

CASE REPORT

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Sudden cardiac death during symptom-free postoperative period of coronary artery bypass graft surgery: Mystery or solved?

Keyur Vora, Harish Vaja

ABSTRACT

Introduction: The risk of sudden cardiac death (SCD) in patients with diabetes after coronary artery bypass graft surgery (CABG) has not been studied in a contemporary clinical trials of surgical revascularization. This report analyses an incidence, timing and mechanistic predictors of sudden cardiac death after CABG in a diabetic patient. **Case Report:** We report a case of an elderly diabetic patient with normal left ventricular ejection fraction and relatively low-risk profile for elective CABG surgery. In an uneventful postoperative routine, sudden cardiac death was unexpected on mild to moderate exertional activity. **Conclusion:** The physiological events during defecation induced straining are simulated valsalva maneuver and may have led to syncope and cardiorespiratory arrest. Considering growing volume of diabetic patients with multivessel coronary artery disease, meticulous critical care monitoring guidelines are needed to be continuously optimized for successful postoperative intensive care.

Keywords: Coronary artery bypass graft surgery, Diabetic neuropathy, Sudden cardiac death

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INTRODUCTION

Sudden cardiac death has been reported in postoperative coronary bypass graft surgery (CABG) with postoperative span of first week to several months later. It is well-known phenomenon that mortality risk is high among patients of severe left ventricular dysfunction (LVEF<30%) [1]. The surgical treatment for ischemic heart failure trial showed that in patients with ischemic cardiomyopathy, CABG with medical therapy resulted in higher mortality at 30 days, but with a significant improvement in long-term mortality (out to 10 years) compared with medical therapy alone [2]. However, sudden cardiac death among patients of preoperative good left ventricular function is rare. We report a case of three days postoperative CABG patient with relatively symptom-free period and sudden cardiac death after routine physical activity.

CASE REPORT

A 70-year-old male diabetic (type II) patient with BMI 27.8 kg/m² was admitted with multi-vessel disease for elective CABG surgery. The patient was relatively

Keyur Vora¹, Harish Vaja¹

Affiliation: ¹Kiran Multispecialty Hospital & Research Center, Surat, India.

Corresponding Author: Keyur Vora, Kiran Multispecialty Hospital & Research Center, Surat, India; Email: dr-keyurvora@gmail.com

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asymptomatic and preoperative investigations were within normal limits. Echocardiography study reveals LVEF 52–55% and grade I diastolic dysfunction. The surgery was uneventful and postoperative recovery was normal. Diet, physiotherapy and intermittent noninvasive ventilation support were given as per the protocol of the institution for CABG patients. On day-3, patient had bowel movement with moderate straining without any symptoms or signs. However, without any premonitory symptoms, patient immediately underwent sudden unconsciousness without any prior changes in electrocardiogram (ECG). The patient underwent bradycardia and ECG revealed near asystole. Advanced cardiac life support protocol was followed instantly and no delay reported in starting cardiopulmonary resuscitation. Echocardiography revealed regional wall motion with severe hypokinesia. The patient was revived for a brief period before undergoing recurrent asystole and could not be revived.

DISCUSSION

Sudden cardiac death among immediate postoperative period results from acute thromboembolism, tachyarrhythmias like supraventricular tachycardia, ventricular tachycardia/fibrillation (VT/VF), myocardial suppression with preoperative severe left ventricular dysfunction, graft occlusion or spasm, complicated diabetes or sepsis complications. This case needs assessment in terms of other probable causes for sudden cardiac death. Emergency echocardiography reveals severe left ventricular dysfunction (LVEF<30%) with regional wall motion abnormality suggesting graft compromise. Fair right ventricular function rules out any possibility of acute thromboembolism. The necropsy was not done due to consent issues and local laws.

The possibility of early graft rejection is a clinical challenge as patients do not express typical symptoms of myocardial infarction. Apparently, diagnosis was not considered in the absence of new electrocardiogram (ECG) modifications or new regional wall motion abnormalities. Moreover, sudden cardiac death due to exertional syncope has been reported by Curtis et al. [3] and Kapoor et al. [4]. The defecation straining leads to increased intrathoracic pressure with increased systemic arterial pressure and reflex bradycardia; resulting into prolonged neurocardiogenic or situational syncope causing severe bradycardia and slow flow in grafts which started a vicious cycle of myocardial ischemia, cardiorespiratory arrest and severe respiratory acidosis. Refractory bradycardia and hypotension unresponsive to atropine and ephedrine are highly likely in diabetic patients due to autonomic dysfunction [5]. The physiological events during defecation induced straining are simulated valsalva maneuver and may have led to syncope and cardiorespiratory arrest.

CONCLUSION

This case report highlights the importance of advanced critical care monitoring especially in postoperative diabetic patients. High level of suspicion is of paramount importance in monitoring postoperative patients even with low cardiovascular risk profile. The case report is one of the rare reports of coronary bypass graft surgery (CABG) postoperative sudden cardiac death; likely due to neurocardiogenic syncope with autonomic dysfunction even in the presence of good left ventricular function and relatively symptom-free postoperative stay. Large pool of data on postoperative sudden cardiac death and necropsy analysis would give vital information on potential mechanisms, risk/benefit evaluations, anesthesiological management and would recuperate guidelines for meticulous cardiac postoperative intensive care. Considering growing volume of diabetic patients with multivessel coronary artery disease, meticulous critical care monitoring guidelines are needed to be continuously optimized for successful postoperative intensive care.

Author Contributions

Keyur Vora – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Harish Vaja – Substantial contributions to conception and design, Acquisition of data, Drafting the article, Final approval of the version to be published

Guarantor

Guarantor of submission is Keyur Vora – Corresponding author of the manuscript.

Conflict of Interest

Authors declare no conflict of interest.

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