



Title	Combination of angiotensin converting enzyme inhibitor and irbesartan for the treatment of heart failure
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ABSTRACT – GENERAL INTEREST

G-C-1

Combination of Angiotensin Converting Enzyme Inhibitor and Irbesartan for the Treatment of Heart Failure

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Background: Angiotensin converting enzyme inhibitor (ACEI) and angiotensin II receptor antagonist (ARB) have been shown to be beneficial in patients with congestive heart failure (CHF). However, it is not known if combination of both agents will confer additional benefit. This study investigated whether combining Irbesartan, an ARB, with an ACEI for 12 weeks was superior to ACEI therapy alone.

Patients and Methods: 46 patients with CHF were randomized to with either ACEI alone or combined with Irbesartan (up to 300mg/day) for 12 weeks. Assessment were performed as baseline and at the end of therapy which included echocardiography, exercise tolerance test with oxygen consumption measurements, blood tests, chest X-ray, 24 Hr-ECG, 6-minute hall walk and Minnesota quality of life questionnaire.

Results: There was no difference in age between the 2 groups (65 ± 11 vs 68 ± 10 yrs, $p = \text{NS}$). Patients in the combined therapy group had significant increase in 6-minute hall walk distance (Combined: 361 ± 96 to $376 \pm 98\text{m}$, $p < 0.05$; ACEI: 360 ± 69 vs $351 \pm 63\text{m}$, $p = \text{NS}$), treadmill exercise time (Combined: 410 ± 211 to $457 \pm 217\text{s}$, $p < 0.05$; ACEI: 443 ± 146 to $447 \pm 177\text{s}$, $p = \text{NS}$), and achieved higher METs estimated by oxygen consumption (Combined: 3.9 ± 1.1 to $4.6 \pm 1.3\text{METs}$, $p = 0.01$; ACEI: 4.0 ± 1.2 to $3.8 \pm 1.1\text{METs}$, $p = \text{NS}$) than the ACEI group. There was a trend towards better maximal VO_2 uptake in the combined therapy group (13.3 ± 4.3 to 15.1 ± 3.8 L/kg/min, $p = 0.06$), but not in the ACEI group (14.2 ± 4.0 to 13.3 ± 3.6 L/kg/min, $p = \text{NS}$). The heart rate tended to be slower in the combined therapy group (78 ± 14 to 72 ± 17 beats/min, $p = 0.08$), but was significantly increased in the ACEI group (76 ± 11 to 83 ± 13 , $p < 0.05$). There were no significant changes in blood pressure, renal function and electrolyte levels, incidence of ectopic beats, Minnesota quality of life score, as well as systolic and diastolic function in both groups.

Conclusion: Combination of irbesartan and ACEI therapy in CHF for 12 weeks further improves exercise time, duration and maximal capacity without adverse effects on hemodynamics and renal function.

G-C-2

“Isolated” Left Ventricular Diastolic Dysfunction - The Condition Need to be Redefined

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Background: Isolated left ventricular (LV) diastolic dysfunction (DD) is found to be a common cause of heart failure. However, DD may overlap with systolic function (SD). This study investigated if systolic abnormality coexisted in patients previously labelled as isolated DD using tissue Doppler imaging (TDI).

Patients and Methods: Echocardiography with TDI was performed in 94 patients with DD and preserved systolic function (ejection fraction [EF] $\geq 50\%$), 73 patients with mixed SD and DD (ejection fraction $< 50\%$), and 42 controls. Regional myocardial velocity curve was constructed offline using a 6-basal and 6-mid segment model at apical views to assess both systolic and diastolic function.

Results: The peak myocardial isovolumic contraction (IVC_M), sustained systolic (S_M), and early diastolic velocity (E_M) velocities were significantly lower in patients with isolated DD than controls, though they were higher than SD. Likewise, the mean S_M (SD: 3.3 ± 1.1 vs DD: 4.9 ± 1.4 vs Controls: 6.1 ± 0.9 cm/s) and mean E_M (SD: 3.8 ± 1.2 vs DD: 4.8 ± 1.7 vs Controls: 8.6 ± 1.5 cm/s) from the six basal segments were significantly lower in patients with DD than controls, but were significantly higher than SD ($p < 0.001$ between all groups). There was a good correlation between the mean S_M and LV EF ($r = 0.69$, $p < 0.001$). In addition the mean S_M decreased with increasing NYHA class. When the -2 standard deviation from mean S_M in the controls (i.e. 4.0 cm/s) was used as cut-off for subnormal systolic function, it was found to be present in 40% of patients with DD.

Conclusion: Using TDI, abnormalities of systolic function were evident in patients previously labelled as isolated DD by conventional methods. As TDI is a sensitive non-invasive tool for the assessment of LV systolic and diastolic function, the definition and distinction between SD and isolated DD should employ more precise quantitative tools such as TDI.