HYPERTHYREODIZM INDUCED OSTEOPOROSIS –
ASPECTS OF COMORBIDITY

M. Zodelava, N.Tskhovrebashvili ,
T. Mamaladze

Clinic of Aesthetic, Reconstructive and Plastic Surgery,
“Caraps Medline”
Tbilisi, Georgia

Osteoporosis is widely spread disease connected with worsening in human life’s conditions and with important financial dues for the treatment and rehabilitation. The risk of the spontaneous fractures, as the basic osteoporosis complications, threatens in every third woman and of every fifth man at the age to or after 50 [8]. Almost all diseases in endocrinologists practice, complicate in primary osteoporosis and very often in primary and secondary osteoporosis simultaneously [4].

Information on the union of thyroid gland diseases and the primary osteoporosis first time appeared in Medical Guide in 1891. It is connected to the German scientist Frederic von Recklinghausen’s F.D., who described the skeletal lesions during two endocrine pathology – so called fibrous osteitis, during the hyper function of parathyroid glands and bone fractures of the long-term current untreated hyperthyreosis cases [9].

In 1941 American endocrinologist Albright reviewed hormones deficiency connection with bones pathology as classic example of menopause osteoporosis [2]. Despite the fact, that the thyroid gland and osteoporosis linkage revealed long time ago, the problem is still not losing a high priority and remains the matter of intensive research [1]. The particular importance gains a hormonal activity of different nosology. It turned out that diseases current with hyper thyreosis especially influence on the bone remodeling. However, condition current with hypothyreosis and subclinical conditions with euthyreosis, able to have some imbalance in the process of osteogenesis [7].

By the latest methods of research, the scientists approached the systemic connection of the main mechanisms of osteoporosis and thyroid gland pathology [1]. TSH high-level activity which is some extent genetically condition, maintained their adequate response to the stimulation, which provides stimulation of remodeling of osteogenesis active phase [8].
MATERIAL AND METHODS: Two groups of women were studied: I group – 17 premenopausal women with hyperthyroidism (TSH≤ 0.05 µIU/ml; FT4 1.9-2.8 ng/ml) in the age of 20 - 40 years; II group – 18 postmenopausal women with hyperthyroidism in the age of 45-60 years (TSH≤ 0.04 µIU/ml; FT4 2.3-3.78 ng/ml). Women with hyperthyroidism were medicated with thyrozol (20 to 30µg/day) for two years. These groups were compared with 15 age-matched control group. BMD measurements were accomplished by quantitative ultrasound technique Sunlight Omni sense 7000S. Results were interpreted in accordance with criteria adopted by the WHO by T-score. In both groups BMD was studied before and after two years of medication.

RESULTS.

In both groups of women with hyperthyroidism before medication the mean BMD was decreased.

Figure 1. Bone mineral density in women with hyperthyroidism before and after medication

I group  T-score: distal 1/3 radius -2.0± 0.06; midshaft tibia -1.8±0.06; proximal phalanx of the third finger -2.4±0.08; II group T-score: -2.6±0.07; -2.4±0.05; -2.9±0.06. After 2 year of medication in both groups of women BMD was increased:  I group T-score:
respectively, reflecting different degrees of osteopenia and osteoporosis. After therapy the women in both groups with hyperthyroidism have TSH and FT4 in normal ranges and euthyroid state was achieved [Fig. 1].

Bone mineral density in women with hyperthyroidism before medication.

I. Premenopausal women with hyperthyroidism.
II. Postmenopausal women with hyperthyroidism.

Bone mineral density in women with hyperthyroidism after medication.

III. Premenopausal women without hyperthyroidism.
IV. Postmenopausal women with hyperthyroidism.

1. Distal 1/3 radius.
2. Midshaft tibia
3. Proximal phalanx of the third finger.

CONCLUSIONS

1. From a preliminary examination it appears that both young and older hyperthyroid patients showed a significantly decreased BMD compared with control group. However, the risk of osteoporosis is even greater for women who are already postmenopausal.
2. It is assured that in patients with hyperthyroidism induced osteoporosis, bone mass may be reversed with treatment of thyroid disease.
3. Those who show evidence of decreased BMD should receive calcium-rich food and prescriptions of osteo therapeutics when deemed necessary.

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SUMMARY

Despite that the linkage between thyroid gland and osteoporosis, revealed long time ago, the problem is still not losing a high priority and remains the matter of intensive research. Two groups of women were examined. I group – 17 premenopausal women with hyperthyroidism age of 20 - 40 years; II group – 18 postmenopausal women with hyperthyroidism age of 45 - 60 years Women with hyperthyroidism were medicated with thyrozol (20 to 30µg/day) for two years. From a preliminary examination it appears that both, young and older hyperthyroid patients showed a significantly decreased BMD compared with control group. However, the risk of osteoporosis is even greater for women
who are already postmenopausal. It is assured, that in patients with hyper thyreodizm induced osteoporosis bone mass may be revered with treatment of thyroid disease. Those who show evidence of decreased BMD should receive calcium-rich food and prescriptions of osteo therapeutics when deemed necessary.

*Key words:* Oteoporosis, TSH-Receptor, Hyperthyreoidizm, BMD (Bone mineral density).

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**ASPECTS OF COMORBIDITY OF HYPERTHYREOIDISM AND OSTEOPOROSIS**

M. Zodelava, N. Chvrebashvili, T. Mamaladze

Clinic of Aesthetic, Reconstructive and Plastic Surgery, "KapreMedlain", Tbilisi, Georgia

**RESUME**

Despite the fact that the connection between diseases of the thyroid gland and osteoporosis has been established for a long time, the problem still retains a high priority and remains a topic of intensive research. Two groups of women were studied: I group – 17 women in premenopause, with hyperthyroidism, aged 20-40 years; II group – 18 women in postmenopause, with hyperthyroidism, aged 45-60 years. The control group consisted of 15 women of the same age. The patients received tiroxol (from 20 to 30μg/day) for two years. According to preliminary data, in young and elderly patients with hyperthyroidism, a significant decrease in bone mineral density was observed compared to the control group. However, the risk of developing osteoporosis is higher for women in postmenopause. In patients with osteoporosis induced by hyperthyroidism, an increase in bone mass may...
быть достигнуто лечением заболеваний щитовидной железы. Лица с выявленной пониженной минеральной плотностью костной ткани должны получать богатые кальцием продукты питания и при необходимости проводит медикаментозную терапию.

**Ключевые слова:** остеопороз, TSH-рецептор, гипертиреоидизм, BMD

минеральная плотность костной ткани.
ძვლისმინერალურისიმკვრივის მნიშვნელოვნად შემცირებას კონტროლოჯგუფთან არ ბით. მიუხედავად ამისა, ისტერიორული ინფექციის შემთხვევაში ღონისძიებების სახიშეშობით და პატიენტებში ღონისძიებების სავარაუდობაში ზრდის შემცირება ყველაზე მნიშვნელოვანია. ჰიპერთირეოიდმა იმოქმედობა ჭირდის შემცირების სავარაუდობაში. პატიენტების ტერიტორიაზე დანარჩენი ხაზები მიერში ღონისძიებაში გადამდინარეობის ამოთვლის დროს კლასიფიცირდება. მისი ყველაზე ძალიან დიდი ხარჯი არ ჰქონდა, შესაძლოა უბილობა მკურნალობის გადახდა.