CASE REPORT

Supraventricular tachycardia precipitated by a peripherally inserted central catheter in an infant with gastroschisis

Mandela Thyoka,¹ Iram Haq,² Gareth Hosie³¹Surgery Unit, UCL Institute of Child Health, London, UK²Department of Paediatric Surgery, Royal Victoria Infirmary, Newcastle upon Tyne, UK³Department of Paediatrics, Royal Victoria Infirmary, Newcastle upon Tyne, UK**Correspondence to**Mandela Thyoka,
m.thyoka@ud.ac.uk

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SUMMARY

Gastroschisis is a common congenital abdominal wall defect requiring surgical correction in early neonatal life. The time to full enteral feeds among infants with gastroschisis is variable. Gastroschisis remains a common surgical cause of intestinal failure in neonates. Peripherally inserted central catheters (PICC) are commonly used to provide long-term venous access for parenteral nutrition during the time enteral feeds are being slowly established. The PICC is placed under fluoroscopic guidance with the distal end of the catheter usually placed at the junction of the superior vena cava with the right atrium. In rare circumstances, the catheter tip may advance into intracardiac chambers, precipitating supraventricular re-entrant tachycardia. We report a case of an infant who was antenatally diagnosed with uncomplicated gastroschisis in whom a supraventricular tachycardia was precipitated by the PICC in the right atrium.

BACKGROUND

Gastroschisis is a common congenital abdominal wall defect requiring surgical correction in early neonatal life. The time to full enteral feeds among infants with gastroschisis is variable. Gastroschisis remains a common surgical cause of intestinal failure in neonates.¹ Peripherally inserted central catheters (PICCs) are commonly used to provide long-term venous access for parenteral nutrition during the time enteral feeds are being slowly established. The PICC is placed under fluoroscopic guidance with the distal end of the catheter usually placed at the junction of the superior vena cava with the right atrium.² In rare circumstances, the catheter tip may advance into the intracardiac chambers,³ precipitating supraventricular re-entrant tachycardia.^{4 5} We report a case of an infant who was antenatally diagnosed with uncomplicated gastroschisis in whom a supraventricular tachycardia was precipitated by the PICC in the right atrium. We deem our case worth reporting as the supraventricular tachycardia (SVT) which was precipitated by the PICC in the right atrium was initially resistant to adenosine prior to being terminated after five doses were administered.

CASE PRESENTATION

We report the case of a male infant, antenatally diagnosed with uncomplicated gastroschisis—with no intra-abdominal or extra-abdominal bowel dilation on antenatal ultrasound scans—who was a

planned delivery at term, following induction of labour at 37 weeks of gestation. He was born via a spontaneous vertex delivery and his birth weight was 3.3 kg. He underwent a primary closure of gastroschisis on first day of life and the PICC was inserted in his left antecubital vein under fluoroscopic control on day 5 of life for parenteral nutrition. On day 5 of life, he suddenly developed tachycardia at 250 bpm with a normal blood pressure. ECG showed a narrow complex supraventricular tachycardia (figure 1); however, there was no immediate resolution/termination of the tachycardia until after five doses of adenosine were administered. An echocardiogram showed normal cardiac morphology. The PICC was pulled back from the right atrium to superior vena cava (SVC) position.

INVESTIGATIONS

ECG and cardiac ECHO.

TREATMENT

Medical—adenosine.

OUTCOME AND FOLLOW-UP

The patient was well at 3 months of follow-up. He, however, presented with a bowel obstruction secondary to adhesions, requiring laparotomy and adhesiolysis.

DISCUSSION

Surgical infants who are at risk of intestinal failure often require PICC insertion for parenteral nutrition. Tachyarrhythmias are known to occur following misplaced or malpositioned PICCs in children.⁶ Sudden onset of ventricular tachycardia at the time of surgical closure of gastroschisis has also been reported.⁷ However, to our knowledge, this is the first report of an SVT precipitated by the PICC in an infant with gastroschisis that was resistant to adenosine.⁸ Our patient suddenly developed narrow complex supraventricular tachycardia 2 days after the PICC was inserted (figure 1). The arrhythmia only responded to multiple doses of adenosine. We decided to pull back the malpositioned PICC even after the cessation of the arrhythmia in order to prevent any recurrence. Spontaneous correction of malpositioned percutaneous central venous lines can occur,⁹ however, this report was in cases where the malposition was not associated with arrhythmias. It is important to check catheter tip position in any infant with the PICC in situ who suddenly develops an arrhythmia even if the position at the

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Figure 1 ECG showing a narrow complex supraventricular tachycardia.

time of insertion was optimal. We also believe that pulling back of the malpositioned PICC, even after cessation of arrhythmia, is still warranted to prevent recurrence.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Learning points

- Tachyarrhythmias in the presence of central venous catheters can occur even if the catheter tip position at the time of insertion was deemed optimal.
- Repeat imaging is essential to rule out change in catheter tip position.
- Tachyarrhythmias can be resistant to medical therapy in some cases.

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Contributors MT presented the case history, reviewed the literature and wrote the first draft of the manuscript. GH was the supervising consultant who had the sole responsibility of the care of the patient and performed the surgery, obtained consent for publication and edited the manuscript. MT, IH and GH participated in the review of the literature and have seen and authorised the final manuscript for publication.

Competing interests None.

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