

Cerebral Ischaemia in Pituitary Apoplexy: A Report of Three Cases and Literature Review

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Conflict of interest

No conflict on interest



Overview of Pituitary Apoplexy

Haemorrhage or ischaemic infarction of Pituitary
Macroadenoma

Resulting in Rapid enlargement

Symptoms include:

- Acute visual loss

- Ophthalmoplegia

- Electrolyte abnormalities

- Endocrine dysfunction



Cerebral Ischaemia in Pituitary Apoplexy

Relationship unclear

29 case reports since the 1950's



Cases at our Institution

Groote Schuur Hospital

3 documented cases dating back to 2007



Case 1

51y Male

Known with a pituitary macroadenoma

Diagnostic MRI shown here:

- Diffusely enhancing lesion
- Right sided Knosp grade 3a cavernous extension

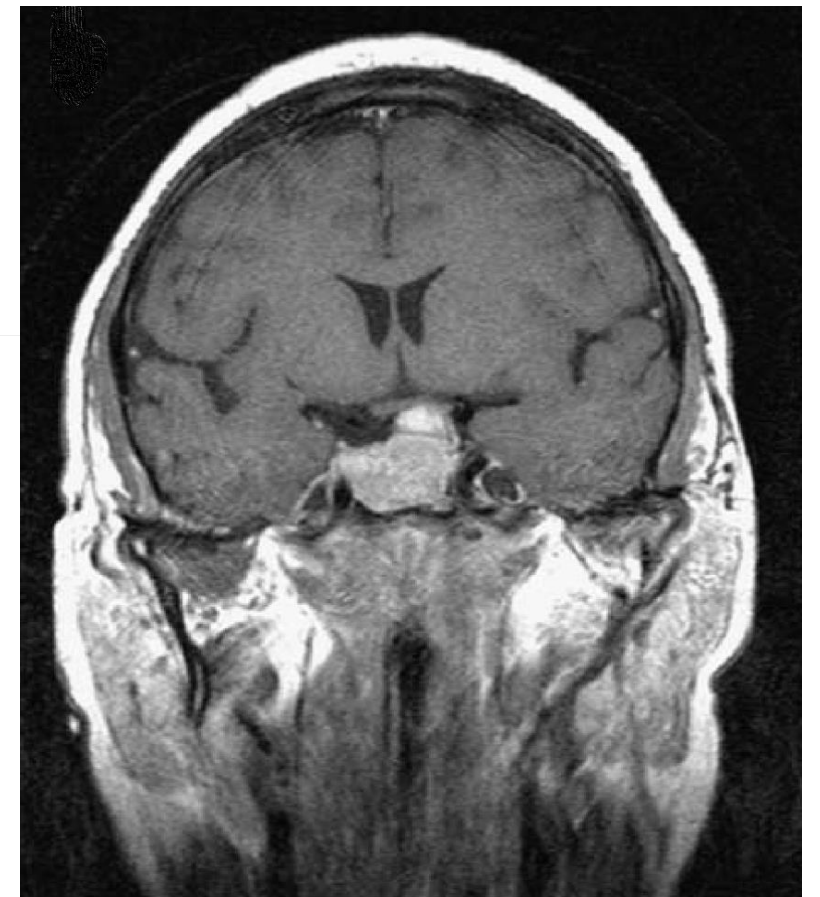
C/O: Severe Headache

GCS initially 14/15, dropped to 8/15

Left hemiplegia

CT:

Enhancing intrasellar mass lesion with hypodense centre



Adequately resuscitated

ETTS within 24hrs of admission

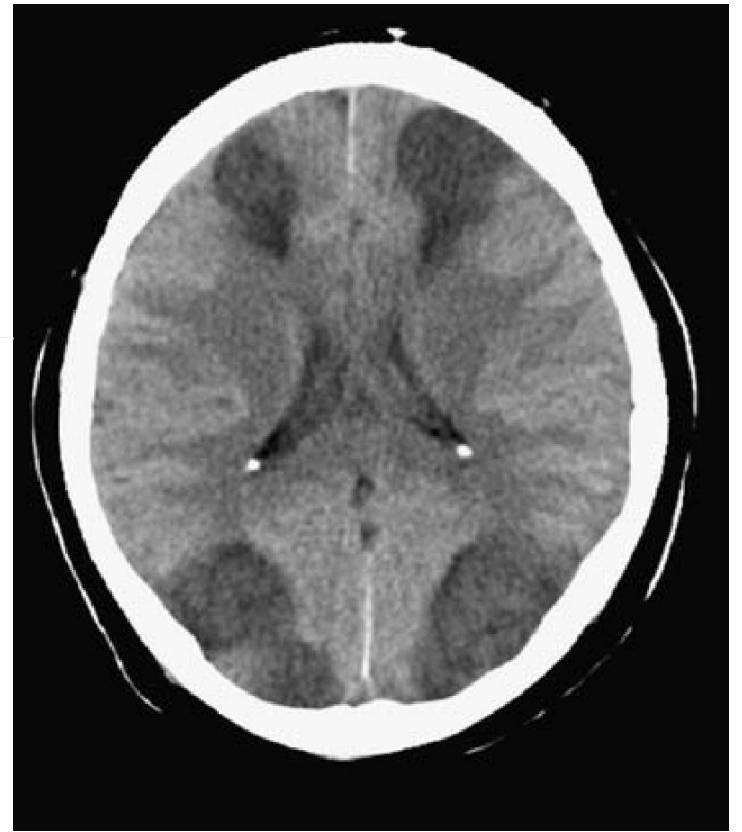
- Blood confirmed intraop
- Tumour Debulked

Post op CTB:

- Watershed infarcts of both Anterior Cerebral & Posterior Cerebral Arteries

Outcome:

- GCS improved to 12/15
- Discharged to rehabilitation hospital



Case 2

31 year old Female

3 day history of severe headaches, blindness and confusion

1st presentation

Clinically:

GCS 13/15

Pupils fixed and dilated

No perception of light bilaterally



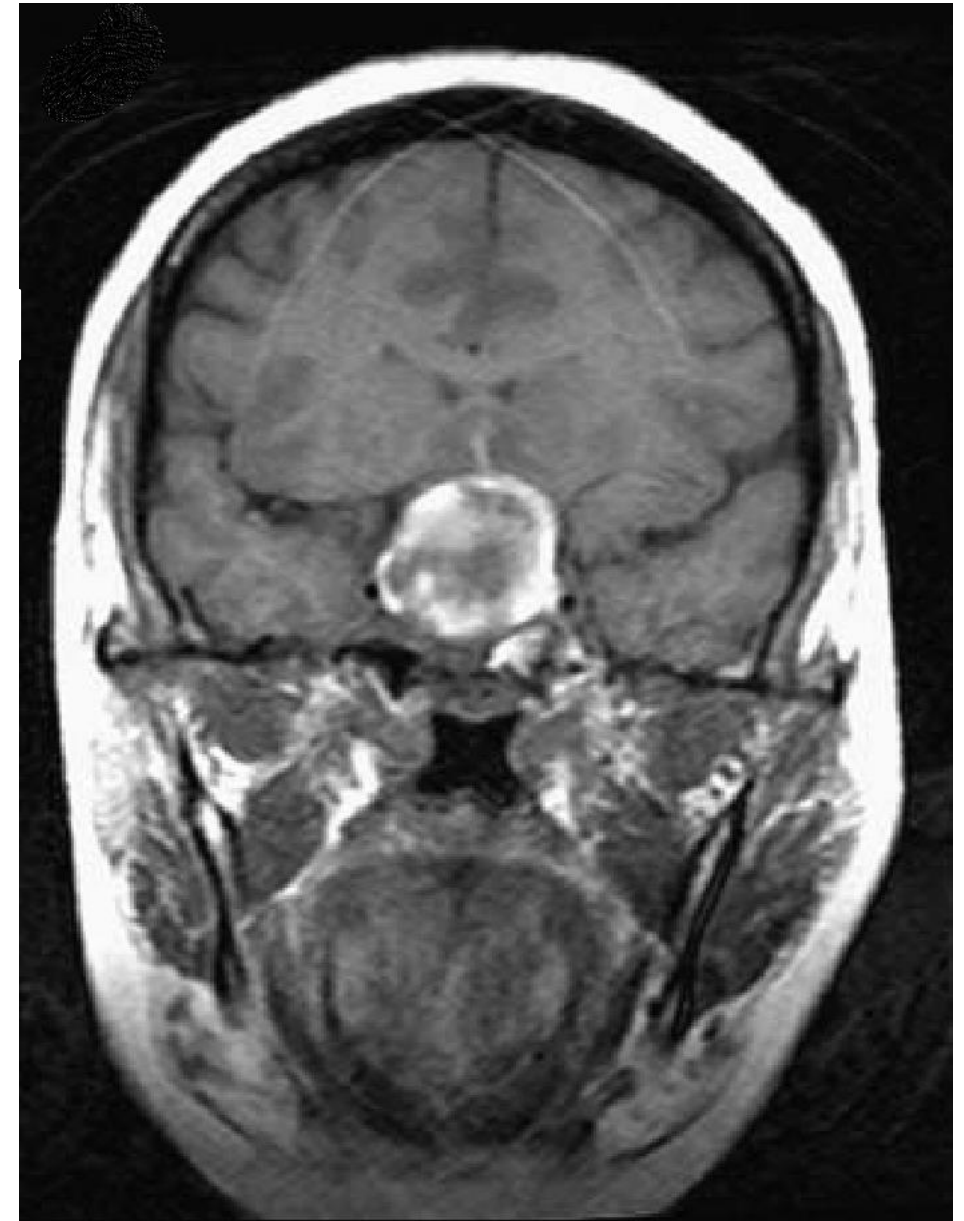
CTB:

Expanded pituitary fossa with mixed density mass

MRI:

Pituitary mass, suprasellar extension.
High intensity capsule, Low intensity mass

Minimal cavernous invasion: Knosp 2
bilateral



Management and Outcome

ETSS performed same day after adequate resus

Post op CTB:

- Good resection of pituitary lesion
- Frontal lobe infarcts

Outcome:

GCS returned to 15/15

Vision returned to useful function

No major post-operative neurological deficit



Case 3

55year old Male

Blind

Known to Neurosurgery:

Pituitary macroadenoma awaiting surgery

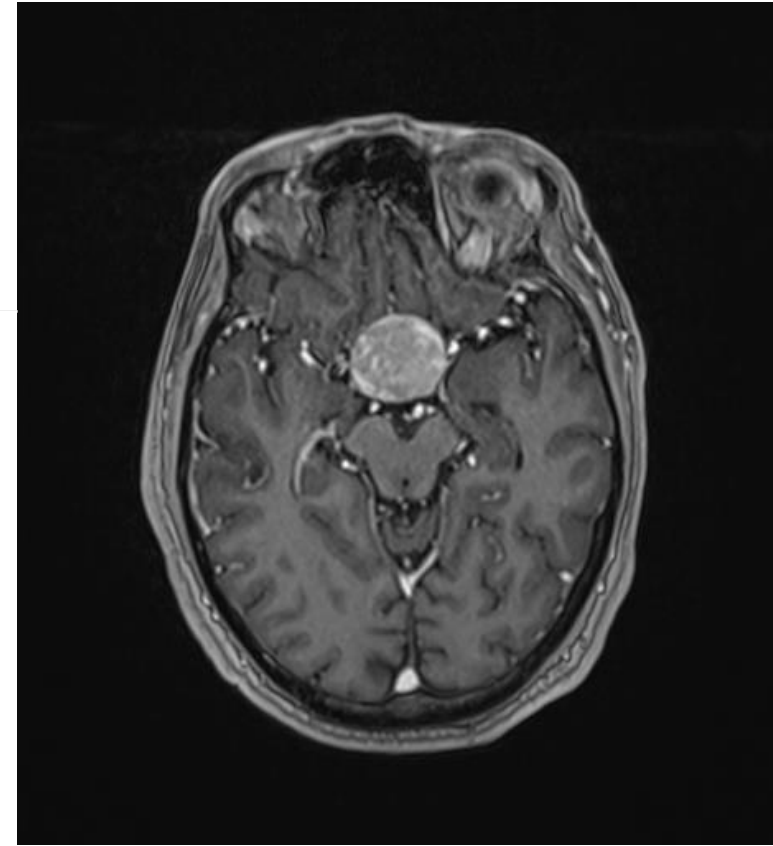
Represented with a 1 week history:

Worsening headaches & confusion

Clinically:

GCS 14/15

Motor and sensory function intact



CTB:

No acute intracranial haemorrhages

No infarcts

Admitted for observation

Next morning:

Clinically deteriorated:

GCS 14/15 → 6/15

Right ophthalmoplegia

Dilated Right pupil

Left sided hemiplegia



CTB: Immediately after
deterioration

Hypodensities in Right
MCA territory

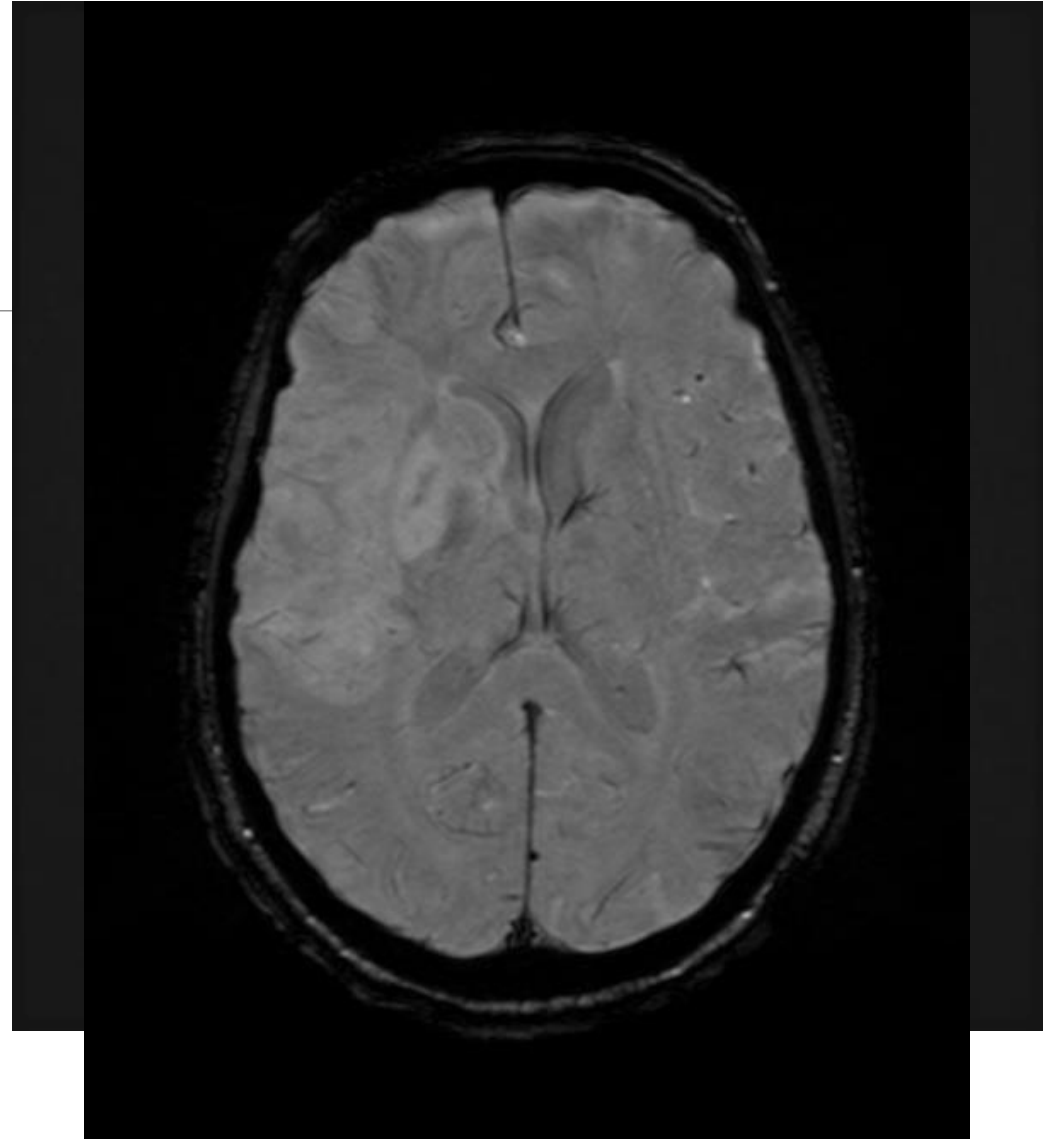


MRI: 4hrs post deterioration

Heterogenous signal T1W and T2W

Dimensions of tumour unchanged

Large Acute MCA territory infarct



MRA:

Absence of filling R cavernous ICA

A2 filling from ACOMM

SWI:

Minor blood products

Unchanged cyst

Confirmed not a primary haemorrhagic
apoplexy



Outcome:

Admitted to ICU

GCS remained at 3T, no neurological improvement

No surgery offered

Demised



Mechanisms of Infarction

Internal carotid occlusion:

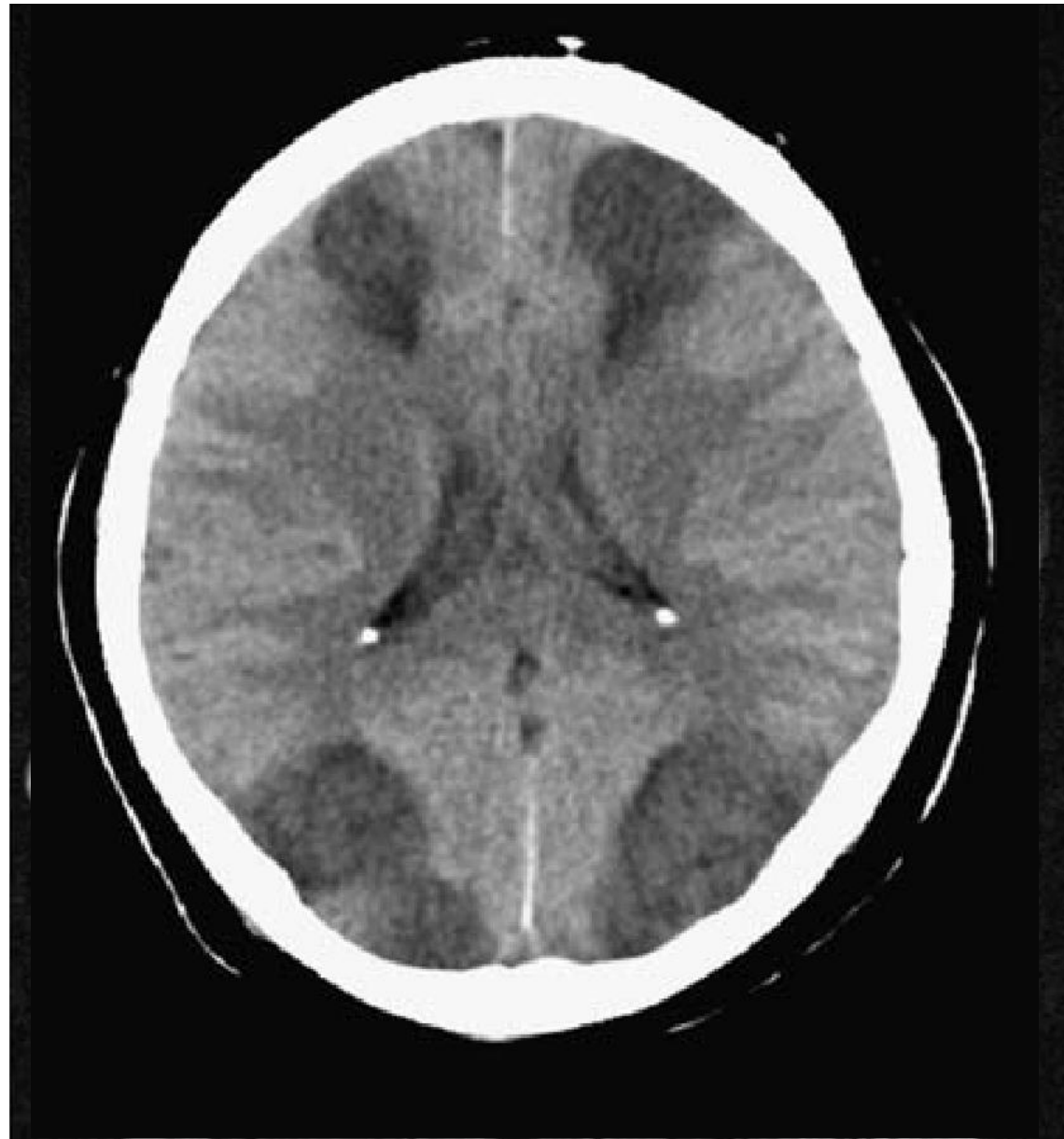
Due to rapid expansion of tumour and direct compression

Vasospasm:

Vasoactive substances liberated from pituitary tumour

Hypothalamic damage and liberation of spasmogenic factors

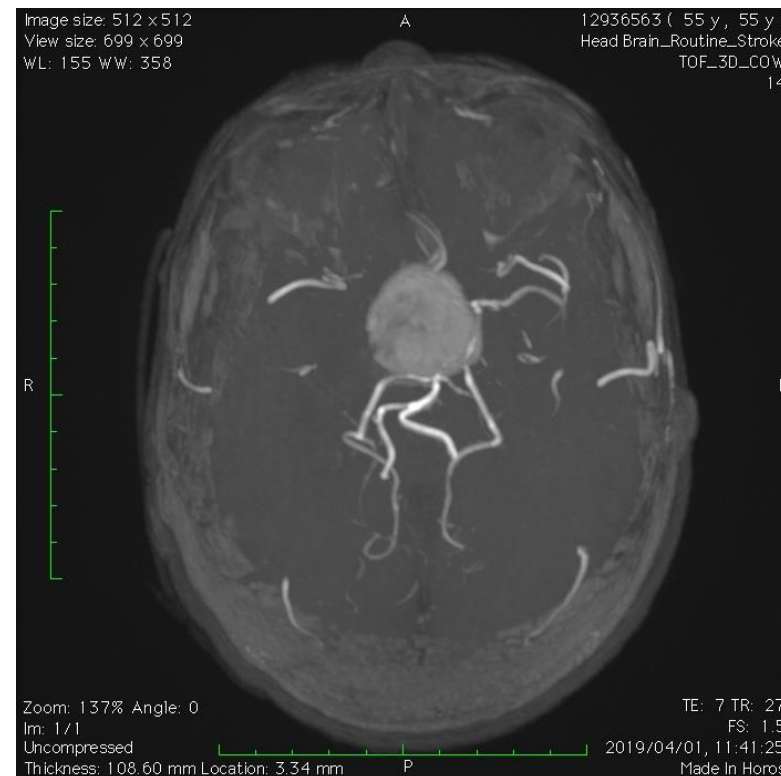




Case 3 we proposed a 3rd mechanism

Primary Ischaemic stroke with secondary pituitary apoplexy

- MCA territory infarct
- No change in tumour dimensions
- MRA revealing possible ICA clot
- Minimal blood in tumour



Literature review

- Vasospasm Reports
 - Pozzati et al:
 - Liberated vasoactive substances
 - Liberated subarachnoid blood
 - Akutsu et al:
 - MRI findings similar to vasospasm in chemical meningitis
- Compression Reports
 - Schinitker and Rousenbaum published in 1952 and 1977 about compression of MCA and ICA from a macroadenoma



Banerjee et al.

- 36% mortality rate overall
 - Mortality higher in bilateral vs unilateral stroke
- Compression as cause in 18 patients
 - 47% mortality
 - 38% mortality with surgery
 - 75% mortality without surgery



- Vasospasm as cause in 7 patients
 - 14% mortality
 - 50% mortality with surgery
 - 0% mortality without surgery
- Vasospasm should be managed with best supportive care
 - Adequate resuscitation



Learning points

Difficult to draw conclusions from these figures

- Small sample size
- Multiple factors at play
- Isolated case reports

Further points:

- Too rare for prospective study
- Imaging investigations vary among reports



Management recommendations

- Key to management rests on suspected aetiology
- Direct compression: May benefit from surgery
 - Should be in presence of accepted indications
- Ischaemia in vasospasm managed supportively
- Ischaemia in thrombo-embolic stroke evaluated and managed as per guidelines
 - Our patients condition too poor for intervention



Conclusion

Cerebral infarction is a rare association with pituitary apoplexy

Carries high mortality rate

Consideration of aetiology is essential

Advanced imaging useful

Current guidelines should be used



Thank you
