Controlateral pursuit deficit from unilateral pontine damage: two case reports

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The aim of this work is to describe two particular cases of saccadic and smooth pursuit movements alterations caused by a focal unilateral pontine tegmental lesion

**Case 1**
The first patient is a 27-years-old woman with a breast carcinoma that developed ataxia and weakness in leftward gaze

Brain MRI showed a solitary enhancing lesion limited to the left dorsal pontine tegmentum, presumed to be metastatic

**Case 2**
The second patient is a 45-years-old man that abruptly developed a left crossed pontine syndrome

Brain MRI showed a left pontine tegmental hemorrhagic lesion

The impairment of controlateral smooth pursuit movements may be associated with:

- damage of excitatory mossy fibres from pons to cerebellum (after their decussation)
- lesion of the excitatory fibres projecting from MVN to the controlateral abducens nucleus (prior to their decussation).

In our patient, the involvement of OKN and VORs suggests a damage of:

- MVN neurons
- projections of MVN to the controlateral abducens nucleus

Our data may seem to contradict previous findings (controlateral smooth pursuit impairment with preservation of VORs)

On the basis of this data, the possibility that unilateral pontine tegmental lesions determine both ipsilateral and controlateral movements alterations, suggests that the oculomotor pattern depends on the neurological structures involved, rather than the lesion site simply

An asymmetry in the pursuit movements in a patient presenting a possible pontine lesion has an only limited value in the localization of the site of the lesion