

An Initiative to Educate General Population on Sudden Cardiac Death- A Short Discussion

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Abstract

Cardiovascular disease is the leading cause of deaths across the globe accounting for 17.8 million deaths in 2017. It has been studied that sudden cardiac deaths account for 40% -50% of all the cardiovascular related deaths. Among this about 10%-20% of all deaths are mostly related to dysrhythmias of the ventricles [1]. These enormous numbers signify the importance of the cardiac health awareness among the general population to be able to take measures to prevent SCD. It has been studied that various factors affecting the heart such as dysrhythmias, cardiac hypertrophy, cardiomyopathy, infections of heart valves and cardiac inner lining called endocardium can cause SCD by themselves or when aggravated by other factors such as stress and exertion [2]. Due to the staggering statistics of SCD, it is imperative that the general population are aware of its causes and steps which can be taken for early recognition of risk factors and prevention.

Abbreviations

Sudden Cardiac Death (SCD), Ischemic Heart Disease (IHD), Left Ventricular Ejection Fraction (LVEF), Implantable Cardioverter- Defibrillator (ICD), Hypertrophic Cardiomyopathy (HCM), Arrhythmogenic Cardiomyopathy (ACM)

Introduction

Since evidence shows that most of the SCD occur without any warning signs, it is imperative that the general population are aware of cardiac health. This awareness will help them to be proactive in managing and maintaining cardiac health. Further, it helps to prevent SCD by recognizing and managing preventable risk factors. It has been studied that SCD can be caused by conditions affecting heart, respiratory system, metabolic conditions and infections. Though most of the SCD are caused due to arteries supplying to heart muscle, the reason for about 40% of the SCDs is not explained. Though the exact risk factors of SCD other than Ischemic Heart Disease (IHD) and stroke are not known, factors such as obesity, hypertension, coronary heart disease, male gender, high resting heart rate, diabetes mellitus including modifiable risk factors like smoking may contribute to the fatality. Further, cardiomyopathy and inherited arrhythmias are also known to contribute for SCD [3]. Other causes of SCD are known to be low left ventricular ejection fraction (LVEF) [4], caffeine induced hypokalemia affecting the functioning of heart [5], hypertrophic cardiomyopathy (HCM) [6] and structural abnormalities of heart [7].

Background

United States of America alone records approximately 350,000 SCD each year [1]. It has been studied that about 45%- 90% of the natural deaths are due to cardiac conditions solely or in conjunction with any other illnesses or conditions causing exertion of the heart. Out of all the SCDs about 8.3% deaths have no known cause. About 75% of the SCDs in non-atheromatous conditions were known to have caused from myocardial ischemia during severe physical exertion. This could be due to tachycardia, shorter diastolic time and severe compression during systole [2]. Since evidence shows relation between SCD and genetics, cardiac conditions, non- erythematous conditions, caffeine, physical exertion and structural abnormalities, it is important to study these aspects to prevent SCD.

Discussion

Since SCD occur is general population who do not have any cardiac conditions, it is important that the population-based strategies should be taken up to maintain cardiac health to prevent SCD. It has been studied that physical activity decreases the SDC risk by 50% though more study is needed about the exact physical activity and intensity [1]. Though physical activity lessens the risk of SCD, evidence supports that, sudden physical exertion will cause SCD due to physiological changes that occurs in functioning of the heart [2]. This makes it imperative that the general population are aware of the risk of SCD with severe physical exertion to be able to prevent them.

Correlation between SCD with inherited arrhythmias and cardiomyopathy, recognizes that genetic testing may be beneficial in recognizing the risk factors. SCD can be prevented in these clients with genetic cardiac conditions by avoiding medical management with high risk medications [3]. Genetic studies will be helpful in determining the medical management of any cardiac conditions if necessary. It is also helpful in determining the need for implantable cardioverter- defibrillator (ICD) in clients who are at risk of developing ventricular arrhythmias before the ventricles go into severe dysfunction [3]. Due to the risk of SCD in HCM, the SCD

risk assessment is recommended for evaluating the use of ICD as prophylaxis to prevent SCD [6]. Congenital or acquired structural abnormalities of the heart such Arrhythmogenic Cardiomyopathy (ACM) and Hypertrophic Cardiomyopathy (HCM) are known to cause arrhythmias which are sometimes fatal, causing SCD. Due to the fatality caused due to structural and functional abnormalities, it is proposed that further studies are recommended in use of 2D Echogram in detection and management to prevent SCD [7]. So far it is observed that, though there is evidence that the 2D Echocardiogram detects cardiac abnormalities which can cause SCD in asymptomatic clients, it is not a protocol to screen the general population for risk through this method [4]. Further studies are needed in this area of early screenings to detect risk factors for SCD. Apart from all the screenings, it is important that the general population are educated on the effects of moderate intake of caffeine on SCD. This is important primary prevention initiative as moderate amount of caffeine is known to cause severe hypokalemia. Caffeine causes potassium to redistribute into cells and increases the renal excretion of potassium. It can also deplete potassium through both the above mechanisms [5]. Though the cardiac screenings are important, primary prevention strategies pertaining to diet, exercise and stress management also should be stressed so general population are aware of the causes and prevention of SCD.

Conclusion

To conclude, the importance of the educating general population is enormous due to the staggering numbers of SCD. The sudden fatalities caused due to structural, functional, infections and other conditions of heart necessitate initiatives to educate the population about the importance of lifestyle, periodic health screenings and follow-up care to prevent SCD.

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