tic marker of the functional state of mitochondria and their disturbances for the evaluation of respiratory system in patients with type 1 diabetes mellitus.

KEYWORDS: diabetes mellitus, mitochondrial function.

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EFFICIENCY OF THE CRITERION OF NEONATAL THYROID-STIMULATING HORMONE IN MONITORING OF IODINE DEFICIENCY IN THE ENDEMIC TERRITORY

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Aim. To evaluate the effectiveness of using the criterion of neonatal hyperthyrotropinemia in monitoring of iodine deficiency in an endemic area. **Material and methods.** The analysis of thyrotropic hormone (TSH) indices in the whole blood of newborns was performed, determined within screening for congenital hypothyroidism in the Tyumen region for the period from 1994 to 2015. The study of neonatal TTG was performed based on the Tyumen regional perinatal center by the method of bilateral fluorometric linked immune ferment assay. Results of medical and biological monitoring during this period were used to establish the correlation: the frequency of iodine deficiency goiter among prepubertal children. Statistical processing of the material was done using the Statistica software package («StatSoft.Inc.», USA, 8.0). **Results.** In 1994, the World Health Organization (WHO) included the level of neonatal hyperthyrotropinemia above 5 mU/l, in the list of criteria for severity of iodine deficiency (ID) in the territory. According to WHO recommendations, for regions with a safe iodine supply, this indicator is determined in no more than 3% of newborns. The level of neonatal hyperthyrotropinemia above 5 mU/l in 2015 is defined in 5.3% of newborns (n=1253), which characterizes the Tyumen region as a territory with a slight iodine deficiency. During the implementation of the iodine deficiency prevention programs in the region, significant improvements were achieved in the 20-years period — the frequency of goiter among schoolchildren in the Tyumen region decreased from 87% in 1995 to 6.8% in 2016 ($p<0.001$). The incidence of neonatal TSH> 5 mU/l decreased from 44.7% in 1995 to 5.3% in 2015 ($p<0.001$). A highly positive statistically significant association was revealed between the neonatal TSH> 5 mU/l and the frequency of iodine deficiency goiter in prepubertal children group ($r = 0.94$, $p<0.05$), which indicates the effectiveness of neonatal hyperthyrotropinemia as a monitoring criterion for ID, which has a number of advantages comparing to other criteria of ID: at first, screening for congenital hypothyroidism covers all newborns, and secondly, the use of neonatal TSH data, determined within program, does not require additional financial costs. Thus, frequency of neonatal hyperthyrotropinemia criterion can be used both to evaluate the severity of ID in the region, and as a criterion for monitoring of the preventive programs implementation in endemic areas.

KEYWORDS: iodine deficiency, thyrotropic hormone.

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FEATURES OF DISTAL FOREARM FRACTURE IN PERSONS 50 YEARS OLD AND OLDER

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Objective. To identify the prevalent fracture risk factors in the group of persons 50 years and older. Assess their impact on BMD in patients with a distal forearm fracture (DFF-fracture of the radius) over 50 years at low injury. **Material and methods.** A comparative study among patients with DFF in the age group 50 years and older. Study based on medical records of city hospital traum depatment. Analised period 2009—2012. All patients underwent R-densitometry on the unit DTX-200, provided by Nicomed Takeda in the framework of the program «Russian Osteoscreening». **Results.** Hospital records of patients 50 years and older who suffered from low-energy fracture of the distal forearm were analyzed retrospectively for the period of 2009—2012. 791 patients were interviewed using standardized questionnaires «Osteoscreening Russia». According to the survey the metabolic syndrome (MS) diagnosed in 70.8% (560 persons). It included type 2 diabetes mellitus (T2DM) —14.8% (117 persons), prediabetes — 22.9% (181 people) — (Impaired glucose tolerance (IGT) and impaired fasting glucose (IFG)), obesity (33.1%) — an isolated cohort of patients with overweight and obesity without disrupting glycemic indices. All patients had DFF that occurred at a low injury. Among the investigated cohort of patients with highnormal bone mineral density (BMD above — 1.0 standard deviation (SD) we revealed 66.0% of patients with MS; 64.1% — with obesity; 65.4% — with the presence of pre-diabetes; 65.3% — with a history of type 2 diabetes. BMD — 1,0—2,5 SD: 20.6% with MS; obesity, 20.2%; prediabetes, 19.7%; type 2 diabetes —19.5%; BMD below 2.5 standard deviations (SD): MS at 13.5%; obesity, 15.7%; prediabetes, 14.7%; Type 2 DM —15.3%. Patients with low-energy DFF with a history of metabolic syndrome differed from the group of patients without this disease by its high and highnormal % normal BMD. Almost $^2/_3$ (70.8%) of patients with metabolic syndrome have normal BMD. **Conclusion.** The prevalence of low BMD in patients of investigated groups has not been established. Proposed mechanism of fracture is focused not on the performance of T-score (BMD) but the bone quality due to changes caused by abnormality of bone metabolism. Suppression of medullary osteoblastogenesis by adipocytes of bone marrow and stimulation of