

CORRESPONDENCE

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Should Calcium Be Used to Treat Hyperkalemia after Succinylcholine?

To the Editor:—The furor about the revised label for succinylcholine (SCh) in part includes amazement at the high mortality rate in these pediatric patients with hyperkalemia.¹⁻⁴ Most expect successful resuscitation as the K⁺ is redistributed, even during arrest and cardiopulmonary resuscitation. However, the clinicians caring for these patients with acute cardiac arrest may not have realized that hyperkalemia could have been the proximate cause and therefore followed American Heart Association guidelines that emphasize the lack of improved outcome with the use of calcium salts.⁵ This choice, to not use calcium during resuscitation, may be the case when there is asystole. Further, the picture is sometimes confused with malignant hyperthermia, and many may then be reluctant to treat with calcium because of a possible triggering action.⁶ However, this approach is historical and is without a solid scientific basis.

The gradient between extracellular and intracellular calcium concentrations is about 10,000-fold during relaxation and close to 1,000-fold during active contractile activity. Administration of exogenous calcium will do little to alter this gradient, as plasma calcium concentration will still be in the millimole range. Further, several studies document the inability of exogenous calcium to trigger malignant hyperthermia in the genetically pure porcine model, even with extracellular calcium concentrations to 7.5 mM (during cardiopulmonary bypass, because cardiac function is impossible in this situation).^{7,8} In addition, calcium given during human cardiac arrest and during an episode of malignant hyperthermia can be therapeutic and life-saving.⁹

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