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Dynamic Changes in the Vaso-Vasorum as an Inducing Factor for Vasculitis in Kawasaki Disease

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INTRODUCTION: Kawasaki Disease (KD) involves a diffuse and systemic vasculitis of unknown etiology that mainly affects infants and children. Although a lot of analyses had already been done clinically, histopathologically or molecular-biologically about the mechanism of coronary arterial lesions, it is still not well elucidated. The objective of this study is to analyse the process of the formation of aneurysms or the change of coronary arteries themselves using animal model. We investigated the involvement of the invasion from the adventitia in the mechanism of vascular involvement and the development of disease state by scanning electron microscope (SEM), micro CT, and sequential histopathology using murine model of vasculitis induced with *Candida albicans* water-soluble fraction (CAWS), because KD is associated with a very low mortality recently, and we seldom have a chance to get autopsied heart

MATERIALS AND METHODS: To prepare the animal model for KD, CAWS was intraperitoneally injected to C57BL/6N mice for 5 days as reported by Ohno et al.

We observed the changes of vasa vasorum at aorta and the orifice of coronary arteries by SEM and micro CT, and also compared neovascularization and distribution at the media and the adventitia quantitatively by immunohistochemical analysis.

RESULTS: As previously reported, obvious inflammation were detected 2 weeks after the injection of CAWS, and also subsequent aneurysmal formation, and intimal thickening 4 weeks after it. In model mice, we found micro vessels verging on the adventitia of Aorta (vasa vasorum), and they increased in model mice. We observed each 1w, 2w, 3w and 4w model mice, and found they started increasing 1w after the injection of CAWS, before obvious vasculitis was microscopically detected.

CONCLUSION: This result indicates that the vasculitis starts by the disorder of vasa vasorum in Kawasaki disease.