Isolated Cognitive Dysfunction Following Long Bone Fracture: A Unique Presentation of Fat Embolism Syndrome

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Case Diagnosis

A 68 year old male developed altered mental status following surgical fixation after polytrauma. He was diagnosed with cerebral Fat Embolism Syndrome (FES).

Case Description

A 68 year old male was a restrained driver in a motor vehicle accident resulting in right femur fracture, displaced right tibial fracture, sternal fracture, right fourth to seventh rib fractures, and closed left bicondylar tibial plateau fracture. Twenty-four hours following femoral fracture repair with intramedullary nailing, he developed altered mental status. His MRI revealed multiple punctate foci of diffusion restriction in bilateral centrum semiovale, corona radiata, and left pons, consistent with FES.

He presented for inpatient rehabilitation with cognitive impairment, weakness, and decreased mobility. His course was limited by mood disorder and deficits in attention, working memory, executive functioning, and processing speed. He was treated with Sertraline to address his mood disorder and enhance neuromotor recovery. His functional deficits and mood improved by discharge.

On outpatient follow up he presented with persistent cognitive impairment, adjustment disorder, and mood disorder, which improved with neuropsychological intervention and continued follow up.

Diagnostic Criteria[1]

Diagnosis

2 Major Criteria OR 1 Major Criteria + 4 Minor Criteria

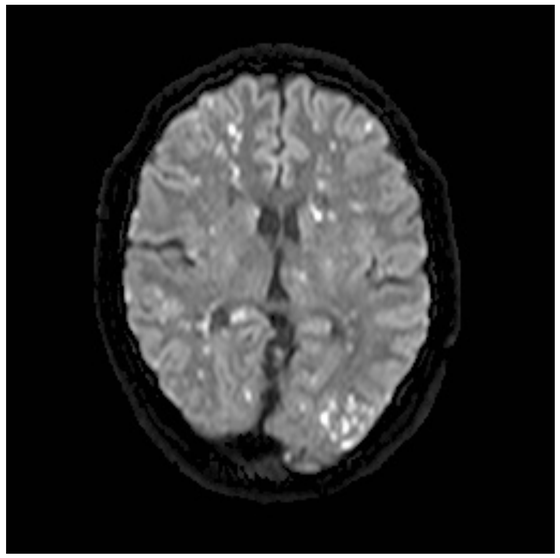
Major Criteria

Respiratory Distress
Cerebral symptoms in non-head injury patient
Petechial Rash

Minor Criteria

Tachycardia
Fever
Jaundice
Retinal changes
Anemia
Elevated ESR
Fat macroglobulinemia

Figure 1: MRI Findings of Cerebral FES[2]



Discussion

- Isolated central nervous system findings in the absence of other symptoms is an uncommon presentation of FES, which typically presents with a triad of pulmonary, neurologic, and cutaneous manifestations due to systemic embolization.[1]
- Despite early surgical fixation, fat embolization can occur, and should be considered when a polytrauma patient develops altered mental status.
- This case demonstrates a unique presentation of FES resulting in significant cognitive and psychiatric sequelae that required inpatient rehabilitation and longitudinal follow up.

Conclusion

- Cognitive dysfunction may be a predominant presenting feature of FES in individuals with long bone fracture.
- Patients with persistent symptoms benefit from inpatient rehabilitation and may require continual follow up.

References

1. Kwiatt, M. E., & Seamon, M. J. (2013). Fat embolism syndrome. *International journal of critical illness and injury science*, *3*(1), 64–68. https://doi.org/10.4103/2229-5151.109426
2. Case courtesy of Dr Rajesh Shanklesha, Radiopaedia.org, rID: 29523

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