Osteoprotegerin – a new biomarker for impaired bone metabolism in complex regional pain syndrome?

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Osteoprotegerin (OPG) is important for bone remodeling and may contribute to CRPS pathophysiology. We aimed to assess (1) the value of OPG as a biomarker for CRPS and (2) a possible correlation with radiotracer uptake in three-phase bone scintigraphy (TPBS). OPG levels were analyzed in 23 CRPS patients (17 women; mean age 50 \pm 9.0 years; disease duration: 12 (IQR 8 – 24) weeks), 10 controls (six women; mean age 58 \pm 9.6 years) and 21 patients after uncomplicated fractures (12 women, mean age: 43 ± 15 years; time after fracture: 15 (IQR: 6 - 22) weeks). The CRPS and control patients also underwent TPBS. OPG in CRPS patients was significantly increased in comparison to both control groups (p = 0.001; Kruskal Wallis test; CRPS patients: 74.1 (IQR: 47.1 - 100.7) pg/ml; controls: 46.7 (IQR: 35.5 -55.0) pg/ml; p = 0.004; fracture patients: 45.9 (IQR: 37.5 - 56.7) pg/ml; p = 0.001). For details see Figure 1. As a diagnostic test for CRPS, OPG has a sensitivity of 0.74, specificity of 0.80, positive predictive value of 68% and negative predictive value of 84%. ROC curve analysis showed an AUC of 0.80 (confidence interval: 0.68 - 0.91). For the CRPS-affected hand, a significant correlation between OPG and TPBS ROI analysis in phase III was detected (carpal bones; r = 0.391; p = 0.03). The persistent increase of OPG in CRPS indicates enhanced osteoblastic activity like increased radiotracer-uptake in TPBS phase III. A contribution of bone turnover to CRPS pathophysiology is likely. OPG might be useful as a 'biomarker' for CRPS.

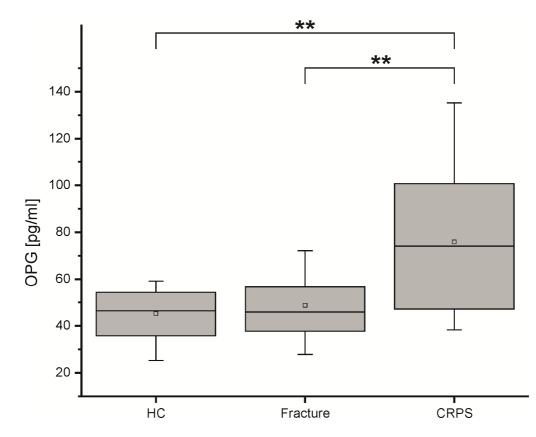


Figure 1