

Metallothioneins (MT) are low molecular weight, cysteine-rich proteins maintaining metal ions homeostasis. They play a role in carcinogenesis and may also cause chemoresistance. The aim: was to explore the relationship between MT serum levels in children suffering from malignant tumours and correlate with laboratory findings during anticancer treatment. Material and methods: This prospective study involves 865 samples from 172 patients (71 girls and 101 boys) with malignant tumours treated from 2008 to 2011. Patient median age: 9.9 years (0.1-19.5). Metastatic diseases at diagnosis: 93 patients (54.1%), recurrence: 12(7%), died: 32(18.6%). MT serum levels were determined using differential pulse voltammetry–Brdicka reaction. Results: Mean MT level 2.67 uM/l was five times higher that of control group (0.05). No significant difference between MT levels in different tumours. No correlation between MT levels in active disease and disease in remission ( $p = 0.33$ ). However, we found a positive correlation between MT levels and age ( $p = 0.009$ ), negative correlation between MT and creatinine ( $p = 0.003$ ). Patients who had disease recurrence had lower MT levels during the treatment (remission 2.67 vs. recurrence 2.34,  $p = 0.001$ ) Conclusion: Patients who had early disease recurrence had lower MT levels during treatment suggests importance for clinical practice as new potential marker. Also important is correlation between MT and creatinine, which supports the idea of relationship between MT synthesis and kidney function.