A Case of Commotio Cordis Caused by Horse Kick
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Citation

Abstract
Sudden death in adults after non-penetrating chest blows are rare cases which are successfully resuscitated. Commotio cordis is the most described report during sporting activities in the youth. There have been very few reports of commotio cordis caused by other traumas. They endure a low survival rate. We reported a rare case of commotio cordis caused by a horse kick injury in a middle-aged male, who was successfully resuscitated and discharged without any neurological sequelae. This case can be classified as commotio cordis as the ventricular fibrillation (VF) had developed immediately after chest injury.

The patient was a 46 year-old male who suffered a severe horse kick impact to the chest while examining the horse. He had no history of cardiac disease or other system diseases. The patient was transported to our hospital in a private car. He arrived at the emergency room within 10 minutes of the accident. There was no basic life support until he arrived. Evidence of ventricular fibrillation led the doctor to carry out immediate defibrillation with a biphasic defibrillator and started cardiopulmonary resuscitation. We performed endotracheal intubation. Return of the spontaneous circulation was restored within 10 minutes of CPR, and establishment of normal sinus rhythm was confirmed. The patient was immediately examined for internal organ injuries that might cause death.

General physical examination determined an 8 cm in length abrasion in the chest wall resulting from blunt trauma, and computerized tomography of the chest showed pulmonary contusion on the left lung. There wasn’t any pneumothorax, hemothorax or cardiac tamponade in the imaging of the mediastinum. The patient was transported to our hospital’s Intensive Care Unit. On arrival, he was hemodynamically stable and image studies were clear. The vital signs were stable (blood pressure: 125/77 mmHg, heart rate: 88 bpm, respiratory rate: 24 bpm, body temperature: 36.0 c). Glasgow Coma Scale score was 3 (E1 V1 M1). Serum CK-MB and Troponin I levels were normal. No evidence of any other critical injury was detected. The patient remained in the ICU for two days. During the clinical course, the patient remained hemodynamically stable and there was no recurrence of arrhythmia. On day 2, he had woken up and extubation had been performed by the ICU doctors. He was able to communicate and asked for discharge. Three days after being accepted to the intensive care unit, he was discharged on his request.

DISCUSSION
According to American Registry, a total of 128 cases of Commotio Cordis occurring during sporting activities have now been reported as most victims being young males, but may also be seen in adults (1). Although once thought to be exceedingly rare, Commotio Cordis is being reported with increasing frequency after chest wall blows (2). Commotio Cordis events are due to low impact, non-penetrating chest wall blows, most of which are not of sufficient force to cause any significant structural damage to the ribs, sternum, or heart. An experimental model for Commotio Cordis suggests that the impact of projectiles on the chest wall of pigs during the period of cardiac repolarization, prior to the peak of the T wave typically induced ventricular fibrillation (7). The prompt detection of VF and the early defibrillation were the keys to the successful outcome in this case. Contusio Cordis is different from Commotio Cordis. Contusio Cordis is due to high impact blows that also result in injury to the above structures of the chest and thorax. Morbidity and mortality were seen as a result of myocardial tissue damage (6). Six cases of cardiac concussion have been reported in adult patients from vehicular accidents (3, 4) and one case has been reported of Commotio Cordis caused by steering wheel injury (5). Three deaths due to blunt cardiac and chest trauma after vehicle accidents are presented where the only significant injuries were contusions of the heart and fractures.
of the sternum and ribs. One case had moderate coronary artery atherosclerosis and another had a blood alcohol level of 0.218%. Given that individuals with cardiac bruising, chest trauma, coronary atherosclerosis, and alcohol intoxication may still die of the same mechanisms as in classic commotio cordis, and that these entities represent a spectrum of findings after chest impact, it may be more useful to separate cases into related subcategories(8). Our patient showed pulmonary contusions on CT but that wasn't the cause of his cardiopulmonary arrest. Apart from these findings, we didn't expect to find any reason in his medical history and findings of images and laboratory results. The age of our case and the high energy chest trauma he was exposed to may not be thought to conform to that of the Commotio Cordis patients identified so far, but the similarity of the history and the findings in the physical examination of our patient with typical commotio cordis cases makes us think that he may also be regarded within the same diagnosis. It has been reported that the previous Commotio Cordis cases involving adults may be considered again based clinical evaluation rather than the age of the patient or the severity of the trauma.

References

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