7 Role of Hepatitis C Virus in Cardiomyopathies

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Abstract. Virus infection was conventionally considered to cause myocarditis, which resulted in development of dilated cardiomyopathy. Recent studies suggest that hepatitis C virus (HCV) is involved in the development of dilated cardiomyopathy, hypertrophic cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy in addition to myocarditis. Furthermore, left ventricular aneurysm represents the same morbid state not only after myocardial infarction but also after myocarditis. There were wide variations in the frequency of detection of HCV genomes in cardiomyopathies in different regions or in different populations. Major histocompatibility complex class II genes may play a role in the susceptibility to HCV infection, and may influence the development of
different phenotypes of cardiomyopathies. If it is the fact that the myocardial damage is caused by HCV, it might be expected that interferon (IFN) treatment would be useful for its treatment. Patients receiving IFN treatment of hepatitis were screened by thallium myocardial scintigraphy, and an abnormality was discovered in half of patients. Treatment with IFN resulted in disappearance of the image abnormality. It has thus been suggested that mild myocarditis and myocardial damage may be cured with IFN. We have recently found that high concentrations of circulating cardiac troponin T are a specific marker of cardiac involvement in HCV infection. By measuring cardiac troponin T in patients with HCV infection, the prevalence of cardiac involvement in hepatitis C virus infection will be clarified. We are proposing a collaborative work on global network on myocarditis/cardiomyopathies due to HCV infection.

7.1 Introduction

Cardiomyopathies may present as idiopathic dilated, hypertrophic or restrictive disease, arrhythmogenic right ventricular cardiomyopathy or several other distinct disorders of the heart muscle (Richardson et al. 1996). Dilated cardiomyopathy, hypertrophic cardiomyopathy and restrictive cardiomyopathy are heterogeneous myocardial disorders of multifactorial aetiologies, including genetic anomalies and acquired immune pathogenetic factors, such as viral infections (Matsumori 1997). Dilated cardiomyopathy is a relatively common myocardial disorder, which may lead to severe heart failure. Along with ischaemic heart disease, it represents the main antecedent of heart transplantation in Western countries, where epidemiological studies performed a decade ago have measured 5-year survival rates as low as 30% to 40% after its initial diagnosis. In contrast, few large-scale studies have been conducted to examine the prevalence, prognosis and management patterns of cardiomyopathies in Asian populations.

Recently, nationwide clinico-epidemiological surveys of cardiomyopathies were performed in Japan (Miura et al. 2002; Matsumori et al. 2002). The total number of patients was estimated at 17,700 (prevalence; 14.0 per 100,000) for dilated cardiomyopathy, 21,900 (17.3 per 100,000) for hypertrophic cardiomyopathy, 300 (0.2 per 100,000) for restrictive cardiomyopathy and 520 (0.4 per 100,000) for arrhythmogenic right ventricular cardiomyopathy. The prevalence of dilated cardiomyopa-