Sudden Cardiac Death in Adolescents: Insights from a Large United Kingdom Registry

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Background: Causes and precipitating factors of sudden cardiac death (SCD) in adolescents are poorly understood. The aim of the study was to investigate the etiologies of SCD and their association with intensive physical activity in a large cohort of adolescents. Design: Between 1994 and June 2022, 7675 cases of SCD were consecutively referred to our national cardiac pathology centre; 756 (10%) were adolescents (age 16±2 years, 69 % males). All subjects underwent detailed autopsy evaluation including histological analysis by expert cardiac pathologists. Clinical information, including athletic status, was obtained from referring coroners. S253 Results: A structurally normal heart, indicative of sudden arrhythmic death syndrome (SADS) was the most prevalent autopsy finding (n=474, 63%). Myocardial diseases were detected in 163 (22%) cases, including arrhythmogenic cardiomyopathy (AC) (n=36; 5%), hypertrophic cardiomyopathy (HCM) (n=31; 4%), idiopathic left ventricular hypertrophy (LVH) (n=31; 4%) and myocarditis (n=30; 4%). Coronary artery anomalies were identified in 17 (2%) cases while congenital heart disease and/or valve disease were identified in 44 cases (6%). Decedents were competitive athletes in 128 (17%) cases and 159 (21%) decedents died during exercise. SADS was less common in athletes (52%) compared to non-athletes (65%), p<001. AC was diagnosed in 8% of athletes compared with 4% of non-athletes, p=0.05 while myocarditis was exclusively found in non-athletes (5% of the cases, p<0.001). Coronary artery anomalies were significantly more common in athletes (9% vs 1%, p<0.001) as well as commotio cordis (5% compared to 1% in non-athletes, p=0.001). The three main comorbidities were asthma (n=58; 8%), epilepsy (n=44; 6%) and obesity (n=40; 5%). Conclusions: SADS and myocardial diseases are the most common conditions predisposing to SCD in adolescents. Arrhythmogenic cardiomyopathy, coronary artery anomalies and commotio cordis are more prevalent in young athletes who die suddenly