A challenging central line insertion: where did the contrast go?

Peter Donnelly, Christopher Flannigan, Julie Richardson

Paediatric Intensive Care Unit,
The Royal Belfast Hospital for
Sick Children, Belfast, UK

Correspondence to

Dr Peter Donnelly,
pdonnelly00@hotmail.com

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DESCRIPTION

A 2-year-old girl had a femoral central line inserted prior to debulking surgery for an abdominal neuroblastoma. She had a background of recent major surgeries, numerous previous central lines and multiple thrombi in her major vessels. The procedure was technically challenging and a triple lumen central line was sited with difficulty.

All three lumens of the central line flushed easily; however, it was only possible to aspirate dark red, non-pulsatile blood from the distal lumen. Specifically due to the background of multiple thrombi, the decision was made to inject contrast to confirm line position and patency. (Contrast was not used to confirm line position, but rather to assess for possible thrombus proximal to the line tip.)

Two millilitres of contrast was injected and a radiograph (figure 1) was performed. The contrast was, surprisingly, not detectable. The proposed explanation for this finding was that contrast was not captured due either to the timing of the radiograph or because an inadequate volume was injected. A further 5 mL of contrast was injected, with a radiograph (figure 2) taken towards the end of the injection. This time, a small stream of contrast was noted coming from the line tip and heading distally down the leg.

The line was reviewed and none of the lumens would sample, however, all flushed easily. The line was re-wired to a longer (12 cm) line and clinically felt to be arterial—confirmed by transducing

Figure 2 Radiograph showing a small stream of injected contrast coming from the line tip before heading distally down the leg, in keeping with arterial positioning.

the line. Imaging then made sense and the line was removed and re-sited without complication.

Learning points

- ▶ Consider central venous line misplacement when all the lumens do not aspirate and flush freely, particularly on a newly inserted line.
- ▶ Contrast, although used for a specific reason in this case (thrombosis), is a useful tool to help confirm line position, however, when contrast is not seen proximal to the line tip, it is important to look for distal vessel contrast—suggesting arterial placement.
- ▶ The absence of bright red pulsatile blood flow does not exclude arterial placement of a central line and transduction of the line to confirm position is recommended.¹

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCE

- 1 Shivappagoudar VM, George B. Unintentional arterial cannulation during cephalic vein cannulation. *Indian J Anaesth* 2013;57:320–2.

Figure 1 Radiograph demonstrating the absence of contrast proximal to the central line tip.

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