73.7	≤ 0.05
Multiparous (1 labor in the history)	106	45.1	71	55.46	≤ 0.05
Medical abortion in nulliparous	11	8.52	3	5.26	≤ 0.05
Medical abortion in multiparous	21	19.81	10	14.08	≤ 0.05
Spontaneous abortions up to 12 weeks	19	8.08	3	2.34	≤ 0.01
Fetal losses in late pregnancy	7	2.97	1	0.78	≤ 0.05
Late gestosis	7	6.6	2	2.81	≤ 0.05
Premature births in history	4	3.77	–	–	–
Caesarean section in history	9	8.49	3	4.22	≤ 0.05
Dysmenorrhea in history	35	14.89	9	7.03	≤ 0.01
Late menarche	33	14.04	8	6.25	≤ 0.01
Chronic adnexitis	56	23.32	17	13.28	≤ 0.05
Cervical diseases	61	25.95	6	4.68	≤ 0.01
Early onset of sexual activity	39	16.59	10	7.81	≤ 0.01
Primary infertility	3	1.27	–	–	–
Uterine fibroids	2	0.85	–	–	–

In addition to obstetric problems, a number of patients (14.89 % in the main and 7.03 % in the control group $P \leq 0.01$) noted menstrual dysfunction (algo-, dysmenorrhoea), later menarche was in 14.04 % and 6.25 % ($r \leq 0{,}01$) of women. 23.82 % of the VPI pregnant indicated uterus chronic inflammatory diseases in the history and 13.28 % ($P \leq 0.05$) from the control group women; cervical disease mentioned 25.95 % and 4.68 % ($r \leq 0.01$) of women, respectively. Noteworthy is the fact of early sexual relations at 16.59 % and 7.81 % of the patients respectively to groups ($r \leq 0.01$): the average age of sexual activity onset in the VPI pregnant was (16.40 ± 0.15) years, in control group it was – (19.4 ± 0.4) years ($P \leq 0.05$). Frequent change of sexual partners combined with the early onset of sexual activity was observed in 16.59 % of the I group patients, in the II group this index equals to 7.81 % ($r \leq 0.01$). In addition, 1.27 % patients of the main group had a history of primary infertility, and in 0.85 % of them uterine fibroids was diagnosed.

With regard to obstetric problems, pregnancy losses both early and later were 3.45 times more frequent in VPI women; thrice often were complications of a previous pregnancy with late preeclampsia, and abdominal delivery was 4 times more often.

Indexes of ultrasonic a calcaneus' osteodensitometry showed BMD decrease in VPI women as compared to those in healthy pregnant.

Only 18.29 % (subgroup 1-B) of VPI pregnant in the 2nd trimester of pregnancy had normal BMD indices.

Osteopenia was diagnosed in 71.91 % (subgroup IA) at BDI (78.07 ± 1.16) %, Z-test – (–1.20 ± 0.04) SD. At 9.78 % of women (subgroup IC), if different from age-related bone loss, equal to (–2.65 ± 0.24) SD, and BDI – (56,35 ± 2,21) %, osteoporosis was diagnosed. BDI at the patients with VPI and normal BMD values (subgroup IB) was (86.45 ± 0.74) %, Z-criterion – (–0.90 ± 0.04) SD (Fig. 1).

Bone mineral density corresponded to normal in 18.29 % of women with VPI and 76.57 % of healthy women ($P \leq 0.001$). Osteopenia was diagnosed in 71.91 % of VPI pregnant women and 23.43 % of healthy pregnant women ($P \leq 0{,}001$).

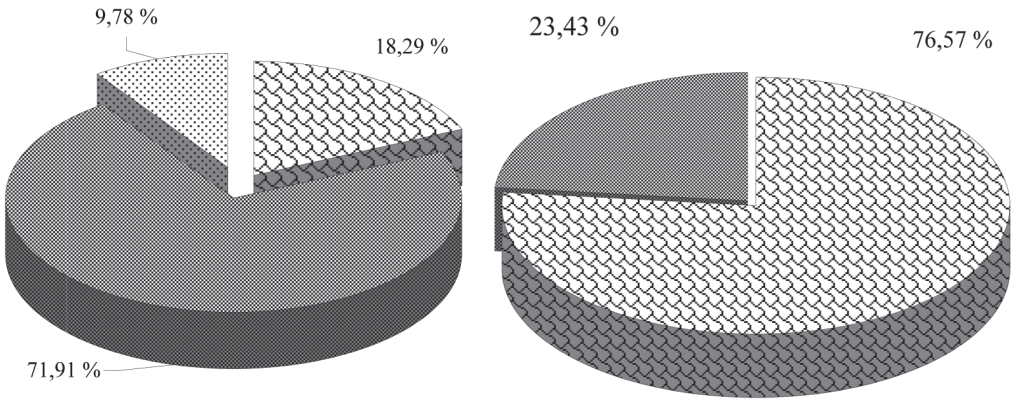

Fig. 1. The distribution of patients of both groups on the characteristics of bone densitometry at the initial examination in the second trimester (P ≤ 0,001):
a – pemant with VPI; b – healthy pregnant; – normal state of BMD; – osteopenia; – osteoporosis

At 9.78 % of VPI pregnant women was diagnosed osteoporosis. In healthy pregnant at the 2nd trimester osteopenia was diagnosed in 13.28 % of women (subgroup IIB, Z-criterion – (–1.12 ± 0,07) SD, BDI – (81.74 ± 2.23) %) . In 86.71 % of the women (subgroup IIA, Z-criterion – (–0.35 ± 0.05) SD, BDI and (93.91 ± 1.62) %) had normal BMD indices.

In general, the dynamics of densitometry data in all the groups were characterized by a gradual BMD decrease with increasing gestational age.

Deviation from the age of bone mass for Z-criterion from the standard indixes in sub-I-A with primary osteopenia at VPI increased from (–1,20 ± 0,04) SD up to (–2,21 ± 0,06) SD (P ≤ 0 , 01); in subgroup IB from (–0,90 ± 0,04) SD to (–1,94 ± 0,15) SD (P ≤ 0,01) and in subgroup IC – from (–2,55 ± 0,16) to (–2,67 ± 0,23) SD (P ≥ 0,05) (Fig. 2). Correlation analysis confirmed the existence of a direct relationship between the magnitude SD from age bone mass and gestation term in VPI pregnant women (*r* = 1).

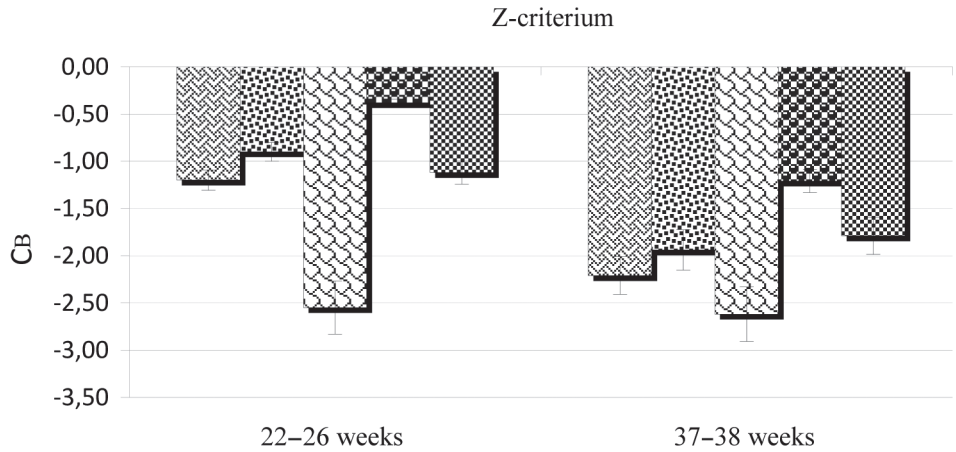

Fig. 2. The standard deviation of age bone mass (Z- criterion, SD) in VPI pregnant women and healthy pregnant women in the dynamics of gestation:
– I-A (*n* = 169); – I-B (*n* = 43); – I-C (*n* = 23); – II-A (*n* = 98); – II-B (*n* = 30)

In VPI patients and primary osteopenia (subgroup I-A), the value SD in the second trimester was (–1.20 ± 0.04) SD, in the third – (–2.21 ± 0.06) SD (P ≤ 0.01).

In pregnant women with normal BMD and VPI (subgroup IB) Z-criterion was equal to (–0.90 ± 0.04) SD in the second and (–1.94 ± 0.15) SD – in the third trimester ($P \leq 0.01$); in VPI pregnant and osteoporosis diagnosed in the second trimester of pregnancy, the amount of Z-criterion was (–2.55 ± 0.16) to (–2.67 ± 0.23) SD ($P \geq 0.05$).

In healthy pregnant women with normal BMD (subgroup IIA) deviation from age bone mass was (–0.35 ± 0.02) SD and (–1.21 ± 0.05), respectively the second and third trimesters of pregnancy.

In the group of healthy pregnant women with osteopenia at the initial examination in the 2nd trimester (subgroup IIB), the value is equal to Z-criterion (–1.12 ± 0.07) SD and (–1.79 ± 0.03) SD.

In subgroups IIA (–0.35 ± 0.02) SD and (–1.21 ± 0.05) and IIB (–1.12 ± 0.07) SD and (–1.79 ± 0.03) SD) Z-criterion deflection with increasing gestational age also reflected BMD decrease; at VPI the changes were of valid character ($r \leq 0.01$). The correlation between gestational age and Z-criterion in healthy pregnant group was strong ($r = 1$).

BDI in all women in dynamics of gestation testified about bones structural condition deterioration (Fig. 3).

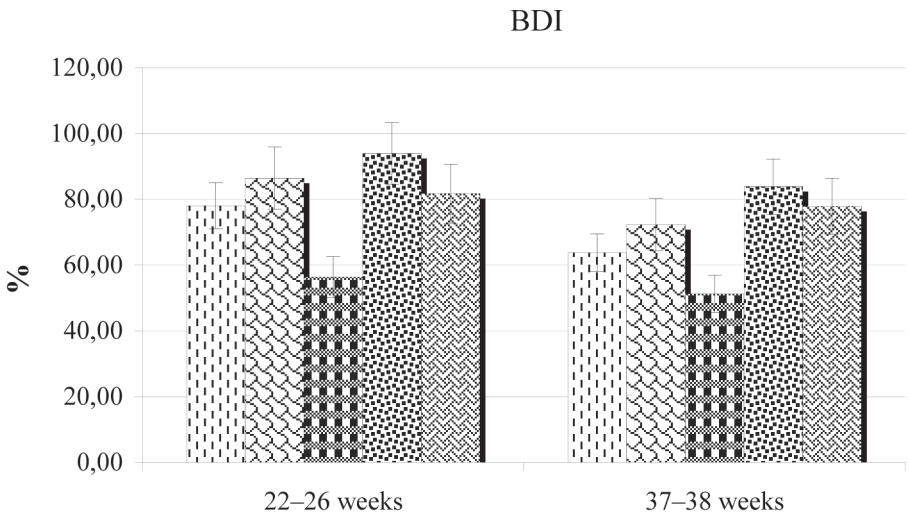

Fig. 3. The indicators of bone density index (BDI) in VPI pregnant and healthy pregnant women in the dynamics of gestation:
– IA ($n = 169$); – IB ($n = 43$); – IC ($n = 23$); – IIA ($n = 98$); – IIB ($n = 30$)

In pregnant women with osteopenia and VPI at the initial examination in the second trimester BDI equals (78.07 % ± 1.16 % in the 3rd –63.76 % ± 1.34 %); in women with normal BMD at the initial examination (subgroup IB) bone quality index was equal to (86.45 ± 0.74) % and (72.3 ± 0.86) %), respectively, the second and third trimesters; and in pregnant women with osteoporosis at the initial examination (subgroup IC) BDI was (56.35 ± 2.21) % and (51.27 ± 2.5) %.

In healthy women with normal BMD (subgroup IIA) BDI was (93.91 ± 1.62) % in the second trimester and (83.88 ± 1.54) % – in the third trimester ($P \leq 0.01$); in healthy women with initial osteopenia in the subgroup IIB – (81.74 ± 2.23) % and (77.88 ± 1.71) %, respectively to the second and third trimesters of pregnancy ($P \leq 0.05$).

Thus in healthy pregnant in subgroup IIA – (93.91 ± 1.62) % and (83.88 ± 1.54) % ($P \leq 0.01$), and in subgroup – IIB – (81.74 ± 2.23) % (77.88 ± 1.71 %, ($P \leq 0,05$),

BDI was significantly higher as compared with the indexes of VPI patients in subgroups IA (78.07 % ± 1.16 % and 63.76 % ± 1.34 %), 1B (86.45 % ± 0.74 % and 72.3 % ± 0.86 %), and IC (56.35 ± 2.21) % and (51.27 ± 2.5) %.

Pearson's correlation coefficients in the main and control groups of pregnant show a clear inverse linear relationship ($r = -1$) of bone tissue density index and gestational age. In the 3rd trimester of pregnancy BMD parameters deteriorated in both groups, the changes were significant in both healthy and VPI women.

Osteoporosis patients of the main group are especially noteworthy. It was diagnosed already at the initial examination in every tenth women (9.77 %). Z-criterion was – (–2.55 ± 0.03) SD ($P \leq 0.001$), BDI – (56.35 ± 1.59) %, bone density was reduced by almost half.

Discussion. It's common knowledge that multifactoriality is one of osteoporosis features: chance of primary or secondary osteoporotic bone tissue lesions is at practically any disease of gastrointestinal tract, urinary, endocrine, reproductive and other body systems. Important is also the influence of genetic factors, lifestyle, dietary habits, bad habits, degree of physical activity, profession [22].

Genetic factors, somatic anamnesis of patients, their age are unmodified risk factors for osteoporosis, so their uniformity was the leading principle of main and control group patients selection. According to anthropometric data, race, occupation, physical activity, which together have a significant influence on the formation of the peak and the strength of the bone tissue, the group also were peer.

There are literature data that young adult healthy women with low BMD average age of menarche formation is significantly more and differs from population physiological 1.9 times [16]. We found that among VPI women there are 2.25 times more patients with late formation of the menstrual cycle than in healthy pregnant. In VPI group there are 2.11 times more patients with menstrual cycle disorders, 1.8 times – with inflammatory diseases of the uterus, 5.5 times more – with cervical pathology (see Table).

In modern obstetric practice various complications of gestational process, such as pre-eclampsia, HELLP-syndrome, anti-phospholipid syndrome, and others are considered from the point of view of the systemic inflammatory response syndrome (SIRS) of the body [15].

Perhaps burdened obstetric and gynecological history in VPI women can be considered as one of SIRS manifestations. Significantly higher rate of late gestosis, spontaneous interruptions in early and late pregnancy, fetal loss syndrome, premature births say for this (Table).

Violation of the immunological status occurs in 70–75 % of chronic urogenital infection patients; immunopathology may lead to inflammatory processes of the various organs and systems with the formation of multiple organ dysfunction. Bone tissue is among the targets of SIRS [7].

Nowadays "cytokine regulation of gestation" is treated as one of the leading physiological mechanisms responsible for violations of adaptation at various pregnancy complications. It has been found that the physiological course of pregnancy is accompanied by a gradual change in cytokine status and cytokines participated in the genesis of late gestosis of pregnancy [20], intrauterine growth retardation, fetal infections, postpartum septic processes, and other complications of pregnancy [17, 11].

Under certain conditions and various complications of gestation, particularly at perinatal infection, uterine-placental macrophages, designed to carry non-specific protection against the action of pathogenic factors become the producers of "aggressive" or "abortive" inflammation; due to an imbalance between pro- and anti-inflammatory cytokines resorption of bone tissue induces [14].

It is known that increased demands on calcium homeostasis related to the need for fetal skeletal mineralization are the leading cause of BMD loss during pregnancy and lactation [9].

Our results of VPI and healthy pregnant osteodensitometric survey show significant violations of bone tissue remodeling during pregnancy.

The bone tissue structural condition both in healthy and VPI pregnant is characterized by its decrease in mass as gestation develops.

Bone tissue density index both in healthy pregnant and in women with perinatal infection has a clear inverse linear dependence on the duration of pregnancy (see Fig. 3): the greater is the period of pregnancy, the less is bone tissue strength.

Deviations from the age-old bone mass in infected women already in the second trimester showed the presence of osteopenic syndrome in 2/3 of patients, and in every tenth patient the decrease of BMD corresponded to osteoporosis (see Fig. 2).

There is a significant correlation dependence of deviation indicator from age bone mass and term of pregnancy: the longer is pregnancy, the more pronounced is the standard deviation from the reference index age bone mass.

At VPI decrease in BMD is more pronounced and changes in less time if compared with those in a group of healthy pregnant women.

Conclusions. The results of the comparative ultrasonic densitometric evaluation of the structural condition of the bone tissue in the dynamics of gestation in pregnant women with verified perinatal infection and in healthy pregnant women suggest that perinatal infection is a risk factor for osteoporosis in pregnancy and exacerbates the existing osteopenic syndrome.

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Conflict of interests. The authors declare no conflict of interests.

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ПРО ВПЛИВ ПЕРИНАТАЛЬНОГО ІНФІКУВАННЯ НА СТАН КІСТКОВОЇ ТКАНИНИ ВАГІТНОЇ

Г. С. Манасова, А. А. Зелінський, І. В. Шпак, І. В. Руденко, Т. Я. Москаленко (Одеса)

Наведено результати порівняльного динамічного дослідження структурного стану кісткової тканини у вагітних з верифікованим перинатальним інфікуванням (ВПІ) та у здорових вагітних. Обстежено 363 жінки. Зниження мінеральної щільності кісткової тканини (МЩКТ) виявлено у 192 пацієнток (підгрупа ІА) з ВПІ вже у II триместрі вагітності. У 43 жінок з ВПІ (група ІВ) показники МЩКТ були в межах норми. Контрольну групу становили 128 здорових вагітних (підгрупа II). Для оцінки структурного стану кісткової тканини використовували ультразвукову денситометрію. У II триместрі вагітності МЩКТ відповідала нормальним показникам тільки у 18,29 % (підгрупа ІВ) вагітних з ВПІ. Остеопенію було діагностовано у 71,91 % (підгрупа ІА) при показниках індексу якості кістки – ІЯК – (78,07 ± 1,16) %, Z-критерію – (–1,20 ± 0,04) СВ (стандартне відхилення). У 9,78 % жінок з ВПІ діагностовано остеопороз (підгрупа ІС): Z-критерій – (–2,65 ± 0,24) СВ, ІЯК – (56,35 ± 2,21) %. ІЯК у пацієнток з ВПІ і нормальним станом кісткової тканини (підгрупа І-В) становив (86,45 ± 0,74) %, Z-критерій – (–0,90 ± 0,04) СВ. В динаміці вагітності спостерігали значні втрати МЩКТ в обох групах, але при ВПІ погіршення структурного стану кісткової тканини було більш вираженим.

Ключові слова: вагітність, перинатальна інфекція, кісткова тканина, ультразвукова остеоденситометрія.

О ВЛИЯНИИ ПЕРИНАТАЛЬНОГО ИНФИЦИРОВАНИЯ НА СОСТОЯНИЕ КОСТНОЙ ТКАНИ БЕРЕМЕННОЙ

Г. С. Манасова, А. А. Зелинский, И. В. Шпак, И. В. Руденко, Т. Я. Москаленко (Одесса)

Приведены результаты сравнительного динамического исследования структурного состояния костной ткани у беременных с верифицированным перинатальным инфицированием (ВПИ) и у здоровых беременных. Обследовано 363 женщины. Снижение минеральной плотности костной ткани (МПКТ) выявлено у 192 пациенток (підгрупа ІА) с ВПИ уже во II триместре беременности. У 43 женщин с ВПИ (підгрупа ІВ) показатели МПКТ были в пределах

нормы. Контрольную группу составили 128 здоровых беременных (группа II). Для оценки структурного состояния костной ткани использовали ультразвуковую остеоденситометрию. Во II триместре беременности МПКТ соответствовала нормальным показателям только у 18,29 % (подгруппа IB) беременных с ВПИ. Остеопения выявлена у 71,91 % (подгруппа IA) при показателях индекса качества кости – ИКК – (78,07 ± 1,16) %, Z-критерия – (–1,20 ± 0,04) СО (стандартное отклонение). У 9,78 % женщин с ВПИ диагностирован остеопороз (подгруппа IC): Z-критерий (–2,65 ± 0,24) СО, ИКК – (56,35 ± 2,21) %. ИКК у пациенток с ВПИ и нормальным состоянием костной ткани (подгруппа IB) составил (86,45 ± 0,74) %, Z-критерий – (–0,90 ± 0,04) СО. В динамике беременности наблюдались значительные потери МПКТ в обеих группах, но при ВПИ ухудшение структурного состояния костной ткани было более выраженным.

Ключевые слова: беременность, перинатальная инфекция, костная ткань, ультразвуковая остеоденситометрия.

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Н. Д. МУРАТОВА[1], Г. С. БАБАДЖАНОВА[2], Д. Д. ЭШОНХОДЖАЕВА[3]

ЦИТОТОКСИЧЕСКАЯ АКТИВНОСТЬ ФАКТОРА TGF-β_2 ОТНОСИТЕЛЬНО КЛЕТОК МИОМЫ МАТКИ

[1]Кафедра предметов хирургического направления (зав. – доц. Н. Р. Янгиева) Ташкентского государственного стоматологического института; [2]Кафедра акушерства и гинекологии (зав. – проф. Ф. М. Аюпова) Ташкентской медицинской академии; [3]Ташкентский педиатрический медицинский институт
<muratova-84@yandex.ru> <babadjanova@mail.ru>

Одним из основных факторов роста, вовлечённых в патогенез миомы матки, является трансформирующий фактор роста (TGF), играющий ключевую роль в осуществлении и регуляции пролиферации, дифференцировке тканей и др. Проведены исследования по определению цитотоксической активности фактора TGF-β_2 временной культуры клеток, полученных из операционных образцов пролиферирующей миомы матки, которые были разделены на пять групп в зависимости от воздействующей дозы. Наивысшая эффективность угнетения жизнедеятельности трансформированных клеток выявлена при воздействии TGF-β_2 в дозе 1000 мкг/(10 · 10^6 кл.). Обладая выраженным дозозависимым цитотоксическим эффектом клеток пролиферирующей миомы матки, фактор TGF-β способен индуцировать появление апоптозных клеток.

Ключевые слова: трансформирующий фактор ростаTGF-ß$_2$, пролиферирующая миома матки, цитотоксическая активность, апоптоз.

Актуальность. Одним из основных факторов роста, вовлечённых в патогенез миомы матки, является трансформирующий фактор роста (TGF). Это мультифункциональный цитокин, играющий ключевую роль в осуществлении и регуляции таких механизмов, как клеточная миграция, пролиферация и дифференцировка тканей, воспалительный процесс, ремоделирование соединительной ткани и др. Избыточная продукция этого фактора роста строго ассоциирована с процессом фиброза в различных тканях.

Семейство TGF-β включает группу гомологичных гетеродимерных белков TGF-β_1–TGF-β_4. Основной изоформой, секретируемой клетками иммунной системы, является TGF-β_1. Белки семейства TGF-β синтезируются в виде препропептида, от которого в результате процессинга отщепляется сигнальный пептид и продомен с образованием зрелого белка. Пропептид, или LAP (latency associated peptide), остаётся связанным со зрелой молекулой нековалентными взаимодействиями. Благодаря этому зрелая молекула белка является биологически неактивной, латентной формой, в виде которой TGF-β хранится в экстрацеллюлярном