

The curious case of the leaking fluid from epidural puncture site: Empirical management of this diagnostic dilemma.

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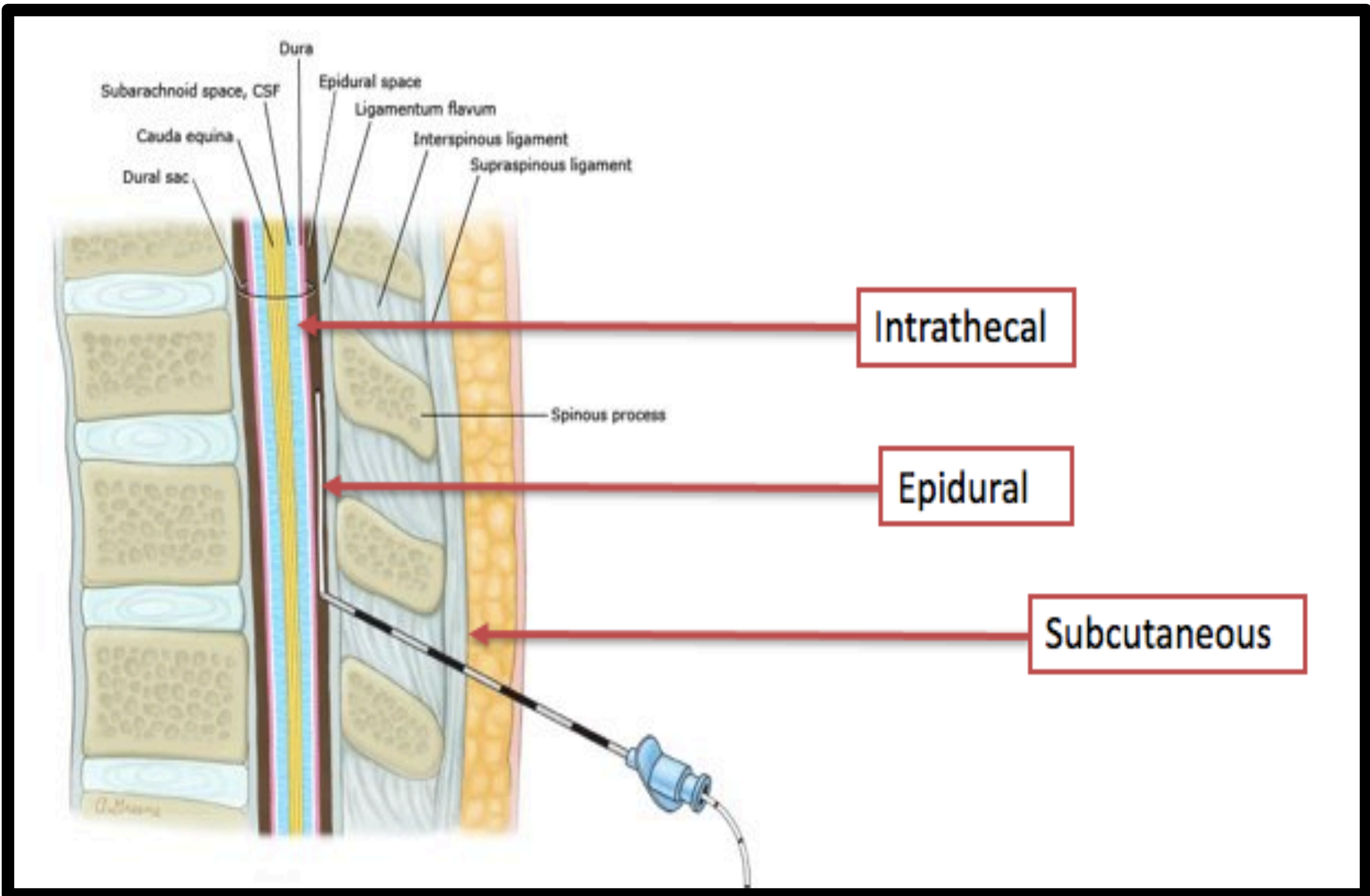
Introduction

Epidurals are an increasingly common procedure in maternity services in the UK and are the gold standard for analgesia in labour. Continuous leakage from the puncture site is a relatively rare occurrence and one with a number of differential diagnoses. Of these, the ‘red flag’ diagnosis of Cerebrospinal fluid (CSF)-cutaneous fistula has potential for serious complications like meningitis and it should be the primary objective to rule this out.

Case

We present a case of a 31 year old primiparous women presenting with a persistent cutaneous fluid leak from the epidural puncture site after catheter removal. Her initial epidural was re-sited after having pressed the PCEA several times. She went on to undergo a category 2 emergency caesarean section under epidural top-up. The leak was reported on the 2nd post-operative day and was still present 36 hours after catheter removal. Her observations were normal, there was full resolution of sensorimotor function and there was no evidence of any post-dural puncture headache. In order to swiftly and definitively rule out a CSF leak and therefore a potential passage to the subarachnoid space, we ordered an urgent MRI lumbar spine. The imaging confirmed normal lumbar spine imaging and no evidence of a continued dural leak.

1. Ennis M, Brock-Utne JG. Delayed cutaneous fluid leak from the puncture hole after removal of an epidural catheter. *Anaesthesia*. 1993;48:317–8
2. Vanner RG. Acetylcholinesterase – A specific marker for cerebrospinal fluid. *Anaesthesia*. 1988;43:299–300..
3. Chan BO, Paech MJ. Persistent cerebrospinal fluid leak: A complication of the combined spinal-epidural technique. *Anesth Analg*. 2004;98:828–30.
4. Downey L, Slater EM, Zeitlin GL. Differentiating interstitial fluid from cerebral spinal fluid. *Anesthesiology*. 1985;63:120.



Differential diagnosis

1. CSF-cutaneous fistula
2. Discrete Seroma
3. Abscess/cyst
4. Tissue Oedema
5. Subcutaneous Local Anaesthetic

Fluids	Glucose mmol/l	Chloride mmol/l	Protein g/l	pH
CSF	2.75-4.145	122-132	0.15-0.45	7.34-7.43
Interstitial fluid	3.85-6.05	95-105	65-80	7.64
Plasma	4.4-6.6	90-110	60-80	7.35-7.44

Discussion

We believe the most important diagnosis in this case is a CSF-cutaneous fistula and, wherever possible, imaging should be sort to rule out this diagnosis. The decision as whether to start empirical antibiotic therapy for meningitis whilst awaiting confirmation of the diagnosis should be assessed according to

1. *The patient’s clinical condition*
2. *The availability of suitable timely imaging*

If a sample of leak fluid can be obtained then a simple bedside test could determine pH of the fluid¹. The diagnosis of CSF can be made by testing the fluid for CSF specific acetyl cholinesterase by protein electrophoresis². β 2 transferrin immunofixation assay confirms CSF and can be performed on fluid samples as low as 0.1 ml³. Even simple chemical analysis for chloride, glucose and proteins can determine the fluid origin⁴. However it is important to note that lab tests are not a replacement for definitive imaging and, where possible, this should be the primary investigation of choice.