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Interleukin-1beta inhibition attenuates vasculitis in mouse model of Kawasaki disease

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Introduction:
Kawasaki disease (KD), a systemic vasculitis, is suspected to be related to abnormalities in innate immunity. Based on the importance of IL-1 signaling in innate immunity, we investigated the effects of an anti-IL-1β antibody using a Candida albicans water-soluble fraction (CAWS)-induced mouse model of KD.
Methods:
CAWS (0.5 mg/mouse) was injected intraperitoneally into 5-week-old DBA/2 mice on five consecutive days. An anti-Murine IL-1β antibody (01BSUR) was administered at various doses (2.5, 5.0, and 10.0 mg/kg) and time points (2 days before, same day, and 2, 5, 7, and 14 days after CAWS administration). After 4 weeks, vasculitis in the aortic root was investigated histologically and serologically by cytokine profiling.
Results:
Groups administered 01BSUR at all doses showed a significant reduction in the incidence of vasculitis. In addition, 01BSUR inhibited vasculitis until 7 days after CAWS administration. IL-1β, IL-6, and TNF-α levels were lower in 01BSUR-treated groups than in the group administered CAWS only. In an analysis of various time points, IL-6 levels were lower in all groups compared to the CAWS only group, but IL-1β, TNFα, and IL-10 levels were lower when 01BSUR was administered before CAWS. IL-10 levels tended to be higher when 01BSUR was administered after CAWS, suggesting that 01BSUR has additional effects beyond blocking IL-1β signaling.
Conclusions:
The anti-IL-1β antibody significantly attenuated CAWS-induced vasculitis.