Circulating levels of MMP-1, -2, -3, -9, and TIMP-1 are increased in POEMS syndrome

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POEMS syndrome (Crow-Fukase syndrome in Japan) is a multisystemic disorder characterized by polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin disorders. Results of recent studies suggest that the characteristic symptoms and signs of this syndrome are caused by overproduced vascular endothelial growth factor (VEGF). However, the pathomechanism of the various symptoms related to elevation of VEGF levels is unknown. VEGF is known to increase the release of MMP in both endothelial cells and vascular smooth muscle cells in vitro. Therefore, VEGF and MMP are considered important to the process of angiogenesis and neovascularization.

Materials and Methods: Plasma and sera from patients with POEMS syndrome or other neurological disorders (NOD) and healthy controls were studied. Concentrations of MMP-1, -2, -3, -7, -8, -9, and TIMP-1, -2, VEGF were measured by corresponding enzyme immunoassay systems. MMP-2, and MMP-9 activities in sera were studied by gelatin zymography.

Results: Circulating levels of MMP-1, -2, -3, -9, and TIMP-1 were more increased in patients with POEMS syndrome than in patients with other neurological disorders or in healthy controls. Serum levels of VEGF and TIMP-1 were strongly correlated with each other.

Conclusion: Increased circulating levels of MMPs and TIMP-1 may lead to better understanding the pathogenesis of POEMS syndrome.