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BONE MINERAL DENSITY IN WOMEN OF REPRODUCTIVE AGE WITH CHRONIC ESTROGEN DEFICIENCY

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Background. Chronic sex steroid deficiency during the reproductive period may lead to metabolic disturbances and impaired bone mineralization. Estrogen deficiency occurring during the period of peak bone mass accumulation may contribute to the development of osteopenia and osteoporosis in young women.

Objective:

to determine the nature and prevalence of bone-destructive changes in women of reproductive age with chronic estrogen deficiency.

Materials and Methods.

A total of 60 women aged 20–30 years with hypogonadotropic and hypergonadotropic hypogonadism were examined. The diagnosis was verified based on clinical and instrumental findings, hormone test results, including serum concentrations of gonadotropins and sex steroids, and functional tests. Bone mineral density (BMD) was assessed in all patients using quantitative ultrasound densitometry with a Sunlight Omnisense 7000/8000 device (Israel). The comparison group consisted of 82 women of the same age with age-appropriate menarche and normal menstrual function. Densitometry results were evaluated using the T-score.

Results.

Persistent hypogonadotropic hypogonadism was diagnosed in 24 patients (40.0%), while hypergonadotropic hypogonadism was identified in 36 patients (60.0%). In women with hypogonadotropic hypogonadism, mean FSH and LH concentrations were 1.8 ± 0.3 IU/L and 2.1 ± 0.2 IU/L, respectively. In women with hypergonadotropic hypogonadism, mean FSH and LH concentrations were 44.1 ± 3.6 IU/L and 38.4 ± 2.9 IU/L, respectively. Mean estradiol concentrations were markedly reduced in both

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groups: 34.2 ± 5.4 pmol/L in women with hypogonadotropic hypogonadism and 29.8 ± 6.2 pmol/L in women with hypergonadotropic hypogonadism.

The mean age of the examined women was 22.8 ± 0.2 years, compared with 22.2 ± 0.3 years in the comparison group. Normal age-appropriate BMD was found in 15 patients ($25.0\% \pm 9.7$). Osteopenia was diagnosed in 29 patients ($48.3\% \pm 9.2$), while osteoporosis was identified in 16 patients ($26.7\% \pm 9.7$). In the comparison group, osteopenia was detected in 12.2% of women, whereas osteoporosis was not identified. Normal BMD was observed in 87.8% of the healthy women.

Conclusion.

Chronic estrogen deficiency in women of reproductive age is associated with a high prevalence of reduced bone mineral density. Osteopenia and osteoporosis were detected in 75.0% of women with hypogonadism, indicating substantial impairment of bone metabolism during the period of peak bone mass accumulation. Early assessment of bone mineral density may therefore be important in women with chronic estrogen deficiency.

Keywords:

estrogen deficiency, hypogonadism, bone mineral density, osteopenia, osteoporosis, reproductive age, estradiol.