The Mitral Valve in Patients with Hypertrophic Cardiomyopathy

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DYNAMIC LV OUTFLOW OBSTRUCTION IN HCM

1958

1969
Eugene Braunwald, MD and the Early Years of Hypertrophic Cardiomyopathy: A Conversation With Dr. Barry J. Maron

Am J Cardiol, in press

Figure 1. Eugene Braunwald, 1963.

Figure 2. Andrew Glenn Morrow, 1963.
DYNAMIC LV OUTFLOW OBSTRUCTION IN HCM
Provokable Obstruction During Physiologic Exercise

Courtesy of Dr. Stefano Nistri
Hypertrophic Cardiomyopathy Is Predominantly a Disease of Left Ventricular Outflow Tract Obstruction

Martin S. Maron, MD; Iacopo Olivotto, MD; Andrey G. Zenovich, MSc; Mark S. Link, MD; Natesa G. Pandian, MD; Jeffery T. Kuvin, MD; Stefano Nistri, MD; Franco Cecchi, MD; James E. Udelson, MD; Barry J. Maron, MD

Circulation, 2006;114:2232

Figure 3. Prevalence of LV outflow tract obstruction in the overall study group of 320 HCM patients. *Includes 30 patients with modest exercise gradients of 30 to 49 mm Hg and 76 patients with gradients ≥50 mm Hg.
DYNAMIC LV OUTFLOW OBSTRUCTION IN HCM
DYNAMIC LV OUTFLOW OBSTRUCTION IN HCM
ASSOCIATED MITRAL VALVE DISEASE
Anomalous Insertion of Papillary Muscle Directly Into Anterior Mitral Leaflet in Hypertrophic Cardiomyopathy

Significance in Producing Left Ventricular Outflow Obstruction

Heinrich G. Klues, MD; William C. Roberts, MD; and Barry J. Maron, MD

Circulation, 1991
Morphological Determinants of Echocardiographic Patterns of Mitral Valve Systolic Anterior Motion in Obstructive Hypertrophic Cardiomyopathy

Heinrich G. Klues, MD; William C. Roberts, MD; and Barry J. Maron, MD

Circulation, 1993
Mitral Valve Abnormalities Identified by Cardiovascular Magnetic Resonance Represent a Primary Phenotypic Expression of Hypertrophic Cardiomyopathy

Martin S. Maron, MD, Iacopo Olivotto, MD, Caitlin Harrigan, BA, Evan Appelbaum, MD, C. Michael Gibson, MD, John R. Lesser, MD, Tammy S. Haas, RN, James E. Udelson, MD, Warren J. Manning, MD and Barry J. Maron, MD

Circulation, 2011
Figure 2

Anterior Mitral Leaflet Length (mm)

- HCM: p=0.34
- Controls: p=0.63

Posterior Mitral Leaflet Length (mm)

- HCM: p=0.98
- Controls: p=0.49

Age (years)

- ≤20
- 21-30
- 31-40
- 41-50
- 51-59
- ≥60
Figure 3

Leaflet Length (mm)

Maximum LV Wall Thickness (mm)

Anterior (p=0.55)

Posterior (p=0.40)
Developmental origins of hypertrophic cardiomyopathy phenotypes: a unifying hypothesis

Iacopo Olivotto, Franco Cecchi, Corrado Poggesi and Magdi H. Yacoub
PERI-OPERATIVE EVALUATION
PERI-OPERATIVE EVALUATION

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CONCLUSIONS

✓ The mitral valve is intrinsically abnormal in HCM.

✓ Increased mitral leaftlet dimensions are a main determinant of dynamic LV outflow obstruction, in the context of a “pathophysiological conspiracy”.

✓ The etiology of mitral abnormalities is unknown; a developmental origin may be hypothesized.

✓ Understanding mitral valve pathophysiology in HCM is crucial for clinical decision making in symptomatic patients with obstruction.
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Preliminary Program

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