Obesity in young sudden cardiac death: rates, clinical features, and insights into people with body mass index >50kg/m^2

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Background: Obesity is common in young sudden cardiac death (SCD) victims but it is unclear whether it is more common than in the general population. This study aimed to contextualize young SCD obesity rates, identifying clinical and pathologic features in WHO class II and III obesity.

Methods: A prospective state-wide out-of-hospital cardiac arrest registry included all SCDs in Victoria, Australia from 2019–2021. Body mass indices (BMIs) of patients 18–50 years were compared to age-referenced general population. Characteristics of SCD patients with WHO Class II obesity (BMI \( \geq 30 \)kg/m^2) and non-obesity (BMI <30kg/m^2) were compared. Clinical characteristics of people with BMI \( >50 \)kg/m^2 were assessed.

Results: 504 patients were included. Obesity was strongly over-represented in young SCD compared to the age-matched general population (55.0% vs 28.7%, \( p<0.0001 \)). Obese SCD patients more frequently had hypertension, diabetes and obstructive sleep apnoea (\( p<0.0001 \), \( p=0.009 \) and \( p=0.001 \) respectively), ventricular fibrillation as their arrest rhythm (\( p=0.008 \)) and left ventricular hypertrophy (LVH) (\( p<0.0001 \)). Obese patients were less likely to have toxicology positive for illicit substances (22.0% vs 32.6%, \( p=0.008 \)) or significant alcohol history (18.8% vs 26.9%, \( p=0.030 \)). Patients with BMI \( >50 \)kg/m^2 represented 8.5% of young SCD. LVH (n=26, 60.5%) was their predominant cause of death and only 10 (9.3%) patients died from coronary disease.

Conclusion: Over half of young Australian SCD patients are obese, with all obesity classes over-represented compared to the general population. Obese patients had more cardiac risk factors. Almost two thirds of patients with BMI \( \geq 50 \) kg/m^2 died with LVH, with fewer than 10% dying from coronary disease.