

Management of Hypokalemia in Cardiac Arrest

Introduction

1. Severe hypokalemia may precipitate profound and life-threatening cardiac complications including ventricular tachycardia and asystole.
2. Classical teaching is that in cardiac arrest with non-shockable rhythms the management includes to identify and treat the H's & T's which include hyper and less commonly hypokalemia.
3. Potassium chloride is the therapy of choice, however, the dose and administration of potassium during cardiac arrest is controversial and limited to case series and case reports.

Pharmacology		Overview of Evidence			
	Potassium Chloride	Author, year	Design/ sample size	Case & Intervention	Outcome
Dose	<ul style="list-style-type: none"> 10-20 mEq initial dose followed by institutional protocol 	Elmahrouk, 2020	Case report	<ul style="list-style-type: none"> 46-year-old post CABG with malignant ventricular arrhythmia on ECMO and intra-aortic balloon pump s/p various antiarrhythmic medications. IV KCl 20 mEq boluses 	<ul style="list-style-type: none"> s/p KCl, the rhythm changed to sinus rhythm Pt discharged home on a regular rehabilitation program
Administration	<ul style="list-style-type: none"> Administer at 2 mEq/min followed by another 10 mEq IV over 5-10 mins 	Liu, 2020	Case report	<ul style="list-style-type: none"> Case: 21 yr old with PMHx hyperthyroidism with thyrotoxicosis and K+ 1.5 mEq/dL IV bolus KCl 40 mEq/40 mL via the central 	<ul style="list-style-type: none"> ROSC with stable hemodynamic status at 8 minutes post KCl after 31 total minutes of CPR Pt was extubated on the next day and was discharged without any complication after a total of 5 hospital days
PK/PD	<ul style="list-style-type: none"> Onset Immediate Increase in serum potassium is variable Renal excretion 85-90% Removed by dialysis. 	Jouffroy, 2014	Case report	<ul style="list-style-type: none"> 50-year-old male with refractory ventricular fibrillation (VF) out-of-hospital cardiac arrest (OHCA) s/p ECMO, 20 shocks, and various antiarrhythmic medications IV KCl 40 mEq via central line 	<ul style="list-style-type: none"> Less than 1 min later, the patient had sinus cardiac rhythm, and progressively recovered circulatory function Patient was discharged on day 11 with a cerebral performance category score of 2.
Comment	<ul style="list-style-type: none"> Compatible with magnesium sulfate, calcium chloride, epinephrine, amiodarone, lidocaine, and vasopressin Lethal injection dose is ~100+ mEq undiluted as IV push x 1-3 <ul style="list-style-type: none"> Being replaced to sedatives due to issues with efficacy and ethical issues 	Abdulaziz, 2012	Case report	<ul style="list-style-type: none"> 23-year-old woman presenting in DKA and cardiac with K+ 1.7 mEq/dL IV KCl 40 mEq via central line 	<ul style="list-style-type: none"> Immediate reversal of asystole and a return to sinus rhythm. Patient had full recovery with no residual neurological deficit
		AHA ACLS Guidelines		<ul style="list-style-type: none"> "If cardiac arrest from hypokalemia is imminent (ie, malignant ventricular arrhythmias), rapid replacement of potassium is required. Give an initial infusion of 2 mEq/min, followed by another 10 mEq IV over 5 to 10 minutes." 	