Refractory Renal Pain After Pyelonephritis: A Pediatric Case Suggesting a Visceral Complex Regional Pain Syndrome

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1. Introduction

Complex regional pain syndrome (CRPS) is a chronic neuropathic pain disorder that usually affects the extremities after trauma or surgery.[1,2] Visceral forms are exceedingly rare, especially in children. Renal pain that persists after infection and structural disease have resolved is a major diagnostic and therapeutic challenge.[3]

Objective: To describe a pediatric patient with refractory flank pain after pyelonephritis, whose course after extensive medical, surgical, and interventional therapy suggests a visceral form of CRPS.

2. Methods

Retrospective review of electronic medical records, including urologic operative reports, diagnostic imaging, longitudinal laboratory data, interventional procedures, and pain management documentation.

Written informed consent for publication was obtained from the patient and his mother. Prepared in a private practice setting without an IRB; no patient-identifiable information.

3. Case Presentation

15-year-old male with congenital posterior urethral valves, chronic kidney disease, and prior urologic reconstructions presented with **severe bilateral flank pain** following pyelonephritis.

The infection resolved and renal function remained stable (serum creatinine 0.84–0.90 mg/dL), but **the pain did not**. Pain scores on the visual analog scale (VAS) ranged 5–9/10 and escalated to 9/10 despite treatment.

Diagnostic evaluation

Renal ultrasound	Kidney structure and hydronephrosis
Nephrostography	Collecting-system anatomy and obstruction
Diuretic renography	Urinary drainage and functional obstruction
Voiding cystourethrogram	Bladder, urethra, and vesicoureteral reflux

Findings: baseline bilateral hydronephrosis without acute obstruction. Pain was disproportionate to these objective findings.

4. Treatment Course

Medications

High-dose multimodal analgesia; sequential μ-opioid agonists; pregabalin, amitriptyline, duloxetine, bupropion, compounded ketamine

No sustained relief

Peripheral interventional procedures

Ureteral stent, percutaneous nephrostomy, bilateral robotic renal denervation, splanchnic nerve blocks, lumbar sympathetic blocks

Short-term relief

Neuraxial procedures

T12–L1 percutaneous epidural catheter with T8–T12 spread of injectate using 0.2% ropivacaine

40% pain relief for under 1 hour. Then, a 2% lidocaine bolus lowered the pain to 6/10 for 1 hour.

Next steps: DRG and DCS stimulation are being offered

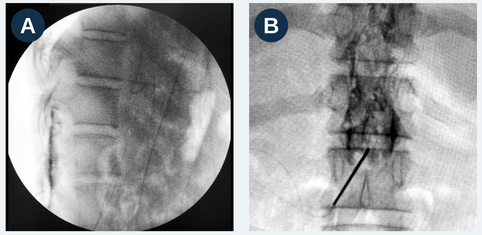


Figure 1. Fluoroscopy during percutaneous epidural catheter placement at T12–L1. **(A)** Lateral view: the dark line along the left shows injectate spread from T8 to T12. **(B)** Anteroposterior (AP) view: epidural needle at the T12–L1 level.

5. Discussion

- Pain persisted after the infection resolved and was **disproportionate to objective tissue pathology**.
- It remained **refractory** to high-dose opioids, neuropathic agents, renal denervation, and neuraxial interventions.
- This suggests **central amplification**, as in CRPS, with central sensitization as a possible primary driver of visceral hyperalgesia.[4]
- **Limitations:** single patient; retrospective chart review.

6. Conclusion

Consider visceral CRPS in children with persistent visceral pain after an inflammatory or structural cause has resolved.

References

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