

Matters of the Heart

A 21 day old baby was brought to an emergency department (ED) with a 3 day history of decreased feeds, vomiting and breathing quickly. The triage nurse noted the baby to be pale and tachypnoeic. A triage category 3 was allocated. A temperature of 36.1 degrees was recorded, and the baby's colour improved slightly on handling.

The baby was placed on a bed with cardiac monitoring and a pulse oximeter was attached. Approximately 40 minutes later, the junior medical officer (JMO) attempted to review the baby, however, the mother was breastfeeding, subsequently, the JMO decided to return later. The JMO returned 10 minutes later, and as the mother was still breastfeeding, a decision was made to return and review the baby after the morning team handover occurred 30 minutes later.

Following the handover, the JMO reviewed the baby and found the baby was tachypnoeic at 80 breaths per minute and tachycardic. This was discussed with an ED registrar who then reviewed the baby approximately 2 hours post arrival at triage.

An Electro Cardio Graph (ECG) was performed which showed a heart rate (HR) of 272 beats per minute (BPM), and no P waves preceding the QRS complex. A diagnosis of Supra Ventricular Tachycardia (SVT) was made.

A vagal manoeuvre was performed at the bedside by the ED registrar using ice water which successfully converted the baby to sinus rhythm (HR 166 BPM).

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A decision was made to insert a cannula and administer a fluid bolus based on a capillary refill time of greater than 3 seconds and a lactate of 8.3mmol/L. The registrar prescribed a stat dose of 370mL of Normal Saline 0.9% on the paediatric IV fluid chart which was equivalent to 100mL/kg.

The registrar then drew up the normal saline bolus into 50mL syringes. After administration of the third syringe, the baby deteriorated rapidly becoming cyanosed, unresponsive and apnoeic, requiring resuscitation.

The registrar realised an error had been made in the amount of fluid administered, and immediately stopped infusing the normal saline. After approximately 90 minutes of Cardio Pulmonary Resuscitation (CPR), the baby had a return of spontaneous circulation and was transferred to a paediatric specialty Intensive Care Unit. The baby was later discharged home with hypoxic ischaemic brain injury requiring ongoing care.

Investigation

On review of the case it was thought that the fluid administered after a prolonged arrhythmia caused rapid deterioration and cardiac arrest requiring resuscitation.

Lessons Learnt

Identification of a sick baby

The delay in assessment of the baby potentially delayed earlier identification of the arrhythmia. Given the presenting problem of breathing quickly and pallor it was more than reasonable that a heart rate and respiratory rate should have been done at triage. This was a potential missed opportunity to escalate care.

This, in combination with the decision to delay assessment as the mother was breastfeeding, contributed to the delay in recognition of a baby in SVT.

Closed loop communication

Once it was identified the baby was in SVT, ongoing treatment should have taken place in a resuscitation room. This should have led to an escalation in care, additional staff and improvement in monitoring. In this case the doctor both prescribed and administered the fluid bolus. This was a missed opportunity for closed loop communication and identification of the ten times fluid error.

It is important to ensure closed loop communication occurs between clinicians prescribing and administering treatment in the resuscitation room environment. The process of verbally ordering treatment should include the dose per kg, and then repeating the order providing an opportunity for all clinicians in the resuscitation room to identify a potential error.

Example of closed loop communication:
Doctor: Sarah, please administer a 200mL Normal Saline bolus which is 20mL/kg.
Nurse: I'm giving 200mL bolus of Normal Saline which is 20mL/kg.
Nurse: 200mL bolus complete

Situational awareness

In this case, the doctor drew up multiple 50ml syringes to deliver the fluid bolus. Whenever more than two syringes, vials or tablets are required always ask "Does this seem right"? Electronic paediatric drug dose calculator programs and resources such as the NETS calculator or the Broselow® system can be helpful safety tools in reducing potential errors during resuscitation of paediatric patients.

Want to learn more? Please visit our website:

www.cec.health.nsw.gov.au

The Paediatric Patient Safety Program works across a range of areas to improve the quality and safety of health care for children and young people in NSW.