

## **SERUM LEVELS OF CREATINE KINASE IN HYPOTHYROIDISM**

*Mirjana Stanojković, Ana Marinković,  
Snežana Madić, Tatjana Djordjević*

*Centre for Medical Biochemistry,  
Clinical Centre of Nis, Serbia*

The aim of this study was to determine serum levels of creatine kinase (CK) in overt and subclinical hypothyroidism. To investigate the change in CK levels with treatment and to evaluate the relationship between free triiodothyronine (FT3), free thyroxine (FT4), and thyrotropin (TSH) levels and the degree of skeletal muscle involvement, as determined by serum CK levels. Patients with other causes of CK elevation were excluded. We included 26 patients (24 women and 2 men, ages 41.63 +/- 11.55 years) with overt hypothyroidism, 36 patients (35 women, 1 man, ages 40.53 +/- 11.45 years) with subclinical hypothyroidism, and 30 age- and gender-matched controls (27 women, 3 men, ages 40.81 +/- 11.20 years) in the study. Serum levels of TSH, FT4, FT3, and CK were measured in all subjects. Creatine kinase elevation was found in 17 patients (58%) with overt hypothyroidism and in 4 patients (10%) with subclinical hypothyroidism. Although a statistically significant elevation of CK levels was found in patients with overt hypothyroidism when compared with patients with subclinical hypothyroidism and controls ( $p=0.0001$ ,  $p = 0.01$ , respectively), no difference was found between the subclinical hypothyroidism and control groups ( $p = 0.14$ ). In hypothyroid (overt and subclinical) patients, a positive correlation was found between CK and TSH ( $r = 0.423$ ;  $p = 0.04$ ), and a negative correlation between CK and FT3 ( $r = 0.525$ ;  $p = 0.002$ ) and between CK and FT4 ( $r = 0.435$ ;  $p = 0.04$ ). Creatine kinase levels decreased to normal levels after thyroid function normalized with treatment. In conclusion, skeletal muscle is affected by hypothyroidism more profoundly in cases of overt hypothyroidism, less so when subclinical hypothyroidism is present.