Pitfalls with the “chest compression-only” approach: the challenge of an unusual cause

Bjørn Ole Reid1*, Eirik Skogvoll1,2,3

Abstract
Chest compression-only (CC-only) is now incorporated in the Norwegian protocol for dispatch guided CPR (cardio-pulmonary resuscitation) in cardiac arrest of presumed cardiac aetiology. We present a case that is unique and instructive as well as unusual. It reminds us of the challenges that face bystanders, dispatch centres and ambulance services when faced with possible cardiac arrest. This case report describes a 50 year old man in a rural community. He had suffered a heart attack 8 months previously, and was found unconscious with respiratory arrest in his garden one morning. Due to the proximity to the ambulance station, the paramedics were on the scene within three minutes. A chain-saw was lying beside him, but no external injuries were seen. The patient had no radial pulse, central cyanosis and respiratory gasps approximately every 30 seconds. Ventilation with bag and mask was given, and soon a femoral pulse could be palpated. Blood sugar was elevated and ECG (electrocardiogram) was normal. GCS (Glasgow Coma Scale) was 3. Upon arrival of the physician staffed air ambulance, further examination revealed bilateral miosis of the pupils and continuing bradypnoea. Naloxone was given with an immediate effect and the patient woke up. The patient denied intake of narcotics, but additional information from the dispatch centre revealed that he was hepatitis C positive. After a few hours, the patient admitted to have obtained a fentanyl transdermal patch from an acquaintance, having chewed it before falling unconscious. This case report shows the importance as well as the challenges of identifying a non-cardiac cause of possible cardiac arrest, and the value of providing causal therapy.

Introduction
Since 2009, chest compression-only (CC-only) CPR is incorporated in the Norwegian protocol for dispatch CPR for cardiac arrest of presumed cardiac aetiology [1]. This is in accordance with recommendations from the Norwegian Resuscitation Council (http://www.nrr.org/wp-content/uploads/2009/12/NRR-om-brystkom-presjoner-alone.pdf, accessed 17.06.2010). A case report illustrating the success of this approach has recently been published [2]; moreover equal efficacy of CC-only CPR compared to traditional CPR in which chest compressions are interspersed with ventilations has been shown [3], although this may not be the case in children [4]. While defaulting to CC-only CPR, the new dispatch protocol nevertheless presupposes that patients with a likely hypoxic cause of their cardiac arrest should receive standard CPR with ventilations. Drowning, strangulation and drug overdose are highlighted as reasons for suspecting hypoxia as the cause of the arrest [1]. This presupposition clearly puts a great challenge on the dispatchers to correctly identify the aetiology. The present case report is based on interviews with the Emergency Medical System (EMS) personnel involved, the ambulance-/air ambulance case reports, and documentation from the emergency dispatch centre. The patient has given written consent to the publication. We believe it is unique and instructive as well as unusual; reminding us of the challenges that face bystanders, dispatch centres and ambulance services when faced with possible cardiac arrest.

Case presentation
A 50 year old man living in a rural community was one morning found in his garden unconscious and in respiratory arrest. The local ambulance station was only 100 metres away, thus paramedics were on scene within...
the patient had not received such prompt effective ventilation. The hypothesis and increased cardiac output to a satisfactory level. Unconsciousness was reversed with an antidote. The question must be raised as to whether the satisfactory outcome would have been obtained if the patient had not received such prompt effective ventilations. Under usual circumstances with a longer prehospital response time, it is very likely that it would have been interpreted as an arrest of a primary cardiac cause. The protocol for dispatch guided CPR would advise compressions-only for bystanders. In an already seriously hypoxic patient, compressions-only would probably have been of little benefit to the patient.

The beauty of traditional CPR is that the combination of compressions and ventilations will cover most potentially reversible causes of cardiac arrest. Whether the simplification that follows from defaulting to CC-only really is beneficial, remains to be seen.
In conclusion, prehospital cardiac arrest poses a substantial challenge for bystanders, dispatch centres and EMS personnel. With new protocols that assume a cardiac cause by default, a high grade of awareness and suspicion is necessary. Collection and sharing of relevant clinical details, history and information is crucial.

Author details
1 Dept. of Anaesthesiology and Emergency Medicine, St. Olav University Hospital, N-7006 Trondheim, Norway. 2 Norwegian University of Science and Technology (NTNU), Faculty of Medicine, Institute of Circulation and Medical Imaging, P.O. Box 8905 MTFS, N-7491 Trondheim, Norway. 3 Norwegian Air Ambulance Foundation, P.O. Box 94, N-1441 Drøbak.

Authors’ contributions
BOR drafted the manuscript. ES made substantial revisions. Both authors have revised, read and approved the article.

Competing interests
The authors declare that they have no competing interests.

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