

# Simultaneous Presentation of Subdural Empyema, Epidural Empyema and Epidural Hematoma in a Pediatric Patient

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#### Introduction

The etiology of intracranial empyema is most commonly from direct extension of adjacent infection, most commonly sinusitis. There is also an association with skull fractures, prior neurosurgery, and hematogenous spread. There have been few reports of presentations of simultaneous epidural and subdural empyema, as well as epidural empyema with hematoma. However, there have been no reports of simultaneous presentation of subdural empyema, epidural empyema and epidural hematoma. We present such a case in a 12 year old male with past medical history of asthma exacerbations and chronic sinusitis who presented to our institution with 3 days of fever, headache, photophobia, and meningismus. The patient did not have any history of trauma. On neurologic exam, the patient was awake, aphasic, and had dense right hemiparesis. CT head showed mixed density right frontal epidural collection and isodense left hemispheric subdural collection (Figure 1). MRI brain with contrast was suggestive of right frontal epidural empyema with hematoma, and left hemispheric subdural empyema (Figures 2-4).

### Methods

The patient was taken to surgery emergently for bilateral craniotomy for drainage of empyemas and epidural hematoma. A large epidural hematoma was found within the right frontal epidural empyema, confirming findings on MRI. Cultures from the OR grew Streptococcus intermedius. The patient was placed on appropriate long term antibiotics.

#### Results

The patient was discharged to rehabilitation facility 3 weeks after presentation. At discharge, the patient's dysphasia and right hemiparesis had greatly improved to where he was able to converse and had near full strength in his right side.

#### Conclusions

Intracranial empyemas are serious disease processes that require aggressive treatment. The simultaneous presentation of subdural empyema, epidural empyema, and epidural hematoma has not been reported before in the literature.



CT head shows mixed density right frontal epidural collection suggestive of presence of hematoma.

Figure 2



MRI T1 with gadolinium shows left hemispheric peripherally enhancing collection suggestive of subdural empyema.



MRI T1 with gadolinium (left) shows right frontal peripherally enhancing collection suggestive of epidural empyema. Susceptibility-weighted image (right) is suggestive of hematoma component within epidural empyema.

## Figure 4



DWI (left) and ADC (right) sequences demonstrates diffusion restriction within epidural and subdural collections, suggestive of empyema.

#### **Learning Objectives**

By the conclusion of this session, participants should be able to: 1) Describe the importance of prompt diagnosis and treatment of intracranial empyema, 2) Discuss, in small groups, the potential mechanism of development of intracranial hematoma within empyema, 3) Identify an effective treatment for intracranial empyema.

#### References

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