Subacute haematoma or brain tumor?

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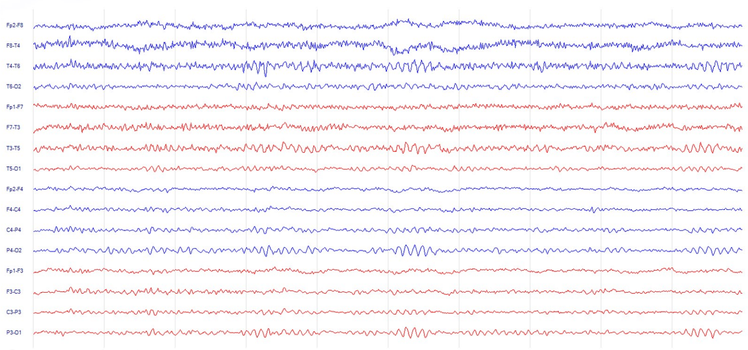

fig. 1 - Basal EEG

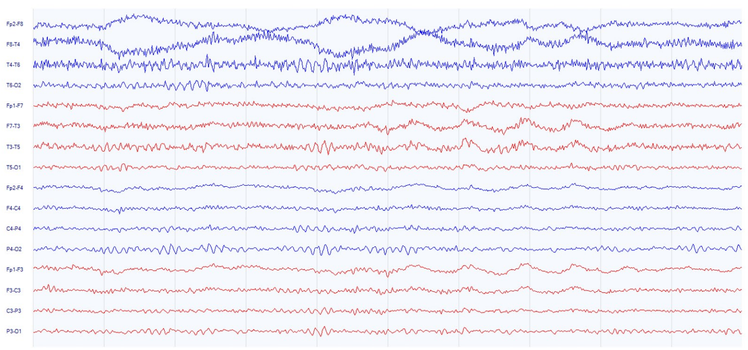

fig. 2 - EEG after hyperpnoea

It is not always straightforward to unequivocally interpret ambiguous neurological findings.
A 48-year-old man, with no significant medical record, unexpectedly started to present **frequent episodes** (once or twice a day) of:

- **profound weakness**,
- **disorientation with global amnesia**,
- **global aphasia**, and
- **loss of strength** and **paresthesia** in **both upper limbs**.

The episodes:

- lasted about **30 seconds to 1 minute**
- with **spontaneous resolution**
- were **not** characterized by **loss of consciousness**, and
- were followed by **further 15 minutes of general weakness** before complete recovery.

After 2 weeks of said symptoms, he underwent an **EEG** (fig. 1-2), which showed **δ waves** of **probable lesional nature** in the **left central fronto-temporal regions**.

He was admitted to our Department soon thereafter.
At admittance, his **neurological examination** was **negative**.

A **brain MRI with and without gadolinium** (fig. 3-6) showed:

- a **nodular intraparenchimal lesion** in the **left temporo-polar area**,
- of **1,9 cm** in **width**,
- surrounded by **peripheral haematic elements**,
- with a **central area** of **fluid content**,
- with a mild **peripheral enhancement** after contrast, and
- presence of **oedema** in the surrounding white matter.

Suspecting a neoplastic formation (either primitive or metastatic), a **whole-body CT with contrast agent** + **^{18}F-FDG-PET** (fig. 7) was performed, which **did not demonstrate** the presence of **pathologic areas** of metabolic hyperactivity nor other pathological masses.

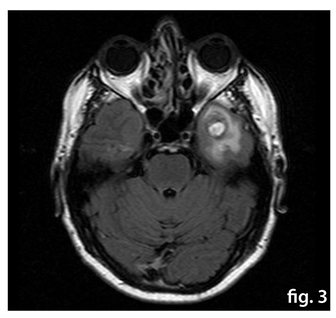

fig. 3

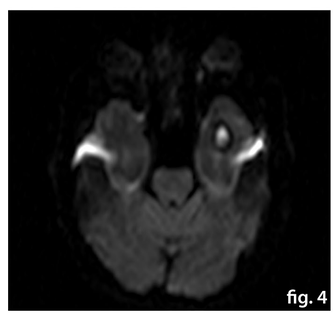

fig. 4

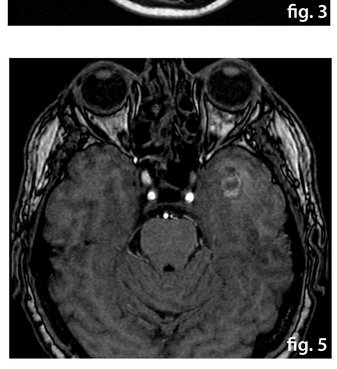

fig. 5

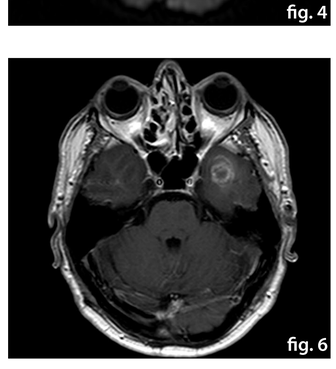

fig. 6

fig. 3-6 - MRI scans in FLAIR (3), DWI (4), angioMRI (5), and T1 with gadolinium (6)

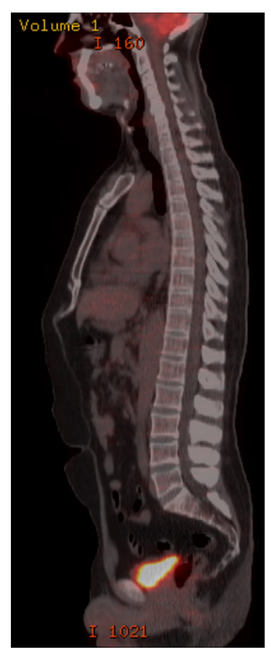

fig. 7 - Whole-body ^{18}F-FDG-PET

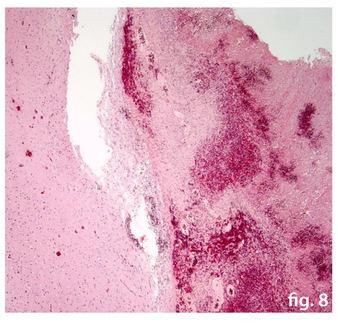

fig. 8

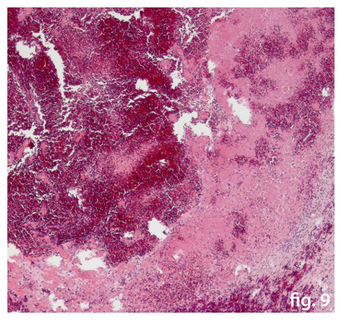

fig. 9

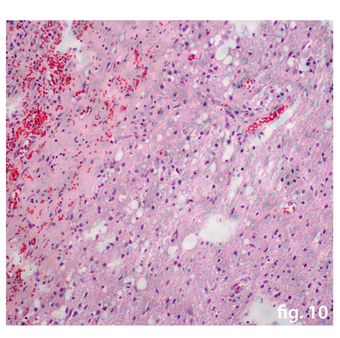

fig. 10

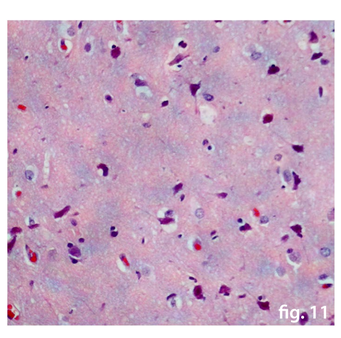

fig. 11

fig. 8-11 - Histological stainings at 2x (8), 4x (9), 10x (10), and 20x (11) magnification

Hence, the patient was transferred to the Department of Neurosurgery, where the **lesion** was **first biopsied** (for the histological intraoperatory analysis), and **then removed**.

The analysis of the **intraoperatory biopsy** showed only **some haemorragic extravasation** with **haemosiderin deposits**.
The following **histopathological analysis of the whole lesion** (fig. 8-11) in haematoxylin-eosin staining demonstrated:

- a **mixture of fibrin and haemorragic elements** (fig. 8-9),
- **granulation tissue with reactive gliosis** (fig. 10), and
- **neuronal ischaemic degeneration ("red neurons")** (fig. 11).

These findings were suggestive for an **intraparenchimal haematoma**, probably due to a **bleeding cavernoma** by a vascular malformation which was not included in the biopsy.
No neoplastic features were observed.
The patient was discharged with an anti-epileptic medication, in good clinical condition.

A number of different factors might have influenced the **misleading pre-surgical diagnosis**:

- the **uncommon localization** of the haematoma,
- the likely **subacute nature** of the lesion with **partial organization**,
- the **impossibility to rule out** with utmost certainty **a bleeding neoplastic lesion** through imaging, and
- the **absence of clear, unique elements suggesting cavernomatosis**,

all **might explain** both the **irritative clinical symptoms** of presentation and the **ambiguous radiological findings**.

These elements should be taken into consideration in order to avoid unnecessary surgical procedures in future similar cases.