
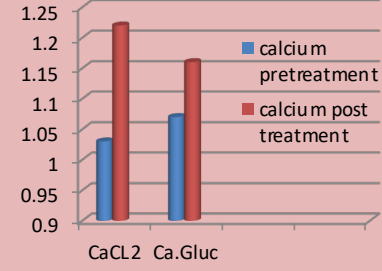
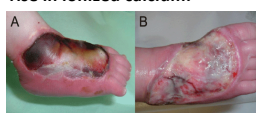



Which Calcium is best in pediatric resuscitation!! Calcium Chloride versus Calcium Gluconate for the treatment of hypocalcemia in acute setting - An evidence based systematic review

Dr A Janjanam¹(MD Ped, IDPCCM), Dr C Kanaris²(FRCPCH FRCM PHD)

¹ PICU Fellow at Royal Manchester Children's Hospital , ² PICU consultant at University Hospital North Midlands and Consultant at North West Transport Service

Introduction	Methods	Investigator	Study setting	Key results	Conclusions									
<p>A 2-year-old girl with severe Group A streptococcal septic shock had persistent refractory hypocalcaemia despite multiple corrections with calcium gluconate which prompted us to do a literature search.</p>	<p>Medical Literature search bases we used include Cochrane library, Embase and Medline OVID interface.</p>	<p>Broner et al</p>	<p>Critically ill pediatric patients with hypocalcaemia</p>	<p>Available pharmacokinetic evidence is mixed .</p> <p>Ca.Gluc may not require hepatic metabolism . In eucalcemic state ,ionization rates are similar for both CaCl2 and Ca.Gluc.</p> <p>CaCl2 is superior to Ca. Gluc in treating hypocalcaemia in critically ill children as per existing evidence.</p> <p>Peripheral extravasation injuries are worse with CaCl2.</p>										
<p>Objectives</p>	<p>Results</p> <p>Meta analysis of RCTs</p> 	<p>Mean increase in i.ca in mmol/l (p<0.05)</p>	<p>CaCl2 group - 0.19</p>	<p>Ca.Gluc group - 0.09</p>										
<p>To review the evidence comparing therapeutic efficacy of calcium gluconate with calcium chloride in treating acute hypocalcemia in emergency setting.</p>	<p>Calcium gluconate is historically believed to have lower bioavailability in shock, arrest & liver failure due to its hepatic metabolism to release i.ca.</p>	<p>CaCl2 group showed increase in Mean BP while no change with Ca.gluc (p<0.05)</p>	 <table border="1"> <caption>Mean increase in i.ca in mmol/l</caption> <thead> <tr> <th>Group</th> <th>Calcium pretreatment</th> <th>Calcium post treatment</th> </tr> </thead> <tbody> <tr> <td>CaCl2</td> <td>~1.05</td> <td>~1.25</td> </tr> <tr> <td>Ca.Gluc</td> <td>~1.05</td> <td>~1.15</td> </tr> </tbody> </table>	Group	Calcium pretreatment	Calcium post treatment	CaCl2	~1.05	~1.25	Ca.Gluc	~1.05	~1.15	<p>CaCl2 is superior to Ca. Gluc in treating hypocalcaemia in critically ill children as per existing evidence.</p>	
Group	Calcium pretreatment	Calcium post treatment												
CaCl2	~1.05	~1.25												
Ca.Gluc	~1.05	~1.15												
<p>To Review the physiological and pharmacokinetic factors influencing the rapidity of rise in ionized calcium.</p>	<p>Calcium chloride supposedly has better ionisation rates.</p>	<p>Martin et al</p>	<p>Adult patients during anhepatic phase of liver transplant</p>	<p>During anhepatic stage , increase in i.ca was similar with both Ca.Gluc & CaCl2</p>	<p>CaCl2 is probably the preferred agent for treating refractory hypocalcaemia in acute setting when central IV access available.</p>									
 <p>Calcium gluconate Extravasation Calcium chloride Extravasation</p>		<p>Cote et al</p>	<p>Pediatric patients intraop & conditioned dogs under halothane anesthesia</p>	<p>Ca.Gluc is as rapid and equivalent as CaCl2 in releasing i.ca.</p>	<p>Need for more paediatric RCTs to determine the therapeutic efficacy of either agent.</p>									
		<p>Heining et al</p>	<p>Anesthetized ferrets and human blood.</p>	<p>Ionization of Ca.Gluc is as great as that of CaCl2.</p>	<p>References</p> <p>Broner CW, et al, Prospective, Randomized, Double-Blind Comparison of Calcium Chloride and Calcium Gluconate Therapies for Hypocalcemia in Critically Ill Children</p>									