Pneumocephalus after Combined Spinal-Epidural with Loss-of-Resistance to Saline technique

Combined spinal-epidural anesthesia with loss of resistance to saline (LORS) was performed for a 27-year-old parturient. Immediately after the epidural she complained of throbbing, positional, frontal headache, associated with photophobia and phonophobia. CT head conducted 2 days later revealed small amount of gas within the left lateral ventricle. Conservative measures with supplemental oxygen, supine position, and analgesics were recommended. The patient had resolution of symptoms within 5 days and was discharged home.

Accidental dural puncture with loss of resistance to air (LORA) is associated with high incidence of pneumocephalus. This has made saline more suitable for identification of loss of resistance. Pneumocephalus after LORS is exceedingly rare and there have been no reports in the literature.

The pneumocephalus seen in the CT scan above could be explained by air tracking though the spinal needle in combination with respiratory cycle variation of CSF pressures. When evaluating acute onset headache after CSE, pneumocephalus should be part of the differential diagnoses in addition to post dural puncture headache and subarachnoid hemorrhage. CT scan is the gold standard for evaluation of pneumocephalus. High radiation exposure should limit its use to case-by-case basis.

A headache after LORA has been reported with injection of as little as 2ml of air. Treatment includes conservative therapy with analgesics, supplemental oxygen to increase the absorption of subarachnoid air by increasing the gradient for nitrogen, supine position, hydration, and in rare occasions hyperbaric oxygen chamber. However, hyperbaric oxygen assumes the risk of causing tension pneumocephalus and should be used judiciously.

Reference: