

The Headache Dilemma: Recognizing Diagnoses Beyond Post Dural Puncture Headache

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INTRODUCTION

Post dural puncture headache (PDPH) is a feared complication of therapeutic and diagnostic neuraxial procedures. While rarely life threatening, PDPH can be severely debilitating and challenging to manage in some cases.

Although the mechanism of PDPH has not been fully elucidated, it was first described in 1898 by German surgeon, August Bier, after completion of a spinal anesthetic in a 34-year-old female. The onset is typically 24 – 72 hours after a dural puncture with typical signs and symptoms including an orthostatic headache typically in a frontal or occipital distribution. It is thought to be incited by leakage of CSF volume through a dural tear causing traction on the meningeal layers. Bier’s research throughout the years suggested risk factors included larger needle diameters, use of a cutting needle, needle bevel orientation orthogonal to the spine, young age, obesity and female sex.

As physicians, there can be a tendency to rush to treat without full cognizance of other likely etiologies. However, it is critical to remember that the differential diagnosis of a headache is broad.

This case report emphasizes the challenges in empiric management of spontaneous intracranial hypotension following a lumbar puncture procedure. Additionally, this case highlights the importance of maintaining a broad differential for headache especially in those with atypical symptomatology.

CASE REPORT

A 49 year-old male with past medical history notable for hypertension, primary sclerosing cholangitis status post living donor liver transplant (on rituximab), and prior spontaneous intraparenchymal hemorrhages with chronic multifocal enhancing abnormalities on brain MRI is found dysarthric, confused, febrile.

He is promptly admitted to Neurology and receives three doses of antibiotics and Tylenol with moderate improvement in his symptoms. Diagnostic LP at L3-L4 level and MRI were conducted with unremarkable results.

24 hours later while sitting in his recliner, the patient sits up and develops acute onset dizziness, nausea vomiting, and intermittent upper and lower extremity paresthesias. He soon develops a headache at the top of his head, 5/10 in intensity, that improves when supine. He receives a “migraine cocktail” of intravenous fluids and pain medications, however no complete resolution. With high suspicion for PDPH, Neurology promptly consults the Acute Pain Service (APS) for consideration of an epidural blood patch (EBP).

Upon initial assessment by APS the patient’s pain (sitting at approximately 45 degrees) was described as mild (1/10). This would rise to 2.5/10 when sitting at 90 degrees). Given his pain considerably improved with conservative measures, APS felt the risks of an epidural blood patch outweighed the potential benefits of the procedure. This along with the nature of post-dural puncture headaches and their natural course were discussed with the patient and his wife. They agreed with the plan and epidural was deferred. He was discharged home.

Over the next two weeks, the patient’s headache persisted and progressed. He found it difficult to sit upright for his outpatient rituximab infusions. APS was quickly re-engaged by Neurology and an epidural blood patch was ultimately conducted at L4/5 by landmark technique. The injection stopped at 25cc after the development of subjective head pressure. Immediately after the procedure, the patient felt notable improvement in his pain. However, his headache returned several days later. At this point, pain is 5/10 in the upright position with approximately 40% improvement to 3/10 in the supine position.

Desperate for solutions, he reaches out to the chronic pain center for further intervention. Upon presentation in clinic, patient was tachycardic to 120BPM and reporting poor oral intake over the last several days. Given the patient’s improvement with the first blood patch, decision was made to conduct a second EBP with plans for him to go to the ER afterwards for dehydration. This procedure was done under fluoroscopic guidance at L3-L4, the level of his initial dural puncture (*Fig 1 and 2*) . The patient had a brief improvement and eventual recurrence of headache.

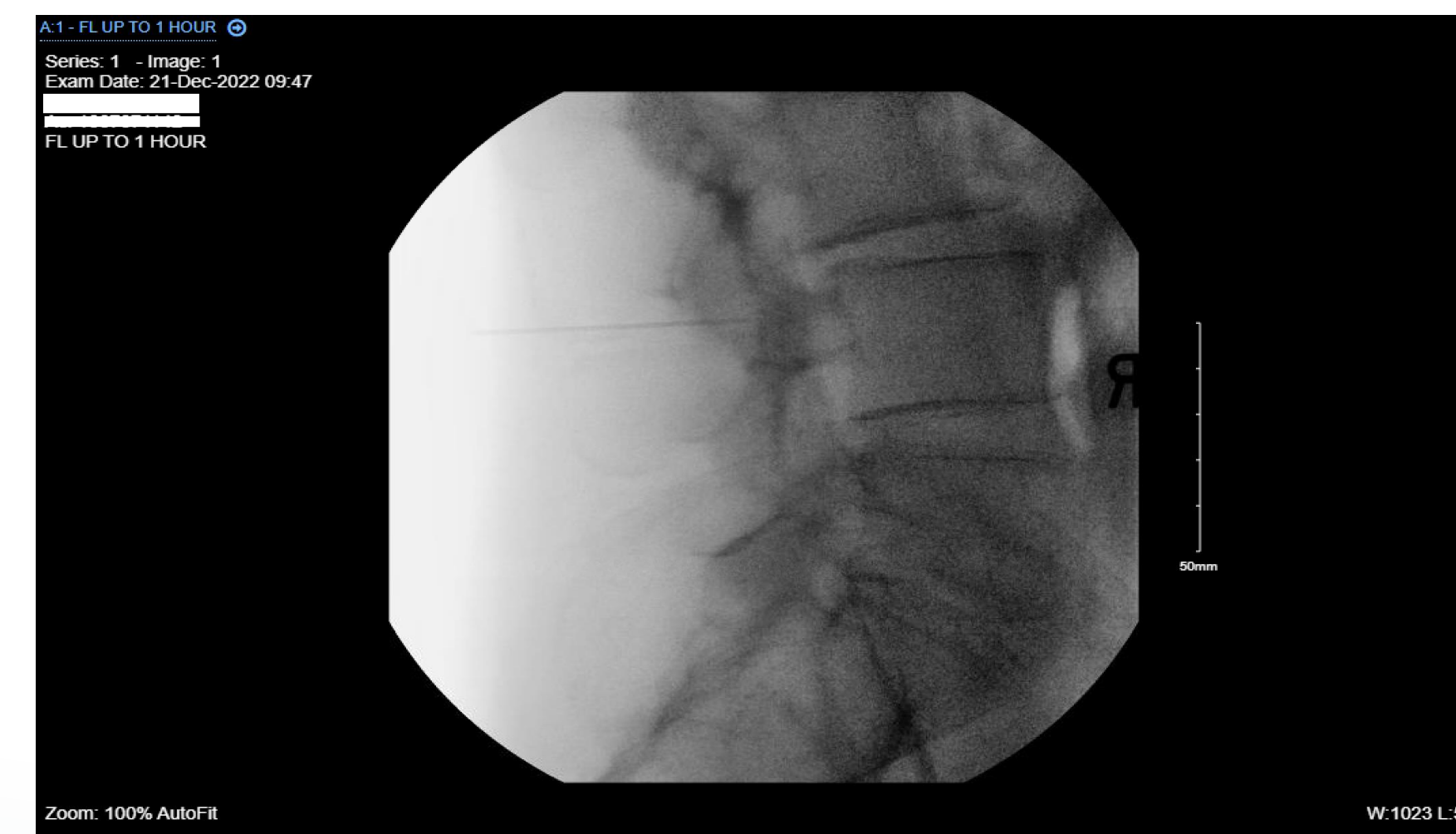
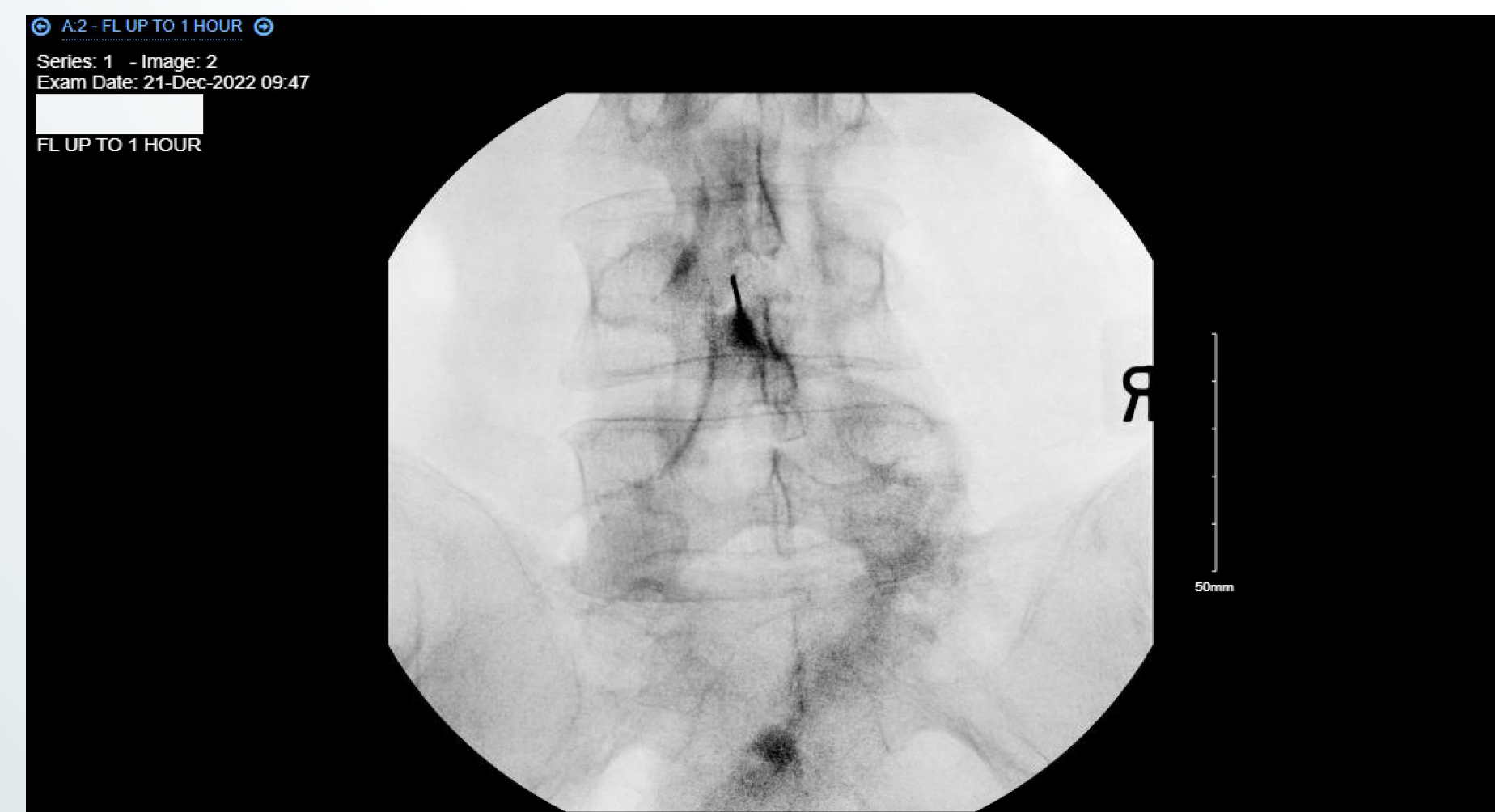


Figure 1 & 2: (From left to right) AP and lateral views of epidural blood patch at L3-L4 under fluoroscopic guidance

An MRI was conducted days later which revealed an increase in the size of T2 flair hyperintense lesions and associated parenchymal enhancement, particularly in the right frontotemporal lobe. He later underwent brain biopsy which, similar to his many prior LPs he underwent, was inconclusive and negative for lymphoma. To this day, his diagnosis is felt to be due to a type of inflammatory condition. Consistent steroids and IV rituximab infusion therapy have kept his neurologic symptoms including his headaches at bay.

DISCUSSION

As proceduralists, it’s critical not to assume causality from temporal order. We must guard against narrow diagnostic focus especially in patients with complex medical comorbidities.

Significant attention was given to his recent LP procedure and management of possible PDPH. Although he had an orthostatic component to his headache approximately 24 hours after his LP procedure, his other symptomatology were atypical from a classic presentation of PDPH. This includes his recurrent paresthesias and fevers. These signs and symptoms should have cautioned all physicians in the patient’s care team to take a step back and re-evaluate all differential diagnoses, such as intracranial mass, infection, severe dehydration, etc.

Conservatively treating this patient’s headache with intravenous fluids and PO pain medications to reduce pain to a tolerable level so he could sit for his IV rituximab infusions may have served this patient better. At that time, he could be appropriately re-evaluated for PDPH.

This patient was exposed to the risks of unnecessary EPBs, such as backache, neck pain, radicular irritation by blood by products and mild pyretic reaction. Although these are usually mild and transient, this can be debilitating in the ability of the patients who are already struggling to take care of themselves.

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