Pneumocephalus: An Under Reported Complication in Obstetric Anesthesia

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Introduction: Pneumocephalus is a known complication of neuraxial technique, particularly using loss of resistance to air (1). Diagnosis of pneumocephalus is confirmed by imaging, usually Head CT, which in many cases is not performed either due to cost or suspected clinical diagnosis. Proponents of epidural loss of resistance to air technique feel this is a more sensitive technique. Risk of pneumocephalus, which may lead to tension pneumocephalus, especially if nitrous oxide is also used, is cited by proponents of epidural loss of resistance to saline method (2).

Case: 24 year old G4P3 parturient presented for 3rd repeat cesarean section. A combined spinal epidural was performed with loss of resistance to air used for epidural space location (3 mL injected) during which the patient complained of sharp headache seconds after epidural space was identified. This resolved substantially, spinal placed and an epidural catheter was threaded. Subsequent positive aspiration of CSF was verified and so the catheter was then subsequently used as a continuous intrathecal catheter. Headache improved slightly but persisted in the post operative period. Pneumocephalus was suspected and head CT ordered with findings of "pneumocephalus within the premedulary and prepontine cistern and also along the right tentorium." The patient was placed on oxygen therapy through non-rebreather mask overnight until the headache resolved. Neurosurgery service was consulted and recommended repeat head CT next morning. On follow up CT "pneumocephalus within the basilar cisterns and along the superior cerebellum which is decreased in amount from the previous study." Clinically the patient had significant relief after 24 hours with complete resolution of headache in 48 hours.

Discussion: We present a case of confirmed pneumocephalus in a parturient following unintentional dural puncture with placement of intrathecal catheter. Pneumocephalus was suspected as cause of headache soon after performance of dural puncture with loss of resistance to air technique. Headache persisted after delivery and removal of intrathecal catheter. Head CT demonstrated pneumocephalus with volume of air out of proportion to amount of air used during epidural. After non-rebreather oxygen therapy, the next day head CT showed decreased size of pneumocephalus. Patient was discharged home after 48 hour of therapy with no headache in good condition.

We suggest that this case illustrates how one complication of epidural block (dural puncture) either evident or occult, may lead to another complication (pneumocephalus). Such complications could potentially be avoided by using saline loss of resistance. If pneumocephalus is not suspected, a patient could be misdiagnosed as having post dural puncture headache. Head CT is diagnostic standard, but even plain head radiologic imaging can help with diagnosis of pneumocephalus.