Endothelial CD200 is heterogeneously distributed, regulated and involved in immune cell-endothelium interactions

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摘要

Abstract

CD200 is a highly glycosylated cell surface protein containing two immunoglobulin superfamily domains in the extracellular region and performs immunosuppressive activities. It is widely distributed in various tissues including the vascular endothelium. We report here the distribution of CD200 in rat endothelia from different vascular beds. Endothelial CD200 immunoreactivity was weakly expressed in most arteries but was intensely expressed in the arterioles, most veins and venules, as well as continuous and fenestrated capillaries. The distribution of CD200 in the sinusoidal and lymphatic endothelia was variable. Immunoelectron microscopic studies revealed that endothelial CD200 varied considerably not only in different microvasculatures but also in the membrane domains at the subcellular level. Endothelial CD200 expression was differentially regulated by lipopolysaccharide in cell types both in vivo and in vitro. Functional assessments of endothelial CD200 suggested that the physical binding between CD200 and CD200 receptor (CD200R) was involved in T-cell adhesion to the endothelium but not in macrophage-endothelium interaction. In the latter, however, CD200 agonist, a synthetic peptide from complementarity-determining region 3 of mouse CD200, may trigger CD200R signaling in macrophages to suppress their adhesion to the endothelium. Our findings demonstrate that the distribution, subcellular localization, and lipopolysaccharide-regulation of endothelial CD200 are heterogeneous, and provide evidence elucidating the functional roles of endothelial CD200 during tissue inflammation.