‘Acute confusion’- are CT head findings absolute or are there differential diagnoses to be considered?

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Summary

Patients commonly present with acute confusion to acute medical units. A 74 year old female presented with acute confusion, generally unwell but apyrexic. Patient later developed seizures- thought to be secondary to a previous stroke as computed tomography (CT) head scan showed no acute abnormality. Seizures continued, the patient developed a fever and became agitated- therefore lumbar puncture and repeat CT head were performed. Findings included raised cerebrospinal fluid (CSF) protein and white cells whilst the CT head scan reported a likely thrombus along the left middle cerebral artery.

Diagnosis was made with a positive CSF viral screen for herpes simplex virus (HSV) type 1 encephalitis with a possible new stroke.

Aim:
- To increase index of suspicion for this diagnosis and prevent delay in diagnosis for a condition with such a high mortality.
- To note HSV is known to mimic signs of a stroke on CT scan

Case report

Background

74 year old female was discharged from A&E 2 days prior with a diagnosis of collapse secondary to postural hypotension. Bloods were within normal limits and patient was back to baseline.

Day 1

Presenting complaint
Represented generally unwell, acute confusion (did not recognise family), newly bedbound, reduced intake, vomited, no urine output for 2 days, and new faecal incontinence

Past Medical History
Treated breast cancer (10 years ago), hypertension, Alzheimer’s disease (independently mobile and self caring, no social support, all recognised family), CVA (no residual signs)

Family History
- nil significant

Drug history-
Memantine, sertraline, simvastatin, clopidogrel

Social history-
- non smoker, no alcohol intake

Examination
- Patient was mobile, neurologically intact, haemodynamically stable, apyrexic but confused.

Investigations
- White cell count more than doubled to 17.9. (neutrophils 15.2), mildly raised urea 8.0, CRP remained 1, Chest xray (CR): nil acute
- Plan on post take ward round- query cause of acute confusion- to rule out intracranial pathology, and treat for sepsis with IV antibiotics and carry out:
  - Urine dip, head CT, confusion screen, morning cortisol, lying standing BP

Sudden deterioration in patient’s condition:

- En-route for head CT scan- patient suffered a seizure, GCS dropped to 3, pupils were dilated at 5mm and found to have sluggishly respond to light. Patient appeared to be in a post ictal state. Airway and saturations maintained on 1L oxygen via non rebreathe mask, GCS11/15
- Heart rate 110, ECG sinus tachycardia, no ST changes
- Repeat CT head scan showed no acute abnormality. Seizures thought to be secondary to a previous stroke

Herpes Simplex Virus (HSV) encephalitis is a severe viral necrotising encephalitis of inferior frontal /temporal lobes- Nearly always sparing basal ganglia...

- presents with varied and subtle non-specific symptoms and signs of:
  - fit like illness- fever, headache, vomiting followed by change in behaviour and cognition and seizures,1
  - These can lead to other misdiagnoses such as stroke, primary epilepsy, and primary psychiatric disorder.
- Lumbar puncture and CSF studies can therefore be delayed and subsequently delay diagnosis and treatment and lead to high morbidity and mortality.
- Early recognition can improve outcomes

Investigations
- (if suspected & to support diagnosis: but NOTE LIMITATIONS)
- MRI head: can show localised infection in inferior frontal/temporal lobes 1,2
  - Note: specific changes are not isolated to HSV encephalitis and differentials do exist including eg. MCA stroke, primary brain tumour 3,4 - therefore needs further differentiation.
  - CT head if MRI not available- but note: early CT is often normal
- CSF analysis (if LP is not contraindicated: due to mass effect/coagulopathy)
  - typically show raised lymphocytes, mildly raised protein and normal or mildly decreased glucose- as seen in our case report.
- HSV encephalitis can be confirmed by PCR detection of HSV (sensitivity of 96-98%) - however important to note PCR can be negative in early stages of infection 5 and up to 30 days as reported in a case.

Management
- Adults - Aciclovir 10mg/kg IV- over one hour – 8 hourly for 14-21 days for normal renal function.
- Dose can be increased in immunocompromised
- Antiepileptic can be added for suspected bacterial meningitis.
- Anticombutants for seizures

Common causes of acute confusion include:
- Infections
- Decreased cardiac output
- Medications
- Alcohol or substances of abuse
- Hypo or hyperthermia
- Acute psychoses
- Unfamiliar surroundings
- Others including faecal impaction and urinary retention

HSV encephalitis
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Conclusions

There are limitations to investigations for HSV encephalitis. Although radiological imaging in HSV encephalitis can mimic a stroke, differentiation can be made with review of baseline imaging whereby clinically, pathologically and radiologically:...
- Basal ganglia is spared in HSV encephalitis
- Basal ganglia is affected by a stroke affecting the MCA

Learning points:
- Consider HSV encephalitis as a differential diagnosis for acute confusion
- Stroke is a clinical diagnosis (not a radiological diagnosis)

REFERENCES

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