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To cite this article: Osamu Igarashi, Joe Aoyagi, Yuji Kawase, Tetsuhito Kiyozuka, Kiyokazu Kawabe, Yasumitsu Ichikawa, Hiroaki Iguchi, Toshiki Fujioka, Ken Ikeda & Yasuo Iwasaki (2005) Cheiro-pedal syndrome following pontine infarction, *Neurological Research*, 27:1, 103-104

To link to this article: <http://dx.doi.org/10.1179/016164105X18412>



Published online: 19 Jul 2013.



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Cheiro-pedal syndrome following pontine infarction

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We report the case of a 64-year-old man with sudden onset of numbness in the right hand and foot. Neurological examinations were normal except for hyperesthesia, and hyperalgesia of the right hand and foot. Brain MRI demonstrated a high signal intensity on T2-weighted image and a low signal intensity on T1-weighted image in the left tegmentum of the pons. He was diagnosed with pontine infarction presenting with cheiro-pedal syndrome (CPS). Damage in the sensory pathways can cause CPS. Difference in the threshold may explain the specific sensory pattern in this syndrome. Further examination of the relationship between sensory symptoms and localization on MRI is needed to clarify this syndrome. [Neurol Res 2005; 27: 103–104]

Keywords: Cheiro-pedal syndrome; brainstem infarction; medial lemniscus; threshold; somatotopy

INTRODUCTION

The cheiro-oral syndrome (COS) is a specific sensory disturbance that affects the unilateral corner of the mouth and ipsilateral hand^{1–4}. In addition to COS, sensory disturbance confined to the foot region has been reported, a syndrome called cheiro-oral-pedal syndrome (COPS)^{4,5}. It is well known that damage of the sensory pathway can cause either COS or COPS. Cerebral lesions exhibit mainly cheiro-oral topography¹. Thalamus and thalamocortical projection produce cheiro-oral-pedal sensory disturbance^{4,5}. Recently, patients with restricted sensory changes in the palm and foot [cheiro-pedal syndrome (CPS)] have been reported⁴.

We report a patient whose clinical manifestation are specific sensory disturbance confined to the hand and foot unilaterally in the same lesion, while MRI shows infarction in the tegmentum of the pons.

CASE REPORT

A 64-year-old man with hypertension and diabetes under poor control suddenly developed numbness in the right hand and foot. He was admitted to our department the following day. His blood pressure was 156/86 mmHg. General physical examinations were normal. On neurological examination, consciousness was alert. His cognitive ability and orientations were normal, as were external eye movements without nystagmus, other cranial nerves, motor functions and deep tendon reflexes. Plantar responses were flexor.

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Cerebellar incoordination and involuntary movements were not seen. There were hyperesthesia and hyperalgesia of the hand and foot in the right side.

T2-weighted MRI showed a high signal intensity in the left tegmentum of the pons and the T1-weighted MRI showed a low signal intensity in the same lesion (Figure 1). The cheiro-pedal sensory disturbance gradually diminished in the course of 4 months with the same intensity.

DISCUSSION

Restricted sensory disturbance in the palm and foot is termed cheiro-pedal syndrome (CPS)⁴ and this was considered to be the diagnosis in our case. Garcin and Lapresle^{2,3} demonstrated that COS may result from a small thalamic infarction between the lateral portion of posteromedial central nucleus and the inferior medial portion of posterolateral ventral nucleus. Thalamocortical and brainstem lesions also cause COS^{5–9}. Otherwise, COPS could be explained by the partial involvement of the medial lemniscus, thalamus or thalamocortical projections¹⁰.

Kim⁴ reported 30 stroke patients presenting with restricted sensory syndrome, including with COS, COPS and CPS. The patients were COS in 10, COPS in eight, CPS in four, restricted to palm and/or finger in seven, and perioral-pedal in one, respectively. In his report concerning CPS, three had responsible lesions, either lenticulocapsular or corona radiata, and only one patient had infarct in the pons⁴. Considering the CPS in the pontine lesion. Kim's case had two consecutive infarcts in the pons and presented with bilateral CPS. Quadriparesis was also seen in his case. MRI of his case showed infarcts identified from tegmentum to basis in

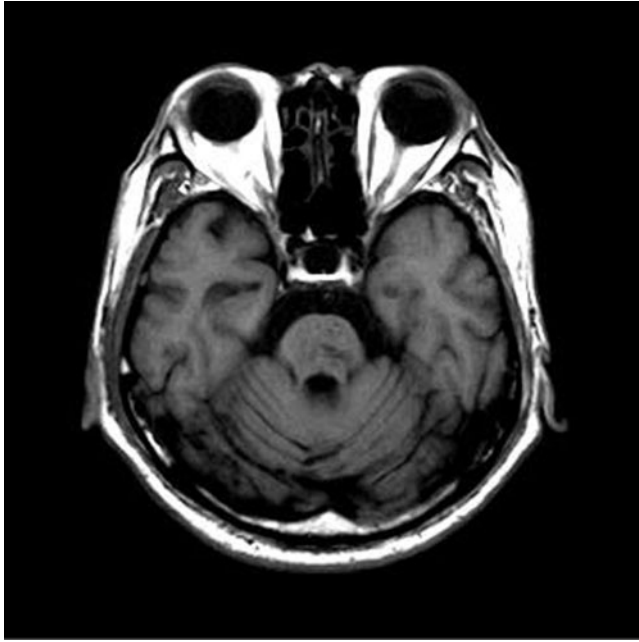


Figure 1: T1-weighted MRI high signal intensity disclosed low signal intensity in the left tegmentum of the pons

the pons bilaterally⁴. In our case, motor functions were normal and the responsible region was localized in the pontine tegmentum. In the pons, the sensory fibers from the mouth, arm and leg are located from the medial to lateral side in the small area of the medial lemniscus¹¹. Therefore, our case indicated that sensory fibers corresponding to the arm and leg in the medial lemniscus was selectively involved. Yasuda *et al.*¹⁰ reported that thoracic sensory disturbance was presented with COS or COPS. However, trunkal sensory impairment was not seen in our case.

Tasker *et al.*¹² reported that in the thalamus the fore limb and hind limb are considered to be located between the areas for fingers and toes. However, the anatomic proximity concept cannot fully explain the selective sensory involvement of COS and COPS.

The difference in threshold may explain the specific sensory pattern in the syndrome¹³. These sensory symptoms may be attributable to differential detection thresholds, possibly related to the partial involvement of sensory nuclei or fibers having somatotopy. Further examination of the relationship between CPS and localization on MRI is needed to clarify the topographic distribution of the sensory pathway.

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