SUNKEN SKIN FLAP SYNDROME: NEUROLOGICAL DYSFUNCTION AFTER DECOMPRESSIVE CRANIECTOMY

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Introduction

- Sunken skin flap syndrome (SSFS) following a head trauma is rare but is a medical emergency.
- It most commonly results from complications after decompressive craniectomy.
- SSFS presents with neurologic dysfunction that improves after cranioplasty or other immediate interventions to improve intracranial pressure (ICP).

Case Study

- 49-year-old male
- History of alcohol use disorder
- Presents with fall down a flight of stairs to Level 3 trauma center
- Intubated in the field
- Initially Glasgow Coma score (GCS) of 3T
- Mannitol administered, GCS then 6T
- CT imaging: subarachnoid and intraparenchymal hemorrhages, subdural hemorrhage (SDH) with 8mm left to right midline shift, occipital fracture, and skull base fractures
- Transferred to Level 1 trauma center
- Emergency fronto-temporo-parietal decompressive craniectomy performed with evacuation of left SDH

Case Study

Post operative day (POD):

- #1 – Neuro exam improved; moving left-sided extremities spontaneously; GCS 6T
- #9 – Moving all extremities spontaneously
- #11 – GCS 11T; percutaneous tracheostomy placed
- #20 – Able to speak with a Passy-Muir Speaking Valve in place
- #26 – Decannulated
- #30 – Consistently GCS 15
- #33 – Lethargic, signs of right sided neglect; unable to follow commands
  - 0/5 strength on right lower extremity, 3/5 right upper extremity
  - Head of bed flat and IV fluids, increasing ICP
  - Improvement in GCS to 15
- #34 – Left fronto-temporo-parietal cranioplasty
- #34-40 – GCS 15; working with physical, speech, and occupational therapy; safely discharged to a brain injury rehabilitation center on POD #6

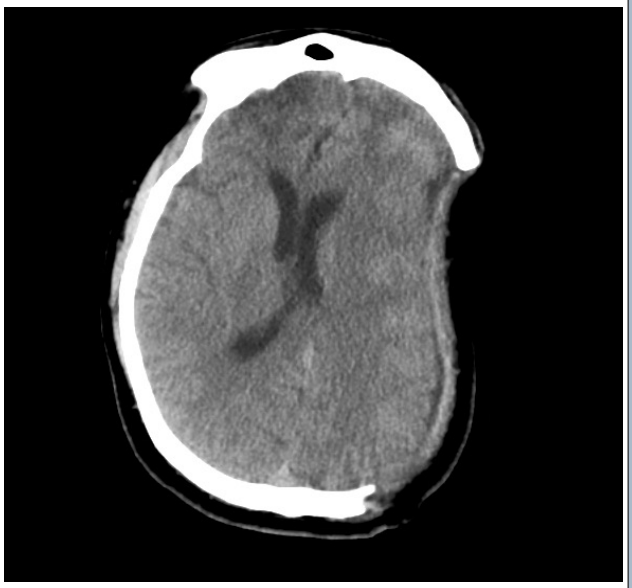

Figure 1: Midline shift with sunken appearance of the left craniectomy, characteristic of sunken skin flap syndrome

Discussion

- Pathophysiology is thought to be related to direct atmospheric pressure on the brain exceeding ICP. As edema decreases with healing, ICP decreases, and the pressure gradient becomes more pronounced.
- SSFS can occur within days, and up to 1 year post craniectomy.
- Awareness of SSFS outside the neurosurgery community is poor.
- SSFS can be a devastating complication of decompressive craniectomy, requiring emergent medical intervention, and if without success, requires urgent intervention with cranioplasty to prevent long term neurologic deficits.

Conclusion

Trauma providers must be familiar with the implications, immediate interventions, and definitive treatment of SSFS.

References

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