

CPR related injuries

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Introduction: CPR related injuries were not properly observed since were established new guidelines for resuscitation (CPR) 2015

Objectives: To describe incidence and seriousness of injuries related to CPR, compare it and try identify factors for seriousness of injury.

Methods: Multicentric study, retrospective analysis of autopsy reports of patients after CPR, trauma were excluded.

We objectivised the most serious injury with Abbreviated injury scale (AIS) and summary of all injuries with New injury severity score (NISS).

Results: We have analyzed 628 autopsies: 80,4% men, age median 67 years, out of hospital cardiac arrests 89,2%, bystander CPR 56,8% and cardiac etiology 78,2%. Ribs injury were founded by 94,6%, injury of lung by 9,9%, sternal injury by 62,4%, liver by 2,5% and spleen by 1,8% Median of the most serious injury was 3 (AIS) and median of summary of injuries was 13 by NISS-low risk of fatal injury. By out of hospital cardiac arrest was higher incidence of pleural injury and thorax vessels injuries without influence on total seriousness of injury compared to hospital cardiac arrests. Bystanders provided CPR had similar incidence and seriousness of injury like CPR provided only by professional emergency staff. Women are significant older ($p=0,0001$), frequency of their injuries are similar to men, but seriousness of their injuries by NISS is significant higher ($p=0,01$). Patients with life threatening injury (AIS 4 and more) has similar baseline profile to their without injury (AIS 0), except of significant higher cardiac etiology of

cardiac arrest by AIS 4+. Manually CPR were provided by 559 patients and mechanical by 64 (11,4%) patients. Both groups are no different in baseline. Mechanical

CRP was significantly longer ($p=0,0005$). Both groups have no differences in incidence of injuries of visceral organs. We have observed injuries by 80% of manual and 87,5% of mechanical CPR ($p=0,18$). The most frequent was thorax skeleton injury 85,5% vs. 87,5%. Median of the most serious injury was 3 (serious by AIS), median of summary of injuries (NISS) was 13 in both groups (low probability of fatal injury). If we analysed CPR by LUCAS 2 compared to manual, results are similar, only pericard injuries are higher with LUCAS 2.

Conclusion: Incidence of CPR related injuries from autopsy reports is very high, but life threatening injuries create only 3%. The highest incidence have injuries of thorax skeleton, especially ribs. There is no differences if patients were resuscitated by bystander or compared to those by professional staff or manually. Women has similar frequency of injuries like men, but significant more serious by NISS. Incidence a seriousness of CPR related injuries according to autopsy reports are no different in comparing of manually and mechanical CPR. Mechanical CPR is significant longer a LUCAS 2 leads to significant more pericard injuries without influence on total seriousness of injury