MITRAL VALVE PROLAPSE AND SUDDEN CARDIAC DEATH- OBJECTIVE MEASUREMENTS OF THE MITRAL VALVE.

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Background: Mitral valve prolapse (MVP) is common with aging and can lead to severe complications. MVP in sudden cardiac death (SCD) is a challenge for the cardiologist. Diagnosis at autopsy is even more challenging as there are no established pathological diagnostic criteria.

Methods: 103 cases (1.4%) of MVP as the cause of death in 7,339 SCD referrals. We measured the mitral annulus, anterior and posterior leaflets, rough zone, and leaflet disjunction of 17 MVP cases and objectively compared to 104 morphologically normal hearts.

Results: Mean age at death was 38 (±15 years), 43.7%≤35 years of age, 52:51 ratio of males to females. MVP hearts weighed more than morphologically normal hearts (413g vs 352g, p≤0.0001). Increased annular circumference (91 vs 75mm; p≤0.001); elongation of the anterior leaflet (26 vs 22mm) and rough zone (15 vs 10mm) with thickening (2 vs 1mm) all p≤0.001; elongation of scallops of posterior leaflet (14, 18, and 16mm vs 10, 11, 11mm) with thickening (2 vs 1mm) both p≤0.001; increase in leaflet disjunction (2 vs 1mm) p≤0.01 was seen. 75.7% (78/103) of cases had left ventricular fibrosis, often in the posterior wall (59%, 46/78). Interstitial fibrosis was predominant (27%, 21/78) over replacement fibrosis (22%, 17/78).

Conclusion: This is the largest MVP series with significant quantitative measurements of the mitral valve annulus and leaflets, heart weight, and myocardial fibrosis in SCD. These measurements should serve as a reference for pathologists assessing post-mortem hearts for MVP which is becoming more important with the concept of a malignant phenotype.