

A case of peduncular hallucinosis due to a pontine infarction: a rare complication of coronary angiography

Notas K, Tegos T, Orologas A

1st Neurological Department, Aristotle University of Thessaloniki, AHEPA General Hospital, Thessaloniki, Greece

Abstract

Background: Cerebral thromboembolism is a rare, but well-recognized complication of angiographic procedures. Peduncular hallucinosis (PH) is a form of complex visual hallucinations usually associated with lesions in the midbrain and thalamus.

Case presentation: We report the case of a 79-years-old male patient with internuclear ophthalmoplegia and vivid lilliputian visual hallucinations (peduncular hallucinations), caused by a pontine infarction following coronary artery catheterization. The patient was started on quetiapine treatment with good results and tolerance. In the next three months, the medication has been discontinued, and the patient is without symptomatology thereafter.

Conclusion: An understanding of how different pathologies may produce complex visual hallucinations can lead to an appropriate treatment, depending on the site and the nature of the lesion. Furthermore, cerebral embolism due to any angiographic procedure, although rare, should always be taken into consideration, upon any neurological manifestation, visual hallucinations included. Hippokratia 2015; 19 (3): 268-269.

Keywords: Cerebral infarction, pons, organic hallucinations, cerebral peduncle, coronary angiography

Corresponding Author: Konstantinos Notas, 1st Neurological Department of Aristotle University of Thessaloniki, AHEPA General Hospital, Styl. Kiriakidis 1, 54636 Thessaloniki, Greece, tel: +306946898736, e-mail: konstantinos_notas@hotmail.com

Introduction

Peduncular hallucinosis (PH) is a form of complex visual hallucinations associated with organic brain disease. Peduncular hallucinations include vivid, formed, well-organized and non-stereotyped images of people or animals and have been reported in thalamic, midbrain, pontine and basal diencephalic lesions, as well as in lesions of the pars reticulata of substantia nigra¹. PH is a diagnosis of exclusion and needs to be differentiated from other pathological conditions that may be associated with complex visual hallucinations, including delirium tremens, drug-induced hallucinations, migraine, treated Parkinson's disease, Lewy body disease, focal epilepsy and Charles Bonnet syndrome².

Case report

A 79-years-old male with a medical history of coronary artery disease, quadruple coronary artery bypass graft surgery six years before and aortic valve stenosis, presented with dyspnea on exertion and underwent a coronary artery catheterization, via the femoral artery, with normal findings. Immediately after catheterization, the patient developed diplopia. Neurological examination revealed right inferior internuclear ophthalmoplegia, with

both abducens nucleus and paramedian pontine reticular formation impairment. Ophthalmoplegia resolved in 48 hours. Four days later, the patient developed vivid visual hallucinations, including lilliputian grotesque people and animals, as well as images of extreme beauty (forests, rivers and his deceased wife wearing fabulous dresses). The patient was not delusional or confused and preserved insight. Hallucinations occurred during the day, with the patient in an alert state. Sleep was impaired. Brain computed tomography imaging (Figure 1) demonstrated a low density lesion in the right pons, while brain magnetic resonance imaging (MRI) demonstrated the lesion in the same area (Figure 2). These findings were consistent with a subacute ischemic pontine infarction, following the coronary angiography. Laboratory examinations, brain magnetic resonance angiography exam, electroencephalography, carotid artery triplex and transcranial Doppler were normal. Mini-mental state examination score was 28/30 and trail making test was normal. The diagnosis of PH was reached and the patient was started on quetiapine with good results and tolerance. In the next three months, the medication has been discontinued, and the patient is without symptomatology thereafter.

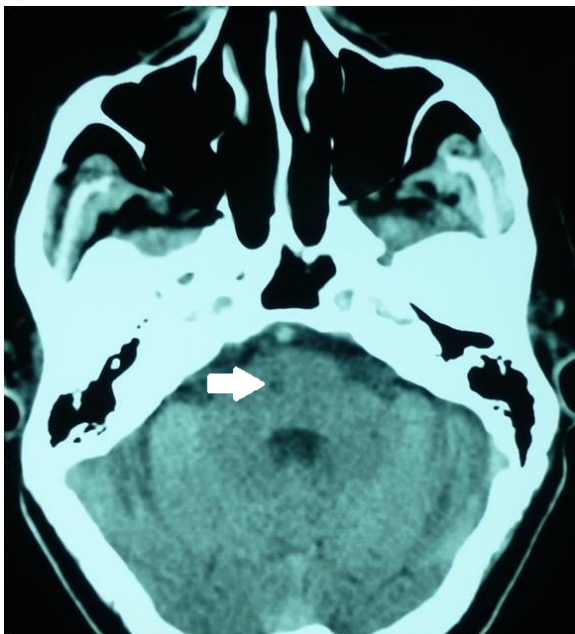


Figure 1: Axial brain computed tomography image (four days post coronary catheterization) demonstrating a low density lesion in the right pons.

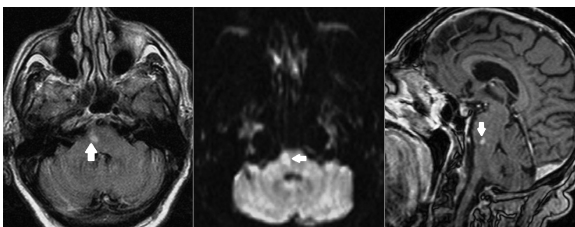


Figure 2: Magnetic resonance imaging (MRI) nine days post coronary catheterization. Left: Axial brain MRI image (fluid attenuation inversion recovery sequence) demonstrating a high-intensity signal lesion in the right pons, consistent with infarction. Middle: Axial brain MRI image (diffusion weighted imaging sequence) demonstrating a high-intensity signal lesion with a luxury perfusion in the right pons, consistent with a subacute ischemic infarction. Right: Sagittal brain MRI image (T1+Contrast sequence) demonstrating a high-intensity signal lesion in the right pons, consistent with infarction.

Discussion

LHermitte was the first to describe PH in 1922³, but it was Van Bogaert in 1927 who coined the term, by means of post-mortem neuropathological examination⁴. Visual hallucinations include vivid, colorful, non-stereotyped images of people or animals, in lilliputian form. Images are often bizarre, with decapitated human torsos or monstrous animals, non-threatening to the patient. Hallucinations occur during the day, with the patient preserving insight². Sleep disturbances are common, due to dysregulation of rapid eye movement (REM) sleep mechanisms⁵.

Visual information in the retinogeniculothalamic tract is modulated by ascending input from pedunculo-pontine and parabrachial nuclei and dorsal raphe nuclei via the superior colliculus². Lesions (vascular, infectious, tumors, degen-

erative) described in PH are located in the midbrain area, mainly in substantia nigra, pons and thalamus, affecting the ascending reticular activating system of the brainstem and its projections to the dorsal lateral geniculate nucleus and also to the lateral pulvinar of thalamus^{6,7}. Midbrain and pons lesions involving the dorsal raphe nucleus result in loss of ascending serotonergic inhibition to the dorsal lateral geniculate nucleus. Consequently, a hyper-excited geniculate can generate visual hallucinations at the cortical level^{2,6}. In addition, lesions involving thalamic nuclei may disrupt the important processing function of these structures, resulting in impaired retinal signals and visual hallucinations⁸.

Cerebral peduncular ischemic infarctions are produced by flow disturbances in perforating branches of the posterior communicating, posterior cerebral or superior cerebellar artery^{8,9}. The etiology of the aforementioned ischemia is vast. One rare factor might be the cerebral embolism due to angiographic procedures (incidence 0.07%- 0.38%)¹⁰. Still, other MRI diffusion studies have demonstrated higher incidence of asymptomatic thromboembolic events (incidence 30%-35%)^{11,12}. Old age, diabetes, hypertension, previous strokes, severe coronary artery disease and lengthy angiography procedures are considered more powerful factors for this event to happen^{12,13}.

Conflict of interest

The authors declare no conflict of interest.

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