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Clinical and capillaroscopy correlation of Pentraxin 3 and mean platelet volume in patients with systemic sclerosis: A case control study

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Systemic sclerosis (SSc) is a systemic connective tissue disease with vasculopathy and tissue fibrosis. Mean platelet volume (MPV) indicates the platelet activation and independent risk factor for arterial diseases. Long pentraxin, or pentraxin-3 (PTX3), is a homologous pattern recognition receptor mainly presented in inflammatory diseases with some inhibitory effects on chronic inflammation. This study aimed to evaluate the relationship between clinical and capillaroscopy manifestations of patients with SSc, MPV, and PTX3 levels compared to the control group. This case-control study was conducted on patients who met the SSc diagnostic criteria. Accordingly, clinical manifestations and capillaroscopy data were recorded. Thus, the MPV and PTX3 levels of the patients and the control group were checked. Then, the relationship between the clinical and capillaroscopy results was evaluated. The mean ± SD of MPV in the control group and patients was 10.11 ± 0.96 fL and 9.65 ± 1.13 fL, respectively (P-value = 0.043). In addition, the PTX3 level was 3.60 ± 8.98 and 1.79 ± 5.77 ng/ml, respectively (P-value = 0.223). The relationship of these factors with the clinical and capillaroscopy results was insignificant (P-value > 0.05). Based on the results, the MPV level was significantly lower in patients with SSc than controls, while the PTX3 level did not differ between the groups. Moreover, there was no relationship between PTX3 and MPV levels with the capillaroscopy and clinical results. However, further studies with larger sample sizes are recommended.

Keywords: Systemic sclerosis; Mean platelet volume; Pentraxin 3; Capillaroscopy

Introduction

Systemic sclerosis (SSc) is a rheumatic disease, which is mainly presented with fibrosis and vasculopathy [1], affecting the skin, blood vessels, muscles, and internal organs [1, 2]. Abnormalities observed in nail fold capillaries can be considered the manifestation of microvascular disease, which can be detected using direct in-vivo microscopy [3, 4]. Platelet volume is a marker of activation and function, measured using mean platelet volume (MPV) [5, 6]. Increased MPV may be reflected either by increased platelet activation or increased numbers of large, hyper aggregable platelets, which is accepted as an independent risk factor for coronary and peripheral artery disease [5, 6]. Furthermore, platelet abnormalities are observed in SSc, which play an essential role in the

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compared to the controls (P < 0.001) [18].

However, the present study showed an insignificant relationship between the sclero-derma pattern and pentraxin level. Accordingly, Adrovic et al. found that pentraxin level was significantly higher in JSS and JLS (P-value < 0.001) [16]. Moreover, no relationship was found between the vascular changes in capillaroscopy and the pentraxin level, which was consistent with the results of Adrovic et al., revealing no relationship between the pentraxin level and capillaroscopy changes in JSS and JLS [16]. This result does not align with the relationship of the elevated PTX level with prominent vascular manifestations in SSc patients in Shiraei et al. [18].

The present study showed no relationship between the pentraxin level and the skin score. In contrast, Adrovic et al. found that pentraxin level was positively correlated with the modified rod skin score in JSS and JLS (P-value = 0.03) [16]. In addition, Iwata et al. showed correlations between the pentraxin level and various fibrotic aspects, such as pulmonary fibrosis, cardiac disease, and pitting scar/ulcer, in patients with SSc [17]. Further, Shiraei et al. reported the relationship between pentraxin and mRSS, which represented skin thickening in SSc similarly, but there was no relationship between the pentraxin level and lung fibrosis [18].

This study aimed to find the relationship between two factors: one as an available and cheap lab test (MPV) as an indicator for activation of the platelet and risk of arterial disease with the clinic and capillary damage of patients with SSc, but it was lower in patients with SSc. No relationship was found with their presentation. In addition, the PTX3 was checked as an inflammatory marker, and there was no relationship with the manifestation of SSc patients. The small sample size was the major limitation of the present study. Further studies are recommended to determine the exact role of MPV and pentraxin levels on vascular changes.

Conclusion

Based on the results, the MPV level was significantly lower in patients with SSc than in the controls. In contrast, the pentraxin level did not differ significantly among the patients and controls. No relationship was found between pentraxin, MPV level, and capillaroscopy changes. Moreover, there was no relationship between the clinical manifestations and MPV/pentraxin level. However, further studies with larger sample sizes should be performed while considering confounding factors and exact histopathologic pathways.

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Conflict of interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article

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