

The left ventricle in aortic stenosis: evidence for the use of angiotensin converting enzyme inhibitors

J Chambers

Web only refs

1. Sasayama S, Ross J, Franklin D, Bloor CM, Bishop S, Dilley RB. Adaptations of the left ventricle to chronic pressure overload. *Circ Res* 1976;38:172–8.
2. Gunther S, Grossman W. Determinants of ventricular function in pressure-overload hypertrophy in man. *Circulation* 1979;59:679–688.
3. Reichek N, Devereux RB. Reliable estimation of left ventricular systolic pressure by M-mode echocardiographic-determined end-diastolic relative wall thickness: identification of severe aortic stenosis in adult patients. *Am Heart J* 1982;103:202–3.
4. Seiler C, Jenni R. Severe aortic stenosis without left ventricular hypertrophy: prevalence, predictors, and short-term follow-up after aortic valve replacement. *Heart* 1996;76:250–5.
5. Griffith MJ, Carey CM, Byrne JC, et al. Echocardiographic left ventricular wall thickness: a poor predictor of the severity of aortic valve stenosis. *Clin Cardiol* 1991;14:227–31.
6. Kupari M, Turto H, Lommi J. Left ventricular hypertrophy in aortic valve stenosis: preventive or promotive of systolic dysfunction and heart failure. *Europ Heart J* 2005 (in press).
7. Chambers J, Takeda S, Rimington H, et al. Determinants of left ventricular mass in aortic stenosis. *J Heart Valve Disease* 2004;13:873–80.
8. Salcedo EE, Korzick DH, Currie PJ, et al. Determinants of left ventricular hypertrophy in patients with aortic stenosis. *Cleve Clin Med* 1989;56:590–6.
9. Rohde LEP, Zhi G, Aranki SF, et al. Gender-associated differences in left ventricular geometry in patients with aortic valve disease and effect of distinct overload subsets. *Am J Cardiol* 1997;80:475–80.
10. Brener SJ, Duffy CI, Thomas JD, et al. Progression of aortic stenosis in 394 patients: relation to changes in myocardial and mitral valve dysfunction. *JACC* 1995;25:305–10.
11. Orlowska-Baranowska E, Placha G, Gaciong Z, et al. Influence of ACE I/D genotypes on left ventricular hypertrophy in aortic stenosis: gender-related differences. *J Heart Valve Dis* 2004;13:574–81.
12. Aurigemma GP, Silver KH, McLaughlin M, et al. Impact of chamber geometry and gender on left ventricular systolic function in patients >60 years of age with aortic stenosis. *Am J Cardiol* 1994;74:794–8.
13. Leggett ME, Kuusisto J, Healy NL, et al. Gender differences in left ventricular function at rest and with exercise in asymptomatic aortic stenosis. *Am Heart J* 1996;131:94–100.
14. Morris JJ, Schaff HV, Mullany CJ, et al. Determinants of survival and recovery of left ventricular function after aortic valve replacement. *Ann Thorac Surg* 1993;56:22–9.
15. Villari B, Campbell SE, Schneider J, et al. Sex-dependent differences in left ventricular function and structure in chronic pressure overload. *Europ Heart J* 1995;16:1410–9.

16. Malhotra A, Schaible TF, Capasso J, *et al*. Correlation of myosin isoenzyme alterations with myocardial function in physiologic and pathophysiologic hypertrophy. *Eur Heart J* 1984;5(Suppl):61–7.
17. Cabrol AM, Vasquez EC, Moyses MR, *et al*. Sex hormone modulation of ventricular hypertrophy in sonoartic denervated rats. *Hypertension* 1988;11(Suppl I):I-93–7.
18. Scheuer J, Malhotra A, Schaible TF, *et al*. Effects of gonadectomy and hormonal replacement on rat hearts. *Circ Res* 1987;61:12–19.
19. Nordmeyer J, Eder S, Mahmoodzadeh S, *et al*. Upregulation of myocardial estrogen receptors in human aortic stenosis. *Circulation* 2004;110:3270–5.
20. Fielitz J, Hein S, Mitrovic V, *et al*. Activation of the cardiac renin-angiotensin system and increased myocardial collagen expression in human aortic valve disease. *JACC* 2001;37:1443–9.
21. Dellgren G, Eriksson MJ, Blange I, *et al*. Angiotensin-converting enzyme gene polymorphism influences degree of left ventricular hypertrophy and its regression in patients undergoing operation for aortic stenosis. *Am J Cardiol* 1999;84:909–13.
22. Wong KK, Summers KM, Burstow DJ, *et al*. Genetic variants of proteins from the renin angiotensin system are associated with pressure load cardiac hypertrophy. *Clin Exp Pharmacol Physiol* 1996;23:587–90.
23. Ortlepp JR, Breithardt O, Hanrath P, *et al*. Lack of association among five genetic polymorphisms of the renin-angiotensin system and cardiac hypertrophy in patients with aortic stenosis. *Am Heart J* 2001;141:671–6.
24. Wierzbicki AS, Nimmo L, Lambert M. Ambiguities in angiotensin-converting enzyme allele genotyping: a comparison of three methods. *J Hum Hypertens* 1997;11:467–8.
25. Schunkert H, Jackson B, Tang SS, *et al*. Distribution and functional significance of cardiac angiotensin converting enzyme in hypertrophied rat hearts. *Circulation* 1993;87:1328–39.
26. Foul J, Tavolar O, Antony I, *et al*. Direct myocardial and coronary effects of enalaprilat in patients with dilated cardiomyopathy: assessment by a bilateral intracoronary infusion technique. *Circulation* 1988;77:337–44.
27. Friedrich SP, Lorell BH, Rousseau MF, *et al*. Congestive heart failure/LV hypertrophy: intracardiac angiotensin-converting enzyme inhibition improves diastolic function in patients with left ventricular hypertrophy due to aortic stenosis. *Circulation* 1994;90:2761–71.
28. Vekshtein VI, Alexander RW, Yeung AC, *et al*. Coronary atherosclerosis is associated with left ventricular dysfunction and dilatation in aortic stenosis. *Circulation* 1990;82:2068–74.
29. Julius BK, Spillmann M, Vassalli G, *et al*. Angina pectoris in patients with aortic stenosis and normal coronary arteries. *Circulation* 1997;95:892–8.
30. Marcus ML, Donald BD, Hiratzka LF, *et al*. Decreased coronary reserve. A mechanism for angina pectoris in patients with aortic stenosis and normal coronary arteries. *N Engl J Med* 1982;307:1362–7.
31. Villari B, Hess OM, Moccetti D, *et al*. Effect of progression of left ventricular hypertrophy on coronary artery dimensions in aortic valve disease. *JACC* 1992;20:1073–9.

32. Omran H, Fehske W, Rabahieh R, *et al.* Relation between symptoms and profiles of coronary blood flow velocities in patients with aortic valve stenosis: a study using transoesophageal Doppler echocardiography. *Heart* 1996;75:377–83.
33. Kenny A, Wisbey CR, Shapiro LM. Profiles of coronary blood flow in patients with aortic stenosis and the effect of valve replacement: a transthoracic echocardiographic study. *Br Heart J* 1994;71:57–62.
34. Lips DJ, deWindt LJ, van Kraaij DJW, *et al.* Molecular determinants of myocardial hypertrophy and failure: alternative pathways for beneficial and maladaptive hypertrophy. *Eur Heart J* 2003;24:883–96.
35. Scheuer J. Catecholamines in cardiac hypertrophy. *Am J Cardiol* 1999;83:70H–74H.
36. Dellasperger KC, Marcus ML. Effects of left ventricular hypertrophy on the coronary circulation. *Am J Cardiol* 1990;65:1504–10.
37. Gaudino M, Alessandrini F, Gieca F, *et al.* Survival after aortic valve replacement for aortic stenosis: does left ventricular mass regression have a clinical correlate? *Europ Heart J* 2005;26:51–7.
38. Mehta RJ, Bruckman D, Das S, *et al.* Implications of increased left ventricular mass index on in-hospital outcomes in patients undergoing aortic valve surgery. *J Thorac Cardiovasc Surg* 2001;122:919–28.
39. Orsinelli DA, Aurigemma GP, Battista S, *et al.* Left ventricular hypertrophy and mortality after aortic valve replacement for aortic stenosis. *J Am Coll Cardiol* 1993;22:1679–83.
40. McKenney PA, Apstein CS, Mendes LA, *et al.* Immediate effect of aortic valve replacement for aortic stenosis on left ventricular diastolic chamber stiffness. *Am J Cardiol* 1999;84:914–8.
41. Hess OM, Villari B, Krayenbuehl HP. Diastolic dysfunction in aortic stenosis. *Circulation* 1993;87(Suppl):IV73–6.
42. Maurer MS, Spevack D, Burkhoff D, *et al.* Diastolic dysfunction: can it be diagnosed by Doppler echocardiography? *JACC* 2004;44:1543–9.
43. Vanoverschelde J-L J, Essamiri B, Michel X, *et al.* Hemodynamic and volume correlates of left ventricular diastolic relaxation and filling in patients with aortic stenosis. *JACC* 1992;20:8713–21.
44. M, Goethals M, Verstreken S, *et al.* Wall stress modulates brain natriuretic peptide production in pressure overload cardiomyopathy. *JACC* 2004;44:2349–54.
45. Pela G, La Canna G, Metra M, *et al.* Long-term changes in left ventricular mass, chamber size and function after valve replacement in patients with severe aortic stenosis and depressed ejection fraction. *Cardiology* 1997;88:315–22.
46. Krayenbuehl HP, Hess OM, Monrad ES, *et al.* Left ventricular myocardial structure in aortic valve disease before, intermediate, and late after aortic valve replacement. *Circulation* 1989;79:744–55.
47. Rimington H, Chambers J. Diastolic function determines exercise time after aortic valve replacement. *Eur J Echo* (in press).
48. Lamb HJ, Beyerbach HP, de Roos A, *et al.* Left ventricular remodelling early after aortic valve replacement: differential effects on diastolic function in aortic valve stenosis and aortic regurgitation . *JACC* 2002;40:2182–8.
49. Takeda S, Rimington H, Smeeton N, *et al.* Long axis excursion in aortic stenosis. *Heart* 2001;86:52–6.

50. Tongue AG, Dumesnil JG, Laforest I, *et al*. Left ventricular longitudinal shortening in patients with aortic stenosis: relationship with symptomatic status. *J Heart Valve Dis* 2003;12:142–9.
51. Carabello BA, Green LH, Grossman W, *et al*. Hemodynamic determinants of prognosis of aortic valve replacement in critical aortic stenosis and advanced congestive heart failure. *Circulation* 1980;62:42–8.
52. Collinson J, Henein M, Flathe M, *et al*. Valve replacement for aortic stenosis in patients with poor left ventricular function. *Circulation* 1999;100(Suppl II):II-1–5.
53. Rediker DE, Boucher CA, Block PC, *et al*. Degree of reversibility of left ventricular systolic dysfunction after aortic valve replacement for isolated aortic valve stenosis. *Am J Cardiol* 1987;60:112–8.
54. Ahmed A, Kiefe CI, Allman RM, *et al*. Survival benefits of angiotensin-converting enzyme inhibitors in older heart failure patients with perceived contraindications. *J Am Geriatr Soc* 2002;50:1659–66.
55. Bonow RO, Carabello B, de Leon AC, *et al*. ACC/AHA guidelines for the management of patients with valvular heart disease: executive summary. *J Heart Valve Dis* 1998;7:672–707.
56. Monin J-L, Quere J-P, Moncho M, *et al*. Low-gradient aortic stenosis. Operative risk stratification and predictors for long-term outcome: a multicenter study using dobutamine stress hemodynamics. *Circulation* 2003;108:319–24.
57. Nishimura RA, Grantham JA, Connolly HM, *et al*. Low-output, low-gradient aortic stenosis in patients with depressed left ventricular systolic function: the clinical utility of the dobutamine challenge in the catheterization laboratory. *Circulation* 2002;106:809–13.
58. Connolly HM, Oh JK, Orszulak TA, *et al*. Aortic valve replacement for aortic stenosis with severe left ventricular dysfunction: prognostic indicators. *Circulation* 1997;95:2395–400.
59. Chambers J. Low gradient, low flow aortic stenosis. *Heart* (in press)