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Epidemiological study on the use of adrenaline in non-traumatic out-of-hospital cardiac arrest resuscitation in emergency departments

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Introduction

Recent large observational studies have shown that the use of adrenaline in out-of-hospital cardiac arrest (OHCA) is only associated with improved rates of return of spontaneous circulation (ROSC) / survival to admission (STA) but not survival to discharge (STD) or neurological outcome. There is no international guideline or recommendation to govern the use of adrenaline especially the number of doses given before termination of resuscitation (TOR) in literature. A consensus practice of using at most 3 doses of adrenaline in non-traumatic OHCA with asystole as initial rhythm has been adopted locally in Hong Kong.

Objectives

To describe the use of adrenaline in non-traumatic OHCA adult resuscitation with particular focuses on the number of doses of adrenaline used, compliance to local consensus and the outcomes of resuscitation including ROSC, STA, STD in two local AEDs.

Methodology

It was a retrospective study performed in 2 local AEDs based on a cardiac arrest registry (CAR). The subjects included adult patients (aged 18 or above) with non-traumatic OHCA from

1st Oct 2015 to 30th Sept 2016. Exclusion criteria included patients with post mortem changes, death after arrival and those with shockable rhythm.

The compliance rate of following the consensus practice, the survival to admission rate versus the control group (resuscitation using more than 3 doses of adrenaline), the survival to discharge rate versus the control group was measured. Student t-test or Chi square test were used for group comparisons where appropriate.

Result

A total of 684 patients were recruited in the study. The compliance rate of consensus practice of using 3 doses of adrenaline was 55.0%. The STD of consensus group was 31.4% (118/376 patients) while that of control group was 23.4% (72/ 308 patients). The survival to discharge of consensus group was 0.8% (3/376 patients) while that of control group was 0.3% (1/308 patients). The rate of witnessed cardiac arrest was significantly higher in the control group than the consensus group. ($p = 0.001$)

The compliance of following the consensus practice of using at most 3 doses of adrenaline in resuscitation of patients with OHCA is suboptimal. A substantial proportion of medically futile patients were resuscitated.