



Abstract No. 8

## Milky CSF? A Rare Case of Catheter-related Extensive IVC Thrombosis in a Neonate

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### Background:

Neonatal inferior vena cava (IVC) thrombosis can result from extrinsic compression from oncologic pathology, iatrogenic thrombus or in-utero thrombosis. Due to broad and non-specific clinical presentation, epidemiology remains indeterminate, which may mean a significant portion are underrecognized but has significant implications on short- and long-term morbidity and mortality.

### Objectives & Methods: Case report

In this exhibit, we report an unusual presentation of IVC thrombosis secondary to repeated central venous catheter (CVC) insertion (Fig 1) in a preterm neonate, presenting with sepsis, generalized oedema, abdominal distension and dilated superficial abdominal veins. Septic workup including lumbar puncture yielded abnormal milky content (Fig 2), suspicious for total parenteral nutrition (TPN) extravasation.

Initial imaging including ultrasound (US) and magnetic resonance imaging (MRI) of lumbosacral (L-S) spine was unrevealing except for relatively prominent epidural venous plexus. However, further scrutiny of the retroperitoneal area in the included field of view (FOV) of MRI revealed absence of IVC flow void with irregular contour and T2 heterogeneity (Fig 3).

Subsequent dedicated MRI venogram and doppler US confirmed extensive infra-renal ilio caval thrombosis with development of secondary venous collaterals (Fig 4-5).

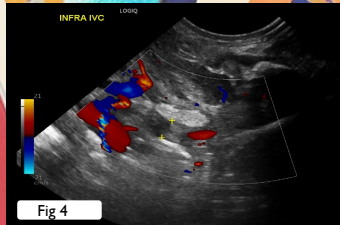
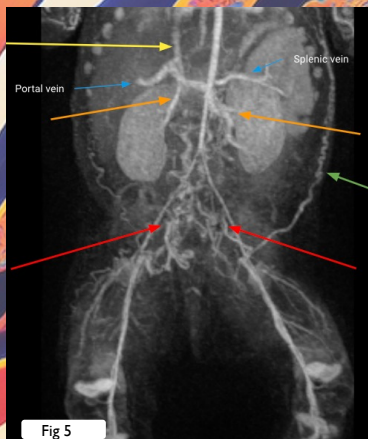


Fig 4 (left): US doppler shows echogenic filling defects in the infra-renal IVC with absence of doppler flow.

Fig 5 (right): MRI venogram shows absent infra-renal IVC with multiple dilated venous collaterals draining via the deep azygos-hemiazygos pathway (red arrows), as well the superficial pathway (green arrows). Note the normal supra-renal IVC (yellow arrow) and bilateral renal veins (orange arrows)



### Why was "milky" aspirate obtained during lumbar puncture?

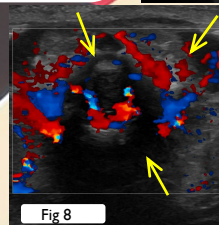
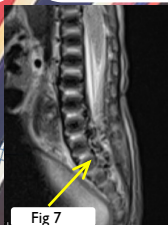
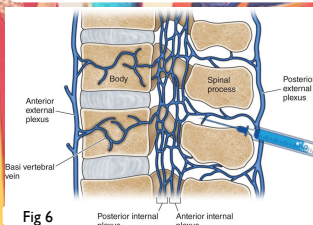


Fig 6: Pictorial diagram of the venous anatomy during a lumbar puncture.

Fig 7: MRI L-S spine sagittal T2-weighted sequence shows dilated epidural venous plexus at lower thecal sac.

Fig 8: US spine shows corresponding dilated epidural and paravertebral venous plexus on doppler imaging.

The plausible explanation for presence of "milky/TPN" aspirate during lumbar puncture was likely related to the puncturing of the abnormally dilated epidural venous plexuses which had led to paucity of accessible CSF space (Fig 6-8) The tip of the PICC inserted through the right lower extremity has also likely entered via the deep paravertebral venous collaterals rather than within the expected IVC location.

### Conclusion:

This exhibit presents a rare and peculiar case of iatrogenic neonatal IVC thrombosis, providing an educational radiological review of anatomy, collateral venous pathway systems and the intriguing relationship between atypical clinical presentation and radiological features. A high index of suspicion for underlying deep venous thrombosis should be sought, especially in patients with indwelling vascular catheters, to ensure timely treatment.