Neonatal non-laparoscopic non-robotic pneumovesical distension presenting as acute abdomen

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 Accepted 9 March 2014

DESCRIPTION

A term baby girl diagnosed prenatally with complex congenital heart disease was being investigated in the cardiac intensive care unit (ICU). The baby was stable on nasal oxygen and having full nasogastric feeds. Her urinary catheter was blocked despite the administration of 60 mL saline for irrigation and 60 mL of air via a bladder syringe by an evening duty nurse with urology experience. A Foley balloon inflated with saline failed to deflate, so the nurse injected 60 mL of air with a syringe through the balloon catheter channel in order to rupture the balloon. This was not documented in the notes. That night the baby’s oxygen saturation decreased, she developed abdominal distension and an increase in lactate levels was noted. Chest and abdominal radiographs showed a large gas shadow in the central abdomen without any air under the domes of the diaphragm or any evidence of necrotising enterocolitis (figure 1A, B). The patient was referred to the surgical team for possible contained bowel perforation. The abdomen was distended but soft and bowel sounds were normal. At exploration, there was no free gas or fluid, but the bladder was seen to be inflated with air. Needle aspiration confirmed this and was used to decompress the distended bladder. Cystourethroscopy showed several small remnants of a Foley catheter balloon which were removed. The post-operative period was uneventful (figure 1C, D).

Pneumodistension of the bladder is used in laparoscopic and robotic bladder surgery, but otherwise very small amounts of air are present in the bladder, even in pathological states.1 Foley catheter lumen blockade and simultaneous blockade of the non-return valve channel is rare and requires

Figure 1 (A) Chest radiograph showing central abdominal gas; (B) abdominal radiograph showing central abdominal well-defined cystic pneumodistension; (C, D) post-operative chest and abdominal radiographs.
The normal capacity of a neonatal bladder is 30 mL, so the injection of 60 mL volume each of saline and air to unblock a catheter lumen followed by another 60 mL of air for a total volume of 180 mL caused acute pneumodistension in this patient.

To prevent rare blockage by sodium chloride crystals of the lumen and non-return inflation valve in a Foley catheter, the balloon should be inflated with sterile water rather than normal saline.

If deflating the balloon with an empty syringe presents a problem, normal procedures should be employed or those described in the specialist literature should be followed by a suitably qualified, trained and experienced neonatal and paediatric urologist.

Foley balloons must never be inflated above the stated volume in order to rupture them as this can cause further complications.

If a Foley balloon is ruptured, all larger fragments not passed in the urine must be carefully removed from the bladder as they may act as nidus for urosepsis and urolithiasis requiring surgery for bladder stone removal.

Learning points

- The normal capacity of a neonatal bladder is 30 mL, so the injection of 60 mL volume each of saline and air to unblock a catheter lumen followed by another 60 mL of air for a total volume of 180 mL caused acute pneumodistension in this patient.
- To prevent rare blockage by sodium chloride crystals of the lumen and non-return inflation valve in a Foley catheter, the balloon should be inflated with sterile water rather than normal saline.
- If deflating the balloon with an empty syringe presents a problem, normal procedures should be employed or those described in the specialist literature should be followed by a suitably qualified, trained and experienced neonatal and paediatric urologist.
- Foley balloons must never be inflated above the stated volume in order to rupture them as this can cause further complications.
- If a Foley balloon is ruptured, all larger fragments not passed in the urine must be carefully removed from the bladder as they may act as nidus for urosepsis and urolithiasis requiring surgery for bladder stone removal.

Acknowledgements

We are grateful to Dr Shudhir Bhimani, MD, Consultant Paediatric Cardiologist, Dr S Vaghela, MS, MCh, FRCS, Consultant Paediatric Cardiothoracic Surgeon, Dr GM Faldu, MD, Consultant Paediatric Anaesthetist, and Dr Nayan Kalawadia, MD and Dr Anil Patel, MD, DCH, Consultant Neonatal Intensivists for their expert help and assistance in this case.

Competing interests

None.

Provenance and peer review

Not commissioned; externally peer reviewed.

REFERENCES