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EXPRESSION OF ANGIOTENSIN-CONVERTING ENZYME AND ANGIOTENSIN-CONVERTING ENZYME 2 IN PATIENTS WITH CHRONIC HEART FAILURE

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Background It has been reported that angiotensin converting enzyme 2 (ACE2) is an endogenous counterregulator of the rennin angiotensin aldosterone system (RAAS). However, the role of ACE2 in the development of human heart failure is not well established.

Methods and Results We evaluated the expression of angiotensin converting enzyme (ACE) and ACE2 at mRNA and protein levels in myocardium from 35 patients with mild or moderate to severe heart failure, and from seven cases with normal myocardium. In myocardium of patients with dilated cardiomyopathy or ischemic cardiomyopathy, the expression of ACE and ACE2 at mRNA and protein levels was significantly increased compared with normal myocardium ($p<0.01$, $p<0.05$, respectively). In myocardium of patients with mild heart failure, the ratios of ACE2/ACE mRNA and ACE2/ACE were higher than that in normal myocardium, but were lower in patients with moderate to severe heart failure.

Conclusions The expression of ACE2 and ACE at mRNA and protein levels are significantly increased in myocardium of heart failure patients. In mild heart failure patients, the compensatory mechanism of heart failure may result in the elevated ACE2/ACE ratio. However, in moderate to severe heart failure patients, the decreased ACE2/ACE ratio may induce the over-activation of Ang II and accelerate cardiac remodeling.