

Lumbar Epidural Blood Patch for Persistent Bilateral Subdural Hematoma After Middle Meningeal Artery Embolization: A Case Report

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Introduction

- Intracranial hypotension (ICH) is defined as a cerebrospinal fluid (CSF) pressure less than 60 mm H2O and is caused by a decrease in intracranial pressure due to leakage of CSF¹.
- Iatrogenic causes, including lumbar puncture (LP), can lead to disruption of the dura resulting in continuous CSF leak into the epidural space.
- Subdural hematoma (SDH) can be a serious sequela of ICH, with symptoms ranging from mild neurologic deficits to severe changes in mental status².
- Epidural blood patch (EBP) has recently been described in the neurosurgery literature as a primary treatment modality when conservative measures have failed to improve symptoms with a success rate reported to be up to 90%^{3,4}.
- This report describes a case of bilateral chronic subdural hematomas that were successfully treated with lumbar EBP.

Case Description

- We present a case of a 73-year-old male with a history of diffuse large B cell lymphoma with CNS involvement who developed acute altered mental status during admission for initiation of chimeric antigen receptor -T cell therapy. He had been treated with intrathecal methotrexate two months prior.
- Computed tomography of the brain during admission demonstrated bilateral SDH 1.3 cm in size (Image 1).
- During his inpatient stay, he continued to have waxing and waning mental status changes presumed to be secondary to ICH due to a CSF leak from prior LP for intrathecal methotrexate.
- MRI of the spine demonstrated a longitudinal extradural collection in the ventral cervical and dorsal upper thoracic spine at the level of the T1-T2 neural foramen, most compatible with a CSF leak. He was discharged uneventfully.
- He was evaluated by neurological surgery as an outpatient three months after discharge for persistent bilateral SDH of unchanged size and worsening headaches with confusion, with a subsequent plan for bilateral middle meningeal artery embolization.
- Following embolization, he was found to have rapidly expanding bilateral SDH concerning for new bleeding in addition to CSF leak, and was admitted to the neurosciences intensive care unit.
- He underwent an urgent bilateral subdural evacuating port system procedure, but continued to have expansion of his SDH size.
- Interventional pain was consulted for consideration of epidural blood patch (EBP) and the following day received a lumbar EBP under fluoroscopic guidance at L4-L5 level with 25 mLs of autologous blood placed following confirmation of epidural access with contrast.
- The patient's neurologic status was closely observed during his admission and was noted to have markedly improved following EBP.
- Additionally, repeat imaging obtained at 24 hours and 16 days after EBP demonstrated interval decreased bilateral subdural hematomas (Image 2).

Imaging

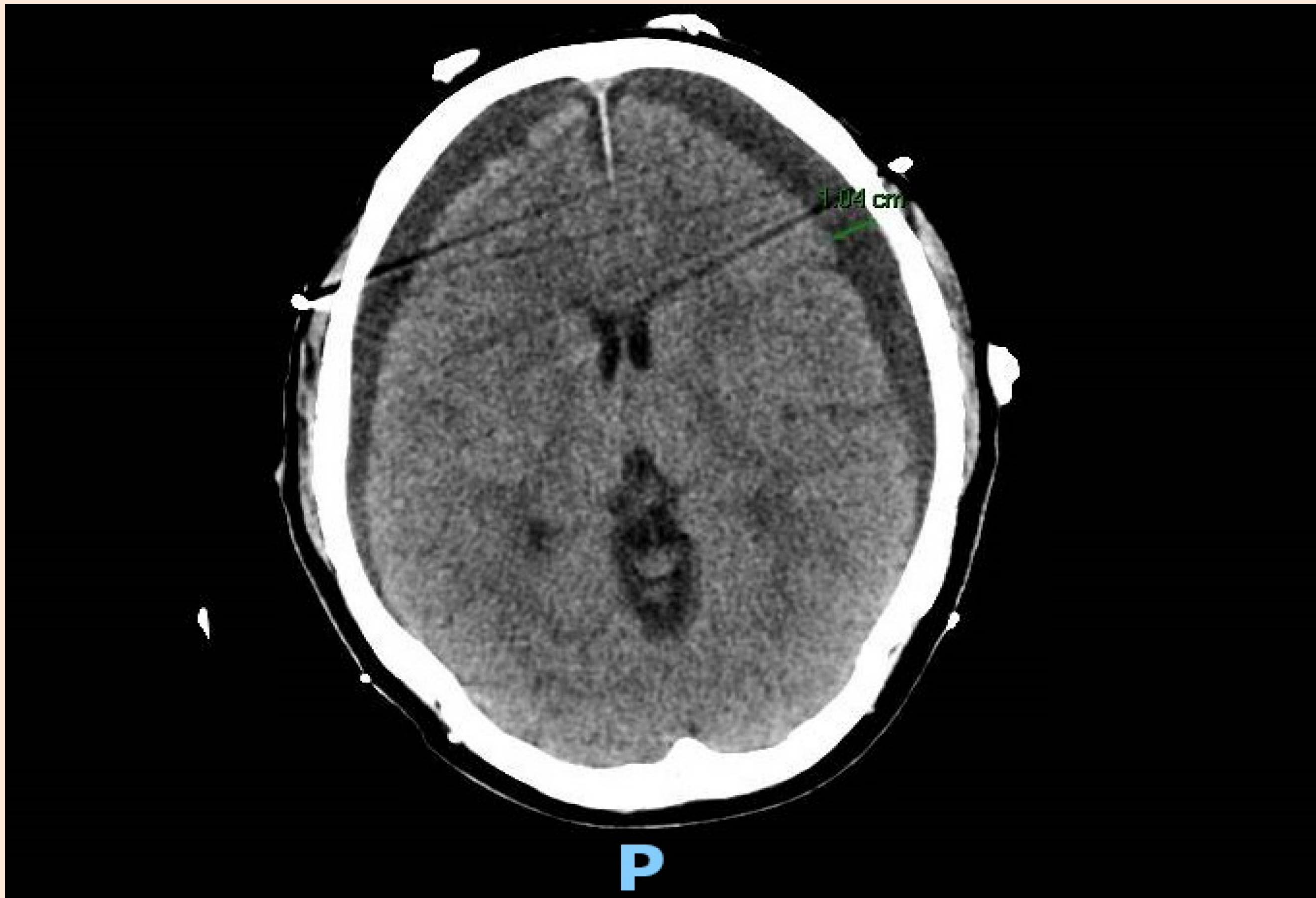


Image 1: CT brain during admission demonstrating bilateral SDH, 1.3cm in size

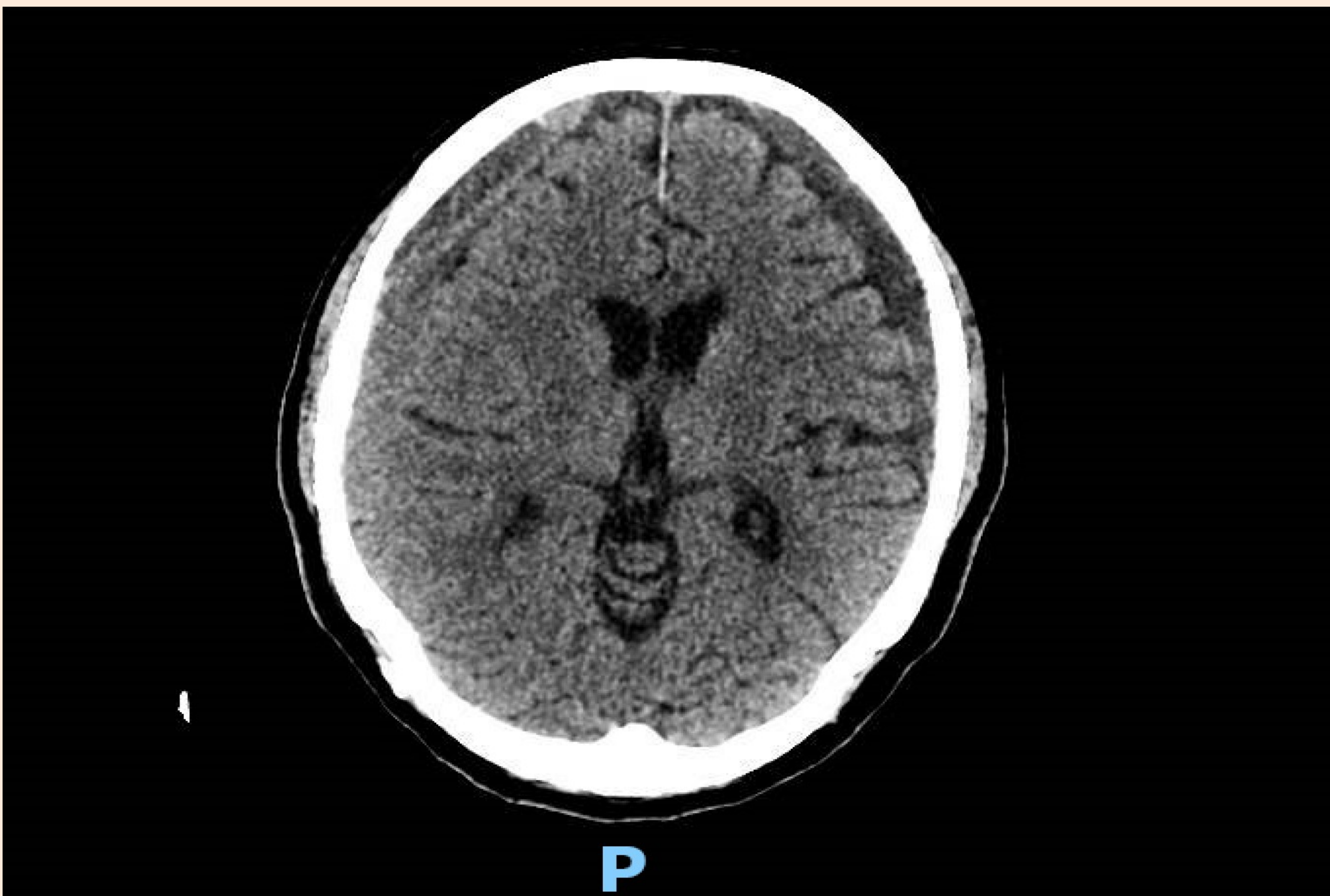


Image 2: CT brain post EBP demonstrating interval decreased bilateral subdural hematomas

Discussion

- Subdural hematoma due to ICH from iatrogenic causes can be a serious cause of morbidity and mortality. The mainstay of ICH treatment is to restore CSF volume by stopping CSF leak.
- When conservative therapy fails, EBP is the treatment modality of choice with instantaneous relief of symptoms reported in up to 90% of cases^{3,4}. If EBP initially fails, it may be repeated.
- In this particular case, EBP was used as a last resort following a lack of benefit from MMA.
- Our case study shows that EBP may salvage outcomes in cases where other options have failed.

Conclusions

- This report describes the case of a bilateral SDH as a complication of ICH with a CSF leak.
- Lumbar EBP was successfully performed with improvement in neurologic status and radiographic findings.

References

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