Abstract. A growing body of evidence supports the view that some forms of human myocarditis and dilated cardiomyopathy result from a pathogenic autoimmune response. The evidence is based first on the presence of heart-specific antibodies in many patients with these diseases, including antibodies with demonstrated functional effects. These antibodies may be present before the onset of dilated cardiomyopathy and may be predictive of the course of disease in terms of deterioration of cardiac function. Depletion of the heart-specific antibodies by extracorporeal immunoadsorption may result in amelioration of disease in some patients, often continuing for long periods of time. Clinical investigations show that a subpopulation of patients with dilated cardiomyopathy
benefit from immunosuppressive treatment. In one report, this subpopulation was identified as autoantibody-positive and virus-negative. Finally, animal experiments have shown that autoimmune myocarditis can be induced by viral infection and that this autoimmune response can be duplicated by immunization with a well-characterized antigen, cardiac myosin. Based on this evidence, we propose that some forms of dilated cardiomyopathy and myocarditis result from pathogenic autoimmune responses that represent the final common pathogenetic pathway of various infectious and even non-infectious injuries.

9.1 Introduction

Myocarditis, defined by the Dallas criteria as “the presence of an inflammatory infiltrate in the myocardium with necrosis and/or degeneration of adjacent myocytes” remains an etiologic dilemma and a therapeutic problem (Aretz et al. 1987). Different agents can cause the same pathologic picture and, consequently, different approaches to treatment can be taken (Feldman and McNamara 2000). A number of infectious microorganisms have been cited as possible causes, including enteroviruses, adenoviruses, cytomegaloviruses, paroviruses, human immunodeficiency virus, measles virus, mumps virus, hepatitis A and C viruses, and herpes simplex virus (Towbin et al. 1999). Any of these viruses can induce a similar response in the heart. Historically, the infectious agent most frequently associated with human cases of myocarditis has been coxsackievirus B3, one of the enteroviruses, but the predominant causative agent varies with time and place (Grist and Bell 1969). In a large proportion of cases, no infectious agent can be found and drugs and toxins have been implicated in the disease. These etiologic uncertainties have contributed to the difficulty of developing rational therapeutic strategies. Therefore, myocarditis continues to represent a major cause of heart failure, especially in young adults (Drory et al. 1991). Moreover, chronic myocarditis sometimes evolves to dilated cardiomyopathy, a disease often requiring cardiac transplantation.

A remarkable finding in most cases of human myocarditis is the presence of autoantibodies specific for heart tissue. This observation, coupled with multiple etiologies, has led to the widely held proposition that myocarditis and dilated cardiomyopathy are the consequences of an autoimmune response to heart that represent a final common patho-