Editorial Comment

Arteriosclerosis and C-Reactive Protein Gene

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Risk factors are involved in the development of most chronic diseases such as hypertension, and include environmental factors, such as excessive sodium chloride intake in hypertension and excessive calorie intake in diabetes mellitus, and genetic risk factors determining disease sensitivity. Recent studies have shown that genetic polymorphisms are involved in genetic sensitivity to diseases. Thus, elucidation of the mechanism of development of diseases requires the analysis of the interaction between environmental and genetic factors. Arteriosclerosis is an end-stage disorder of hypertension, diabetes, and lipid metabolism disorder. Therefore, the treatment of these life-style diseases should focus on the prevention and reduction of arteriosclerosis. In recent years, the concept has been proposed that arteriosclerosis is an inflammation. C-reactive protein (CRP) is an inflammatory protein synthesized in the liver, but its pathophysiological role is not clear. It remains to be clarified whether CRP is an inflammation marker or an important factor in the development of arteriosclerosis. In a paper published in *Hypertension Research*, Morita *et al*. (*1*) showed that a CRP gene haplotype was associated with blood CRP levels in elderly Japanese subjects, and that another haplotype was associated with pulse wave velocity (PWV), an indicator of arteriosclerosis. This observation suggests that although a locus close to the CRP gene may be involved in the mechanism of development of arteriosclerosis, CRP itself is involved in its development. As a result of the success in the Human Genome Project, ultra high-throughput, comprehensive genetic analysis of a large number of specimens has been the mainstream in genetic analysis experiments. On the other hand, the conventional, relatively small-scale, case-controlled studies have not lost their significance. Such studies are feasible for relatively rare diseases, or when test data are limited and, by relatively easy means, provide us with new knowledge, and may give us hints to proceed to the validation of a relationship by a larger-scale study. The study of Morita *et al*. (*1*) is the first step toward advancing research on the relationship between inflammation and arteriosclerosis by genome informatics, including individual-level studies using genetically engineered animals such as knockout mice, as well as a search for genes close to the CRP gene.

References

1. Morita A, Nakayama T, Doba N, Hinohara S, Soma M: Polymorphism of the C-reactive protein (CRP) gene is related to serum CRP level and arterial pulse wave velocity in healthy elderly Japanese. *Hypertens Res* 2006; **29**: 323–331.

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