

Shadow over abdomen

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DESCRIPTION

Male neonate was born by normal vaginal delivery at 38 weeks. He was antenatally diagnosed to have dextrocardia, congenitally corrected transposition of great arteries, moderate ventricular septal defect and pulmonary atresia. He was born in good condition and cried at birth. However, he was noted to have saturation of 65%–70% in air and started on continuous positive airway pressure and transferred to neonatal intensive care unit for further monitoring. Postnatal echocardiography confirmed the diagnosis, and he was started on prostaglandin E1 (PGE1) at 5 nanogram/kg/min.

On day 3 of life, he underwent a cardiac gated CT angiography (CTA) for further understanding of anatomy and confirmation of diagnosis. In view of need for PGE1 until transfer to tertiary cardiac surgical centre, a peripherally inserted central venous catheter was inserted in the following 12 hours. He underwent an abdominal X-ray to check long line position (figure 1).

Abdominal X-ray showed a homogenous opacity within the urinary bladder due to retention of contrast. Long line was visualised to the right. The homogenous opacity was an incidental finding when X-ray was done to confirm the long line position.

The neonate was administered intravenous iohexol 350, which is a non-ionic water soluble



Figure 2 Normal X-ray of abdomen 6 hours later.



Figure 1 Homogenous dense shadow within urinary bladder.

contrast medium.¹ Iso-osmolar and hypo-osmolar contrast agents (300 mg I/mL or greater) are preferred as they cause less adverse reactions and extravasation in children undergoing CTA.² CTA accurately depicts the cardiac anatomy as well as the extracardiac structures in babies with complex congenital heart disease and thus serve as complimentary tools to echocardiography.^{2,3}

Ninety per cent of iohexol undergoes renal excretion within the first 24 hours. Renal opacification is seen within the first minute following intravenous injection. Iohexol is also used for performing urograms. Renal failure impairs opacification of the renal tract due to decreased excretion through the kidneys and increased excretion into the small intestine through the gall bladder. This phenomenon is also noted in neonates with immature kidneys.¹

Unless patients are well hydrated before the procedure, there is a likelihood of acute renal failure especially in infants and in the paediatric population. Osmotic action of the contrast further potentiates dehydration due to diuresis.¹ Our patient was on maintenance intravenous fluids, and the X-ray



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repeated 6 hours after the previous showed further excretion of the contrast from the bladder (figure 2).

It is well-known fact that iodinated, non-ionic, water-soluble contrast agents are excreted by the kidneys. Contrast media-induced nephropathy has been noted in children with normal renal function. The documentation of a homogenous opacity within the urinary bladder was an incidental finding as an abdominal X-ray was done to confirm the long line tip position. We would like to highlight the need for monitoring evidence of dehydration and renal function before the administration of contrast agents to the paediatric population.¹⁴ Our patient's urea and creatinine preprocedure was 1.1 mmol/L

and 64 µmol/L. Postprocedure urea remained the same, and creatinine was 63 µmol/L. Urine output remained between 2 mL/kg/h and 3 mL/kg/h.

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Contributors Both authors have been involved in conception and design of the article, data interpretation and writing the draft. The final draft has been approved by both authors. Both authors have been involved in patient care.

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Learning points

- ▶ Iodinated, non-ionic, water-soluble contrast agents are excreted by the kidneys.
- ▶ Babies should be adequately hydrated and their renal function should be checked before they are injected with contrast agents prior to any procedure.

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