Tension pneumocephalus post dacryocystorhinostomy, complicated by NSTEMI and DKA,ICU management challenge

Dr. Amber Sabeen Ahmed ;Dr. Kulsoom Banu; Dr. Heera Lal.

Aga Khan university hospital, Karachi, Pakistan

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Introduction:

: Pneumocephalus describes the entrapment of air in the intracranial cavity

usually present after trauma (3.9 -9.7% cases) or supratentorial craniotomy (1)

. Its mostly benign but can be associated with acute neurologica deterioration with raised intracranial pressure called tension pneumocephalus.

a case of pneumocephalus which developed unusually after dacryocystorhinostomy

also developed non-ST- elevation MI and diabetic ketoacidosis

Case description

- 62-year-old diabetic lady s/p CABG 10 years back presented in ER with sudden drowsiness
- dacryocystorhinostomy 1 day back.
- respiratory rate of 42 and heart rate of 130
- Glasgow Coma Scale (GCS) of 7/15, with CSF rhinorrhea.
- intubated and had urgent CT scan head done
- CT showed defect in the cribriform plate of the right ethmoid bone with thinning of the cribriform plate on left.
- A speck of air was identified adjacent to the defect of the right cribriform plate ,most likely the source of postsurgical pneumocephalus
- demonstrated mount Fuji sign (3).
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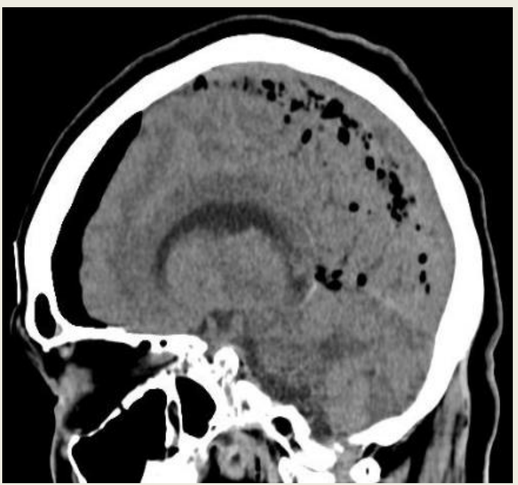
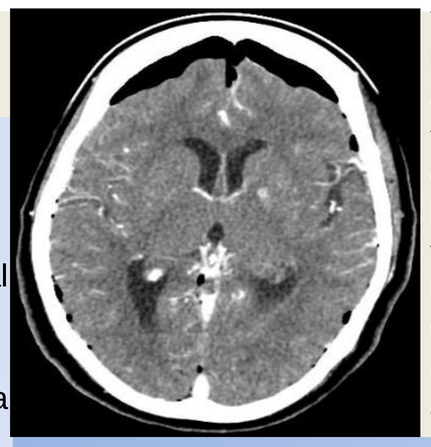


This image shows multiple specks of air identified along bilateral parietal and temporal convexities as well as along the falx



This image shows typical MOUNT FUJI SIGN The ***sign*** refers to the presence of gas (pneumocephalus) between the tips of the frontal lobes with a heaped-up appearance giving the silhouette-like appearance of ***Mount Fuji***

- also in high anon gap metabolic acidosis ,fulfilling criteria for diabetic ketoacidosis (DKA)
- ECG showed ST segment depression in anterior leads. troponin came out to be 110 ng/ml.S
- given 100% Fraction of inspired oxygen (Fio2) on mechanical ventilation
- kept in Fowler's position with head of bed elevated to 30degrees
- Hypertonic saline was also started
- along with insulin infusion and fluids.
- she was started on dual antiplatelets and statin but heparin was only given prophylactically.
- Her anion gap gradually closed and her acidosis improved.
- Repeat CT head showed complete resolution of pneumocephalus.
- progressively gained consciousness and was extubated successfully
- shifted out and was later discharged home, with GCS of 15/15

Discussion

- very few reported cases of pneumocranium developing after ophthalmological surgery worldwide
- Pneumocephalus is usually managed conservatively but tension pneumocranium, might need surgical intervention
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- Successful conservative management for tension pneumocephalus with bed rest, keeping in fowler's position ,analgesics, antipyretics and high flow oxygen
- Positive pressure ventilation is not recommended but in our case was successful
- iatrogenic tension pneumocephalus along with NSTEMI and DKA was never reported in literature.
- This combination of acute neurosurgical emergency along with acute medical emergency conditions was challenging as to avoid acidosis and further neurological insult
- Successfully extubated with a multidisciplinary approach and sent home with full GCS of 15/15

Conclusions

A multidisciplinary approach and good ICU management proves to be a winning combination, in our case of pneumocephalus complicated by NSTEMI and DKA

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