

Short Report

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Consciousness in cardiac arrest: A case report

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Introduction

Despite substantial advancements in the management of cardiac arrest, high-quality Cardiopulmonary Resuscitation (CPR) remains the cornerstone of care. We present a rare case of CPR-Induced Consciousness (CPRIC), an uncommon yet increasingly prevalent phenomenon.

Case report

A 41-year-old woman three weeks post full-term normal spontaneous vaginal delivery presented to the Emergency Department (ED) with sudden-onset chest pain. Shortly after arrival, she experienced a witnessed cardiac arrest and received immediate CPR. Initial cardiac rhythm interpretation revealed Ventricular Fibrillation (VF), prompting defibrillation before conversion to Torsades de Pointes and Pulseless Electrical Activity (PEA). Care was dictated per standard Advanced Cardiac Life Support (ACLS) measures. Throughout the resuscitation, she demonstrated eye-opening and purposeful movements during chest compressions, attempting to redirect manual compressions away from her chest. In one instance she attempted to

get off the stretcher. Cessation of chest compressions led to immediate loss of consciousness and pulses, with persistent PEA on telemetry. Team members expressed concern that they may be harming the patient or potentially performing unnecessary CPR. In the setting of ongoing resuscitative efforts, and with the continued logistical challenges and ethical concerns of her transient consciousness, she was sedated, paralyzed, and intubated. Return of Spontaneous Circulation (ROSC) was achieved before the patient was placed on Extracorporeal Membrane Oxygenation (ECMO). She was subsequently found to have sustained a spontaneous coronary artery dissection as the etiology of her cardiac arrest.

Discussion

We present this case of a patient in cardiac arrest who exhibited purposeful movements during CPR as an example of CPR-Induced Consciousness (CPRIC). The phenomenon of CPRIC encompasses a spectrum of clinical signs of cerebral perfusion that disappear with discontinuation of CPR. Although the precise pathophysiology of CPRIC remains unknown, the limited extant literature surmises that high quality chest compressions

generate sufficient circulatory support to maintain a tenable cerebral perfusion pressure [1-3]. Patients may exhibit purposeful movements, respond to commands, or even be able to communicate with providers [3]. CPRIC is most likely to be seen in cases of shockable cardiac arrest witnessed by professional rescuers [1,2], and is thought to be increasing in frequency with advancements in resuscitation science [4]. Furthermore, CPRIC has been associated with increased likelihood of Return of Spontaneous Circulation (ROSC) [5], survival to hospital admission, and survival to discharge.

To our knowledge, this case represents the youngest reported instance of CPRIC in the United States [4]. Our search of the global literature revealed only two such cases in younger patients: a 27-year-old woman in Taiwan, and a 38 year old man in Canada [6], both of whom survived to hospital discharge [7].

As was the case in our patient, differentiation between CPRIC and ROSC can be challenging, leading to diagnostic delay and interrupted CPR. Given that patients exhibiting CPRIC are disproportionately likely to achieve ROSC, consistent high-quality compressions are of paramount importance [2,8]. The relative rarity of this phenomenon is complicated by the lack of optimal management strategies. In an attempt to continue high quality compressions without interruption, both analgesia and sedation need to be considered [2]. Providers may elect to employ any of a variety of sedatives [2,3,7-9] or pursue full sedation and paralysis as our team did in this case. Not surprisingly, providers are likely to face confusion and may experience psychological trauma from participating in such a resuscitation.

As cardiac arrest management continues to improve, we anticipate Emergency Physicians will encounter CPRIC on a more frequent basis [1]. The first step in management entails recognition of this rare phenomenon and differentiation from ROSC. Given the strong survival potential of these patients, attention should be directed at maintaining ongoing resuscitative efforts while simultaneously balancing the practical needs of patient restraint with the ethical concerns of the team.

Declarations

Meetings: This case has not been presented elsewhere.

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Conflicts of interest: None of the authors have any conflicts of interest.

Author contributions: All authors (AM, KM, RK, KC, RH, VF, AC) were directly involved in the care of the patient. All authors (AM, KM, RK, KC, RH, VF, AC) assisted in review of the case and preparation of the manuscript.

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