

# DIAGNOSTICS OF THE HETEROTOPIC OSSIFICATION IN PATIENTS WITH SPINAL CORD INJURY

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**Key words:** *heterotopic ossification, spinal cord injury, bone*

**Aim.** The aim of the study was to define the peculiarities of bone remodeling and identify specific parameters to development to heterotopic ossification.

**Methods.** Markers of bone formation (Osteocalcin, serum type 1 procollagen (N-terminal) (tP1NP)) and bone resorption (serum collagen type 1 cross-linked C-telopeptide ( $\beta$ -CTX)) were determined by the electrochemiluminescence immunoassay "ECLIA" for Elecsys user cobas immunoassay analyzer.

In the study were included 23 patients with spinal cord injury – first group (average age  $26.8 \pm 3.9$  years, duration of spinal cord injury from 3 to 12 months) and 23 healthy people's appropriate age and gender (average age  $30.6 \pm 6.0$ , years). In the first group included 11 patients with spinal cord injury with the presence of heterotopic ossification – subgroup I and 12 patients with spinal cord injury without heterotopic ossification – subgroup II.

**Results.** The results of examination showed that patients of first group had significantly higher bone markers than control group: P1NP ( $256.7 \pm 48.2$  ng/ml vs  $49.3 \pm 5.1$  ng/ml,  $p < 0.001$ ), serum  $\beta$ -CTX ( $1.47 \pm 0.23$  ng/ml vs  $0.45 \pm 0.04$  ng/ml,  $p < 0.0001$ ), osteocalcin ( $52.2 \pm 9.8$  ng/ml vs  $24.9 \pm 2.08$  ng/ml,  $p < 0.001$ ). There were obtained that levels of bone remodeling markers in patients with HO were significantly higher in comparison with patients without HO: P1NP ( $404.9 \pm 84.9$  ng/ml vs  $133.2 \pm 15.7$  ng/ml,  $p < 0.001$ ), serum  $\beta$ -CTX ( $1.75 \pm 0.23$  ng/ml vs  $0.28 \pm 0.14$  ng/ml,  $p < 0.0001$ ), osteocalcin ( $87.1 \pm 18.9$  ng/ml vs  $29.4 \pm 3.7$  ng/ml,  $p < 0.001$ ).

**Conclusion.** The bone formation and bone resorption markers in patient of first group were significantly higher than in healthy individuals of appropriate age. The rate of bone turnover markers in patient with HO was considerably higher than in patient without HO and the process of formation dominated over the resorption in patient with HO.

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## **DIAGNOSTYKA KOSTNIENIA HETEROTOPOWEGO U PACJENTÓW PO URAZIE RDZENIA KRĘGOWEGO**

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**Słowa kluczowe:** *kostnienie heterotopowe, uraz rdzenia kręgowego, kość*