

UNILATERAL PILOERECTION IN MESENCEPHALIC IN HYPOTHALAMIC CONTROLATERAL HEMORRAGE

R. Balestrino¹, G. Bosco², G. Zelante², S. Leonbruni²,
G. Vaula², M. Romanelli², P. Cerrato²

1) Department of Neuroscience, University of Turin, Torino, Italy

2) Department of Neuroscience, STROKE UNIT, University of Turin,
Torino, Italy



CASE REPORT

MEDICAL HISTORY

A 46 years old male developed left-hemibody hypoesthesia and headache, rapidly followed by the development of left hemiparesis, expressive aphasia, down-gaze deviation and absence of photomotor reflex in the left eye. CT scan revealed a ponto-mesencephalic hemorrhage, angio-CT was negative. Medical history consisted of thalassemic trait with mild anemia and cigarette smoking. The patient was sedated and admitted to the intensive care unit for 2 months, and then was awoken and admitted to the stroke unit.

NEUROLOGICAL EXAMINATION

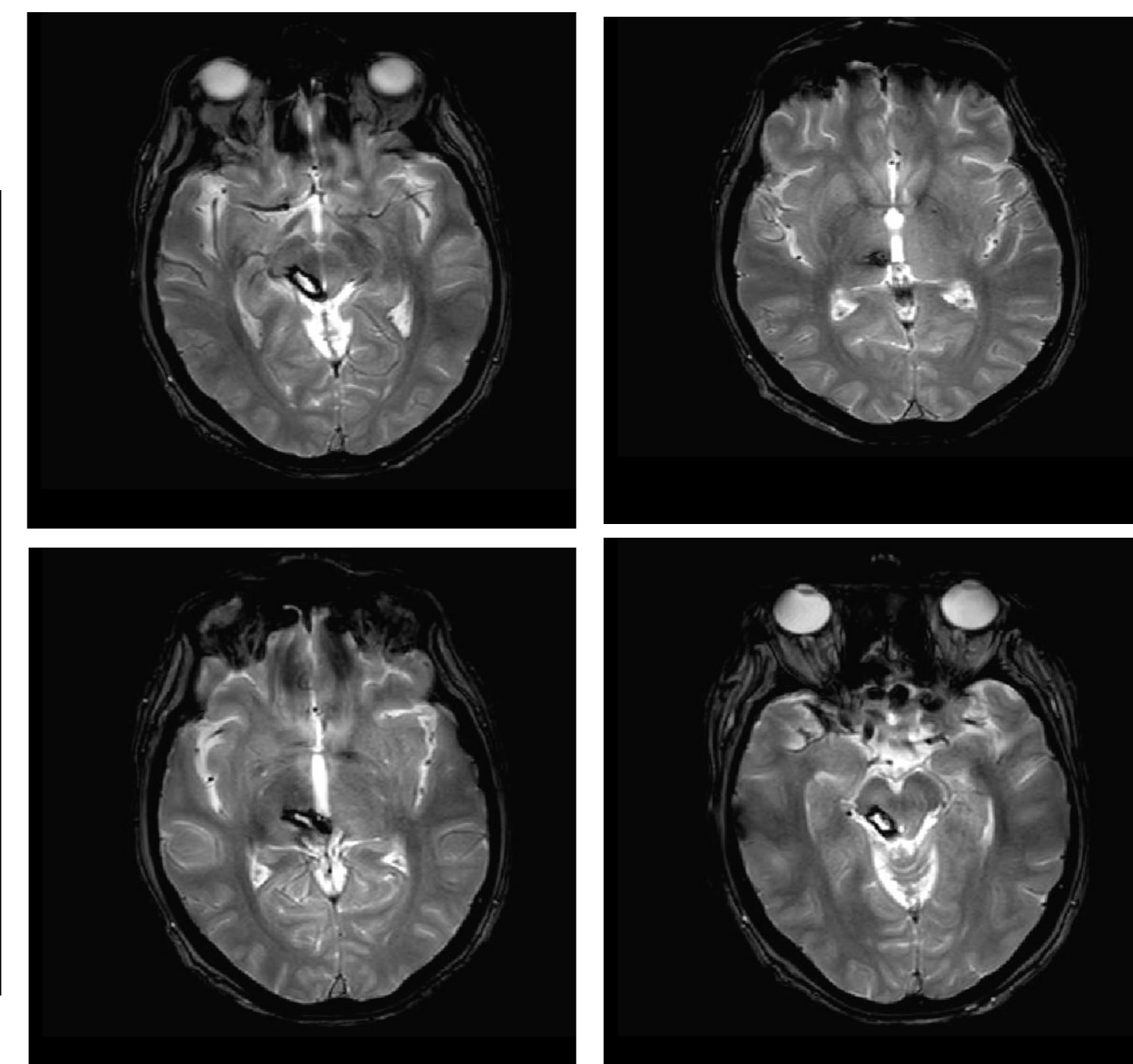
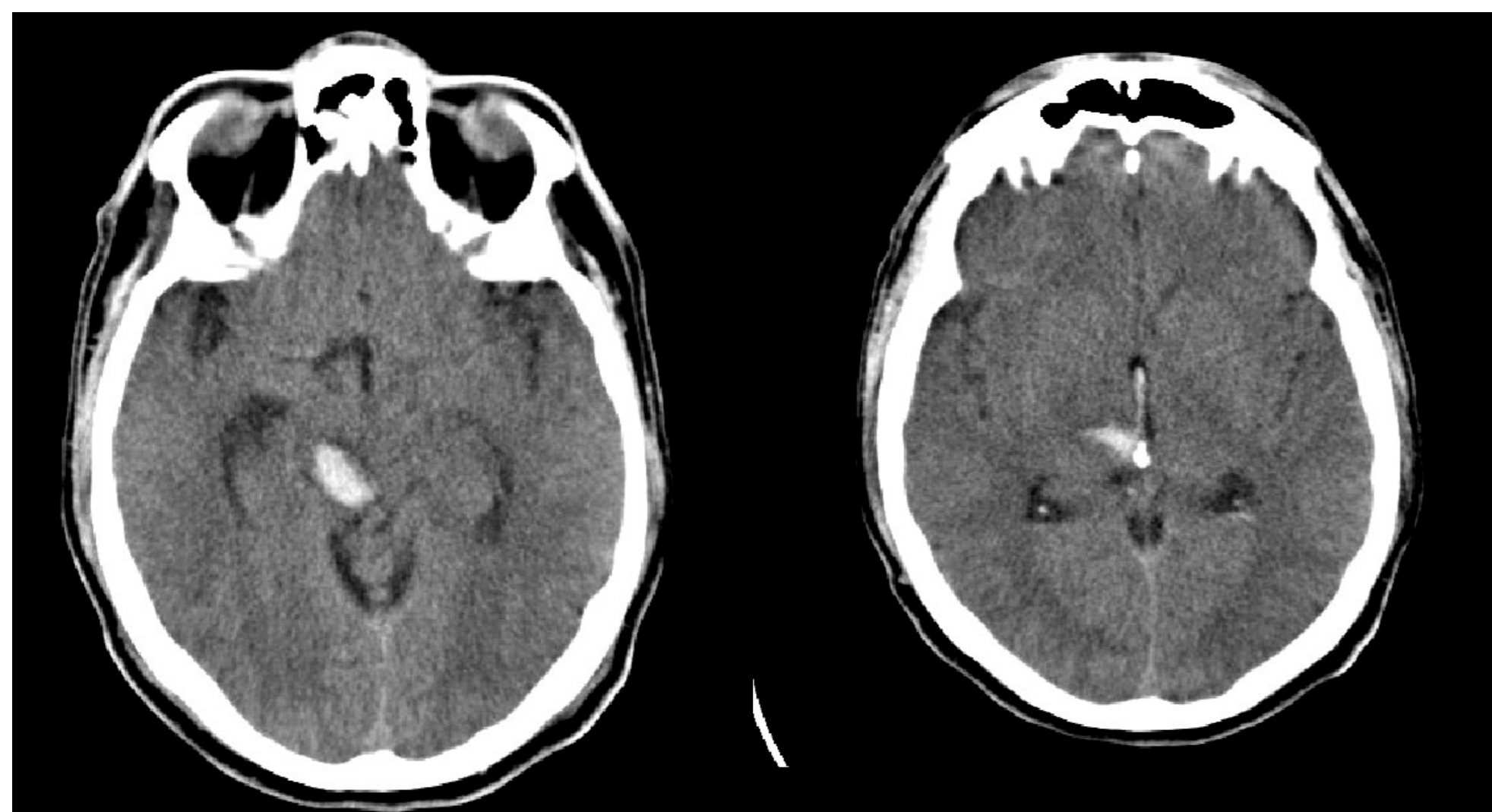
The patient presented expressive aphasia and mild cognitive and motor slowing; anisocoria with bilateral normal photomotor reflex and an abduction and elevation deficit in left eye with double vision. He had sensory loss (tactile, nociceptive and vibratory) in the left hemibody, a severe paresis of the left lower limb and a mild paresis of the left upper limb. Cerebellar tests showed dysmetria in the right upper limb with intentional tremor. The patient showed 2-3 minutes long episodes of piloerection confined to the left hemibody during voluntary mobilization attempts, without other symptoms, cold shivers or aura; the patient was not aware of it. EEG was negative.



IMAGING

The CT scan revealed reabsorption of the hemorrhage, MRI scan excluded previous bleeding in other locations, vascular malformations and other lesions; the consequences of the hemorrhage were evident in the right postero-lateral portion of the mesencephalon, in the mesial portion of the thalamus and subthalamus, in the upper posterior portion of the pons and in the right superior cerebellar peduncle.

Images: CT SCAN, T2 MRI 3T, Gradient Echo MRI 3T



PREVIOUS REPORTS

To our knowledge, this is the first report of unilateral piloerection after a stroke involving deep brain structures: other cases of monolateral piloerection have been reported as an ictal sign in visceral epilepsy. The majority of patients were reported to have temporal epilepsy, most commonly in the left hemisphere; other cases have been described in autoimmune encephalitis and tumors¹; when unilateral, this sign is reported more commonly as ipsilateral in respect to the focal origin.

NEUROANATOMICAL CONSIDERATIONS

The precise neuroanatomical pathways of piloerection are not fully understood: piloerection s have a cortical representation, and, according to previous literature, limbic structures of the left temporal lobe and the insula appear to be the anatomic origin of this phenomenon – at least in pilomotor seizures²; however, the hypothalamus and the brainstem seem to play a pivotal role in the physiological regulation of piloerection³ and this is the neuroanatomical pathway which seems more likely implicated in the pathogenesis of piloerection in this case. Studies in animal models (cats) demonstrated that piloerection can be elicited by the electrical or pharmacological stimulation of the hypothalamus and can be abolished by bilater hypothalamectomy. Physiologically, the hypothalamus serves to integrate pilomotor activity with other manifestations such as fear, rage, thermal regulation and sexual excitement³.

References: 1) Panda S, Agarwal C, Sharma A. Piloerection: A rare ictal phenomenon. Case report and review of literature. Ann Indian Acad Neurol 2017;20:169-72

2) Loddenkemper T, Kellinghaus C, Gandjour J, Nair DR, Najm IM, Bingaman W, et al: Localising and lateralising value of ictal piloerection. J Neurol Neurosurg psychiatry 75:879-883, 2004

3) Walker AE: The hypothalamus and pilomotor regulation. Assoc Res Ment Dis Proc 20:400-415, 1940