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Inflammation markers and neuropathy in type 2 diabetes mellitus

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Background and aims: There is some evidence on the role of inflammation in diabetic neuropathy. Thus, the aim of the present study was to examine the potential association of commonly used inflammation markers [white blood cell count (WBC), platelet count (PLT), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), ferritin and fibrinogen] with polyneuropathy (DPN) and sudomotor neuropathy in patients with type 2 diabetes mellitus (T2DM).
Patients and methods: We included 180 patients with T2DM (age 65.6±9.2 years, diabetes duration 10.9±8.5 years). Exclusion criteria were acute/chronic inflammation/infection, malignancy and systematic disease. Patients were examined for DPN using the Michigan Neuropathy Screening Instrument (MNSI) and for sudomotor neuropathy using the time to complete colour change of the Neuropad test. Patients were divided into those with DPN (MNSI > 2) and those without DPN (MNSI ≤ 2), as well as into those with sudomotor neuropathy (time to colour change > 10 minutes) and those without sudomotor neuropathy (time to colour change ≤ 10 minutes). We also measured absolute time to complete Neuropad colour change, as well as inflammation markers (WBC, PLT, ESR, CRP, ferritin and fibrinogen). **Results:** There was a significant correlation between MNSI score and Neuropad time to colour change (r_s=0.746, p<0.001). Patients with DPN exhibited significantly higher fibrinogen levels in comparison to those without DPN (422.2±111.9 mg/dl vs. 355.4±85.9 mg/dl, p=0.008). Patients with sudomotor neuropathy exhibited significantly higher CRP levels, as compared to those without sudomotor neuropathy (0.86±1.40 vs. 0.33±0.38 mg/dl, p=0.023). A significant correlation was noted between MNSI score and fibrinogen (r_s=0.303, p=0.022). Finally, time to complete colour change of Neuropad was significant correlated with fibrinogen (r_s=0.291, p=0.033) and CRP (r_s=0.334, p=0.002). **Conclusions:** In T2DM, the severity of DPN is associated with fibrinogen, and the severity of sudomotor dysfunction is associated with fibrinogen and CRP. These results underline the role of chronic inflammation in diabetic neuropathy, including DPN and sudomotor impairment.