

Proinflammatory Activation of Peripheral Blood Mononuclear Cells in Patients with Vestibular Neuritis

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Key Words

Vestibular neuritis · Inflammation · CD40 · Tumor necrosis factor- α · Peripheral blood mononuclear cells · C-reactive protein · CD38

Abstract

Vestibular neuritis (VN) is characterized by acute vertigo with spontaneous nystagmus and is often accompanied by vegetative symptoms. While the pathogenetic process leading to this disease is widely unknown, increasing evidence exists that a proinflammatory environment is responsible for the induction and progression of VN. Twelve patients with acute VN and 12 healthy, age-matched individuals were included in this study. In addition to routine blood parameters, plasma levels of soluble CD40 receptor/ligand (sCD40/sCD40L) were determined by ELISA. Moreover, peripheral blood mononuclear cells (PBMCs) were isolated by Ficoll density gradient. Afterwards, in CD14 (monocytes), CD68 (macrophages), CD3 (T lymphocytes) or CD19 (B lymphocytes) subpopulations, proinflammatory [CD40, tumor necrosis factor- α (TNF- α), and COX-2], proapoptotic [caspase-3, and poly(adenosine diphosphate ribose) polymerase] and proadhesive (CD38) proteins were measured by 2-color fluorescence-activated cell sorter analyses. In comparison to healthy

individuals, patients with acute VN revealed significantly elevated plasma levels of C-reactive protein, whereas plasma levels of sCD40 and sCD40L, as well as cholesterol/triglyceride status were similar. However, we found a significant elevation of the percentage of proinflammatory CD40+, TNF- α +, COX-2+ or CD38+ PBMCs. Elevation of proinflammatory and proadhesive proteins in PBMCs of patients with acute VN in parallel with an acute phase response may contribute to disease induction and progression and, thus, may be suggested as a novel therapeutic target.

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Introduction

Vestibular neuritis (VN) is the second most common cause of peripheral vestibular vertigo and defined as an acute unilateral vestibular dysfunction characterized by acute rotatory vertigo with spontaneous nystagmus and is usually accompanied by vegetative symptoms like nausea and vomiting. Although VN is a very common disease, the pathogenesis is widely unknown. There is in-

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