Frontal Lobe Syndrome

Frontal lobe syndrome (FLS) reflects damage to the prefrontal regions of the frontal lobe. It is characterised by deterioration in behaviour and personality in a previously normal individual.

Aetiology

- Head injury.
- Cerebrovascular event.[1]
- Infection.
- Neoplasm.
- Degenerative disorders - eg, Pick's disease, a type of dementia with histopathological findings of Pick's bodies and selective involvement of the frontal and temporal lobes.
- Many instances of the disorder have a genetic cause.

Epidemiology

Prevalence
It was found in 19% of people aged ≥85years in one study.[2] There may be significant under-reporting due to the nature of the condition.

Presentation

Symptoms
Changes are often reported by family as "He's not the father I know", but may be difficult to detect in the surgery during normal conversation. There may be an indication from events such as previous head injury and divorce or loss of job in a previously stable individual.

History should include a careful developmental history, trauma history and social history, including educational and personal achievements, employment history, and substance use and abuse history. Characteristic features are:

- Decreased lack of spontaneous activity - the patient feels no desire to do anything and is unable to plan activities, but may have periods of restlessness.
- Loss of attention - the patient displays a lack of interest and is easily distracted.
- Memory is normal but the patient cannot be bothered to remember.
- Loss of abstract thought - eg, cannot understand proverbs.
- Perseveration - a tendency to continue with one form of behaviour when a situation requires it to change.
- Change of affect - depending on the nature of the damage to the brain, the patient either becomes apathetic and 'flat' or becomes over-exuberant and childish or uninhibited with possibly inappropriate sexual behaviour.

Signs
The mini mental state test does not measure frontal lobe damage properly. The following are more accurate. Demonstrate, then observe:[3]
• **Go - no go:**
  - Tell the patient to hold up two fingers if you hold up one and vice versa.
  - Give it 10 attempts.
  - Typically, a patient with FLS will copy you (echopraxia).

• **Visual grasp:**
  - Hold your hands at the side of the patient's eyes and ask him or her to fix their eyes on your nose.
  - Check lateral vision by wiggling fingers.
  - Tell the patient to move his or her eyes AWAY FROM the hand with wiggling fingers.
  - An FLS patient may not be able to do this if there is damage in the orbital cortex.

• **Letter fluency:**
  - Ask the patient to say as many different words beginning with 'F' as they are able to in one minute (no proper names).
  - Normally, the patient should be expected to produce at least 8.

• **Motor test:**
  - Perseveration can be shown by asking the patient to perform a series of three movements: make a fist, lay the palm on the desk and then place the side of the hand on the desk.

'Neglect' is most common after lesions of the right hemisphere involving either the right parietal lobe or the right frontal lobe. Patients with right-sided brain lesions typically neglect the left hemispace. This can be assessed by asking the patient to draw or to read. Patients may neglect the left half of the drawing or leave off the left half of words (neglect dyslexia).

**Differential diagnosis**

- Alzheimer's disease
- Apraxia
- Aphasia
- Depression

**Investigations**

- Check B12 levels, thyroid function, serology for syphilis and antinuclear antibodies.
- Consider MRI/CT scanning if there is the possibility of a tumour.
- Patients often have a specialist neurological assessment and, following this, further investigations such as lumbar puncture may be performed.

**Management**

**General principles**

General supportive care sharing some principles with dementia care - eg, understanding, and accepting help.

- As patients may have lost their inhibitions or appreciation of danger, a high level of supervision may be required.
- If the patient can be supported at home, visiting assistance could be sought from physiotherapists, occupational therapists and/or speech therapists.
- Respite care may be needed.
- Assessment by a social worker may also be helpful.

**Pharmacological**

The therapies used in Alzheimer's dementia are **not** of use.

**Complications**
Patients with severe injuries or lesions may be severely disabled in a way that their carers may not recognise or appreciate. Personal responsibility is frequently affected, even in the absence of gross neurological changes.

Prognosis

This depends on the underlying pathology.

Further reading & references

3. Espay AJ; Frontal Lobe Syndromes, Medscape, Sep 2012

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