
SMI-Associated Sudden Cardiac Death



A study published in JAMA Cardiology aimed to measure the prevalence of silent myocardial infarction (SMI) in patients that have had a sudden cardiac death (SCD) with no other history of coronary artery disease (CAD).

SCD is responsible for 50% of cardiac deaths, with CAD being the most common cause. As SCD is usually the first occurrence of any underlying heart problems it can be difficult to understand what exactly caused SCD before the event, with half of the myocardial infarctions (MI) not clinically recognised.

The researchers used a case-control study where they were able to gather results from autopsies and compare the clinical characteristics with the ECG markers for individuals that had an SMI, leading to an SCD. Data was gathered using the Finnish Genetic Study of Arrhythmic Events (Fingesture) study, generating a population of 5869 individuals that had an SCD confirmed by autopsy.

The study found that in the population tested, 42.4% had experienced an SCD with no previous history of CAD. After surveying the ECGs conducted before the SCD event, 2/3 of individuals were found to have abnormal ECG results. This describes people that had a previously undetected MI that was recorded on the ECG as Q waves and T-wave inversions, signalling myocardial scarring.

Certain characteristics were noted in individuals that had experienced an SCD associated with an SMI. One of the most prominent characteristics being increased SMI prevalence in individuals of older age, with this presenting more commonly in men. Heart weight in both men and women was also seen to be higher in those that had experienced an SMI, as cardiac hypertrophy often follows an MI to compensate and maintain stroke volume. Also, it was found that more participants that had experienced an SMI had their SCD occur during physical activity, with a large proportion taking place outdoors.

With the high proportion of undetected MI prevalence, further studies on additional methods for detecting and diagnosing SMIs would be advantageous, as many of the myocardial events did not present on ECGs before the SCD event.

Source: [JAMA Cardiology](#)

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