



# Letter to the editor: insular stroke presenting with acute onset of pain

Michael Bayat<sup>1</sup> · Allan Bayat<sup>2</sup>

Received: 20 March 2018 / Accepted: 6 April 2018  
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

## Abstract

Post-stroke pain is a well-known neuropathic pain syndrome but pain at the onset of stroke is a very rare occurrence. We wish to present a case where a stroke in the insular region caused acute-onset lateralized neuropathic pain.

**Keywords** Stroke · Pain · Neuralgia

## Case

A previously healthy 90-year-old woman was admitted to our department due to acute onset of painful paresthesias in the entire left side of her body. The pain was described as burning sensation. Clinical examination showed decreased sensation to painful (pinprick) stimuli and impaired ability to distinguish between hot and cold stimuli on the left side of her body, encompassing the face, truncal region, arm and leg. Pain thresholds and perception thresholds to contact heat and cold were not investigated. An MRI showed an ischemic stroke in the right posterior insular region (Fig. 1). She was diagnosed with atrial fibrillation which was considered to be the cause of her stroke. During admission she later developed focal seizures with left sided convulsions without loss of awareness and was started on lamotrigine. The painful state lasted a few days and the paresthesias gradually vanished during the next few weeks. At a follow-up telephone consultation 2 months later she no longer experienced any symptoms.

## Discussion

Central neuropathic pain arises due to a lesion affecting the central nervous system, typically involving the spino-thalamo-cortical system for pain and temperature. The lesion may be located in the spinal cord, brainstem, subcortical or cortical region. Post-stroke pain is a well-known neuropathic pain syndrome occurring after a stroke and is more common after lateral medullary (Wallenberg's syndrome) or thalamic infarctions. The pain can be spontaneous or evoked and is often accompanied by abnormalities in thermal or pain sensation. Patients may describe the pain as "burning", "aching", "freezing", etc. Post-stroke pain often occurs within the

first few months after the stroke [1]. But pain at the onset of stroke—as in our case—is an exceedingly rare presentation.

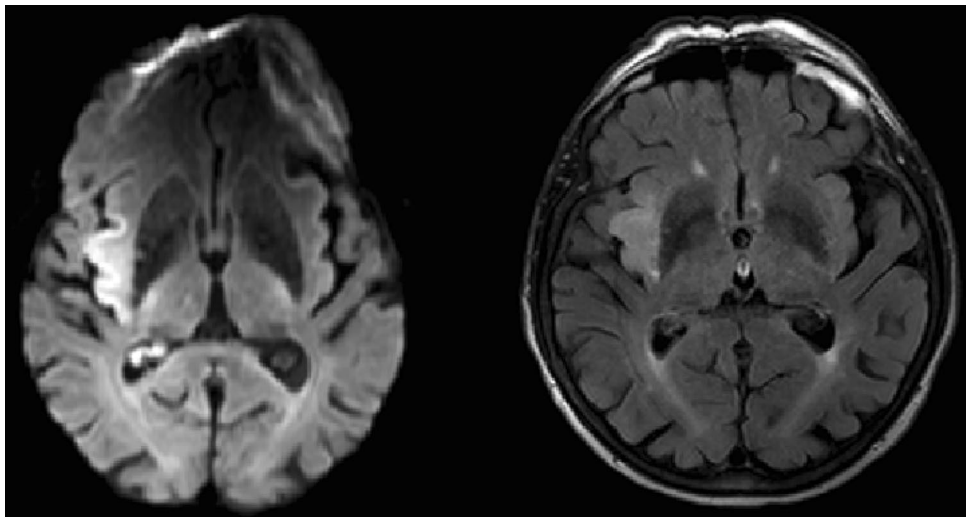
The opercular-insular (also called parasyylvian) pain syndrome is a distinct central pain syndrome arising due to a lesion in the parasyylvian cortex (in particular the mid-posterior part of insula and the parietal operculum). The parasyylvian cortex is involved in the processing of pain-temperature sensation and lesions here may present with predominant or isolated deficits in pain and temperature sensation [2]. It has been shown that cortical stimulation of the operculo-insular region can generate painful sensations [3, 4]. Traditionally the opercular-insular pain syndrome has been termed "pseudothalamic" but this may be inaccurate since thalamic pain does not exhibit dissociated thermo-algesic sensory loss but includes disturbances in superficial and deep sensitivities. In this respect the opercular-insular pain syndrome has more in common with the lateral medulla oblongata lesion (Wallenberg's syndrome) which may also present with a dissociated sensory loss [2].

With this case presentation we would like to highlight that on very rare occasions a stroke in the insular region may present with acute-onset lateralized neuropathic pain.

✉ Michael Bayat  
bayat86@hotmail.com

<sup>1</sup> Department Of Neurology, Aalborg University Hospital, Aalborg, Denmark

<sup>2</sup> Department of Neurology, Rigshospitalet, Copenhagen, Denmark



**Fig. 1** MRI showing an ischemic stroke in the right insular region, DWI (left), T2 (right)

### Compliance with ethical standards

**Ethical standards** The case report been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

**Informed consent** The patient has consented to the submission of this case report to the journal.

**Conflicts of interest** The authors declare that they have no conflict of interest.

### References

1. Klit H, Finnerup NB, Jensen TS (2009) Central post-stroke pain: clinical characteristics, pathophysiology, and management. *Lancet Neurol* 8(9):857–868. [https://doi.org/10.1016/s1474-4422\(09\)70176-0](https://doi.org/10.1016/s1474-4422(09)70176-0)
2. Garcia-Larrea L, Perchet C, Creac'h C, Convers P, Peyron R, Laurent B, Mauguière F, Magnin M (2010) Operculo-insular pain (parasyylvian pain): a distinct central pain syndrome. *Brain* 133(9):2528–2539. <https://doi.org/10.1093/brain/awq22>
3. Ostrowsky K, Magnin M, Ryvlin P, Isnard J, Guenot M, Mauguière F (2002) Representation of pain and somatic sensation in the human insula: a study of responses to direct electrical cortical stimulation. *Cereb Cortex* 12(4):376–378
4. Isnard J, Guénot M, Sindou M, Mauguière F (2004) Clinical manifestations of insular lobe seizures: a stereo-electroencephalographic study. *Epilepsia* 45(9):1079–1090