H43 Liver Laceration as a Complication of Cardiopulmonary Resuscitation (CPR)

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After attending this presentation, attendees will have a better understanding of the potential complications involving resuscitation artifacts in patients, how to differentiate these injuries from trauma prior to resuscitation, and how to determine cause of death.

This presentation will impact the forensic science community by presenting a case of CPR injuries in a patient who had symptoms of myocardial infarction, diagnosed with echocardiography. These types of injuries, such as rib fractures, liver laceration, and contusions, are rare findings at postmortem examination. It is important that these injuries be recognized, differentiated from trauma prior to resuscitation attempts, and diagnosed as the main cause of death.

CPR is an emergency procedure performed in an effort to manually protect brain function until further measures are taken to return spontaneous blood circulation and breathing in a person who is in cardiac arrest.[1] CPR's complications associated with external cardiac compression include trauma to the heart and chest wall and gastrointestinal visceral injury including ruptured stomach and liver.[2] Liver abnormalities may contribute to an increased risk of laceration.[3] Thoracotomy ossification has caused a resuscitation laceration of the liver.[4] Meron et al. identified liver injuries in 0.6% of the patients who were non-traumatic in- or out-of-hospital cardiac arrests.[5]

This study presents a 43-year-old female whose cause of death was ischemic heart disease. She experienced a headache for the past two days and her father had died from heart disease. Except for these, there were no clinical findings. The hepatic injury findings were a surprise because of a lack of information about liver injuries or clinical signs evocative for those in the patient's medical file. CPR was performed for 45 minutes. The external examination at the autopsy revealed no pathologic findings. The internal examination at the autopsy revealed multiple injuries caused by the cardiac massage: liver laceration and contusion, bilateral rib fracture, massive intraperitoneal bleeding of 2,500cc. The heart weighed 306gr, coronary arteries showed occlusive atheroma plaques, and microscopic examination revealed perivascular fibrosis. Others organs revealed no pathologic findings for macroscopic and microscopic findings. The toxicological analysis revealed that no toxic agents or alcohol components were detected in the blood or urine specimens. This case brings attention to physicians of the issue of iatrogenic injuries following CPR and the possibility for these injuries to contribute to thanatogenesis.

This presentation will analyze the role of the pathologist in establishing the correct cause of death by being aware so findings are not misinterpreted.

Reference(s):

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CPR, Artifacts, Liver Laceration

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