



For all patients with ICH, surgical evacuation was associated with a higher likelihood of survival without disability (odds ratio 2.1, 95% CI 0.95–4.7). The prognosis for patients with both SDH and parenchymal hemorrhage was very poor regardless of treatment strategy. Although the differences in outcome may be due in part to selection of patients for operation with lower mortality risk, physicians caring for patients with suspected intracranial hemorrhage following thrombolytic therapy should consider early neurosurgical consultation and intervention to potentially decrease patient disability and improve survival.

**756 Hypertrophic Cardiomyopathy**

Tuesday, March 21, 1995, 2:00 p.m.–3:30 p.m.  
Ernest N. Morial Convention Center, Room 26

2:00

**756-1 Non Surgical Septum Reduction: A New Treatment for Hypertrophic Obstructive Cardiomyopathy (HOCM)**

U. Sigwart, P. Buszman, C. Knight, R. Vecht, R. Sutton, D. Gibson. *Royal Brompton Hospital, London, U.K.*

In patients with HOCM and marked intraventricular gradients resistant to conventional drug treatment with beta blockers and/or Verapamil surgical resection of the muscular septal bulge has been advocated. We have investigated a new catheter treatment in 5 patients with HOCM and significant LV outflow tract gradients. All patients were in class 3 NYHA with angina and shortness of breath. Intraventricular gradients were measured with transeptally introduced Brockenbrough catheters in the LV inflow tract and arterial catheters in the aortic root. All patients were studied at rest, during the Valsalva manoeuvre, after nitrates and after Isoproterenol infusion. The measurements were repeated during balloon occlusion of the first major septal branch of the left anterior descending coronary artery. — In all patients the resting intraventricular gradient was reduced to less than 20 mm/Hg and provocative testing (nitrates and post extrasystolic potentiation) failed to create typical increments. The longest inflation time was 30 minutes. Three patients had Verapamil 0.5 mg injected through the angioplasty balloon which resulted in a longer lasting gradient/reduction after deflation of the balloon. — After informed consent, 2 patient had 3–5 ml of desiccated alcohol infused through the inflated balloon catheter in order to devitalize the offending myocardium. This resulted in a CK elevation up to 2,500 units and permanent abolition of the intraventricular gradient accompanied by marked clinical improvement.

From these preliminary observations we conclude that non surgical septum ablation maybe a promising new technique for the treatment of HOCM. Further studies are warranted.

2:15

**756-2 Long Term Results of Dual Chamber (DDD) Pacing in 114 Adult Patients with Obstructive Hypertrophic Cardiomyopathy and Severe Drug-Refractory Symptoms**

Dorothea McAreavey, Lameh Fananapazir. *NIH, Bethesda, MD*

Several studies indicate that short term, dual chamber (DDD) pacing relieves symptoms and reduces LV outflow tract (LVOT) obstruction in hypertrophic cardiomyopathy (HCM). We evaluated the long term outcome of DDD pacing in 114 adult patients (age, 47 ± 15 yrs) with obstructive HCM and symptoms refractory to β-blocker and verapamil therapy. Three sudden deaths occurred during a follow up period of 34 ± 10 months, maximum, 52 months (98% 3-year survival rate). At the last follow up evaluation, the NYHA functional class improved significantly (3.1 ± 0.54 versus 1.7 ± 0.72, p < 0.0001). Thirty-seven patients (32%) became asymptomatic. Symptoms were improved in a further 62 patients (54%). However, 12 patients (10%) continued to have disabling symptoms for various reasons: 8 had persistent LVOT obstruction (in 3 patients an aberrant papillary muscle contributed to the LVOT obstruction

and in 3 patients, rapid AV node conduction prevented RV pacing), 3 patients had severe LV diastolic dysfunction, and 1 patient had mitral valve prolapse and regurgitation. Seven of the 12 patients underwent corrective cardiac surgery, and two patients are being considered for cardiac transplantation. At a follow up cardiac catheterization after 14 ± 8 months of pacing, there were significant reductions in LVOT gradient (79 ± 45 mmHg versus 26 ± 31 mmHg, p < 0.0001) and LV systolic pressure (188 ± 44 mmHg versus 147 ± 32 mmHg, p < 0.0001) comparing baseline and follow up measurements. Aortic pulse pressure increased (45 ± 17 mmHg versus 52 ± 14 mmHg, p < 0.01).

These results suggest that long term, DDD pacing relieves symptoms and LVOT obstruction in most HCM patients who would otherwise have been candidates for cardiac surgery.

2:30

**756-3 Management and Prognosis of Asymptomatic Patients with Hypertrophic Cardiomyopathy**

Paolo Spirito, Pietro Bellone, Paolo Bruzzi, Carlo Vecchio. *Divisione di Cardiologia, Ospedali Galliera, Genoa, Italy*

The clinical course of hypertrophic cardiomyopathy (HCM) is extremely heterogeneous; some patients develop severe symptoms of heart failure, some die suddenly, but many remain asymptomatic throughout life. The prognosis of patients who are asymptomatic at initial examination, however, has never been investigated systematically in a large study population. We examined the clinical course of all the patients with HCM who were evaluated in our department during 10 years and were asymptomatic or had only mild symptoms at initial examination. A total of 89 patients were followed for a mean of 4.9 yrs (0.3–10.8). Of these 89 patients, 50 (56%) were not treated with cardioactive medications during follow up. Annual mortality was 0.4% (95% confidence interval 0.1–1.4); only 2 patients died, both showing progressive deterioration before death. Seventy-nine patients (89%) remained clinically stable during follow up, 3 developed severe symptoms (functional class III), and 5 did not progress to class III but experienced sustained ventricular tachycardia or syncope. Echocardiographic assessment of cardiac morphology showed that the 2 patients who died were in the small group of 8 patients with particularly marked hypertrophy (≥30 mm) at initial examination. In conclusion, our results show that cardiac mortality is low in patients with HCM who are asymptomatic or have only mild symptoms, and that clinical deterioration usually occurs gradually. In the absence of data showing that therapy prevents cardiac death or delays disease progression in HCM, our results suggest that treatment should be used only for alleviation of symptoms.

2:45

**756-4 Dual Chamber Pacing in Refractory Hypertrophic Obstructive Cardiomyopathy: A Two-Center European Experience in 34 Consecutive Patients**

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Dual chamber pacing with complete right ventricular capture has been reported to improve symptoms in drug refractory hypertrophic obstructive cardiomyopathy (HOCM). We report the joint experience of 34 consecutive implanted patients.

34 patients, (22 male, mean age 50 ± 18 yrs, range 16–79) with mean symptom duration 7.5 yrs and refractory symptoms (angina: Class II n = 10, III n = 12, dyspnoea: Class II n = 6, Class III n = 26, classe IV n = 1, syncope: n = 13) were implanted after temporary dual chamber pacing had shown left ventricular outflow tract gradient reduction of >30% as assessed by Doppler Echocardiography.

After a mean follow-up of 10.2 ± 10.1 months (range 1–72), 33 patients remained alive. Symptoms improved as follows. Syncope was eliminated in all but 2 patients and 1 patient developed syncope after implant. Angina improved in 14 but was unchanged in 4 patients and worsened in 4 and developed in 5. Dyspnoea was improved in 28/33 and unchanged in 5 patients. Left ventricular outflow tract gradient decreased from 75 ± 29 (range = 36–115) mmHg to 35 ± 27 (range 6–80) mmHg [p < 0.001]. Patients who did not improve were younger (mean age 36.6 yrs) and had a shorter follow-up.

*Conclusion.* Longer follow up after pacing for HCM sees re-emergence of old and development of new symptoms in some patients despite continued medical therapy.

TUESDAY P.M.