



## CASE REPORT

# A Case of Postural Instability with Unusual Aetiology in a Elderly Patient

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### Abstract

Pneumocephalus or air within the cranial vault is usually associated with a series of symptoms caused by head trauma, the presence of neoplasms or after craniofacial surgical interventions or other causes. We report a case report of an elderly patient who presented with postural instability with an anamnestic history that didn't talk about traumatic events. We review briefly the literature for non-traumatic causes causes of pneumocephalus, its symptoms and clinical manifestations and finally the therapy.

### Keywords

Pneumocephalus, Elderly patient, Postural instability, Computed tomography

## Background

The postural instability is a spatial orientation disorder with an erroneous perception of movement of the body or of the surrounding environment that is clinically with extrinsic sense of confusion in multiple directions. It is a very common especially in people over the age of 65-years, recognizing a multitude of causes also very heterogeneous among themselves and with different prognosis disorder, even within the same etiology. Here we present a case of postural instability in an elderly patient. A case of postural instability is presented which, although not infrequent, is often not sufficiently investigated in the elderly patient and whose incidence

is undoubtedly underestimated compared to the real, given the number of cases that occur at an advanced age but which fortunately resolve into spontaneous way and without important consequences.

## Case Presentation

A 68-year-old male patient, already suffering from five years from high blood pressure and type 2 diabetes both in drug treatment (acetylsalicylic acid-ASA-ramipril and metformin), comes in a vision reporting the occurrence of headache in the left temporal-parietal side associated with a sensation of postural instability, a few days before, which the patient reports appeared after the troublesome rhinitis episode with plenty of serous rhinorrhea and repeated attempts to blow his nose and Valsalva maneuvers. No history of recent or past trauma, travels, infections, syncope/presyncopal, surgery.

## Management and Results

The patient was in good general condition. Vital Signs: Glasgow Coma Score (GCS) 15, Blood Pressure (BP) 130/80 mmHg, Heart Rate (HR) 86 beats per minute, rhythm; Respiratory Rate (RR) 14 breaths per minute; SpO<sub>2</sub> 98% in the ambient air, CT 36 °C. At the neurological examination the sensory was intact, as well as the psyche, with cranial nerve unscathed. No motor

and sensory deficits. the Romberg sign was positive with multiple oscillations and lateral pulsion, prevalent on the left. Absent nystagmus, even after stimulation maneuvers. Cerebellar tests were positive and the index-nose test on the left was a clear asymmetry. The remaining physical examination appeared within the limits. It took vision of recent previous controls, where it was highlighted at the echocolor Doppler examination of the supraortic logs the minimum presence of a carotid atheromasia (20%, bilaterally) and the presence of mild hypertensive retinopathy, in the absence of visual disturbances; EKG in the limits. We opted to request an investigation by computed tomography (CT) imaging, which showed, "an air bubble at the level of the left cerebellar pontine angle cistern, near the petrous rocks. Other more minute air bubbles will appreciate cranial cerebellar hemisphere ipsilateral immediately below the tentorium. CT of the petrous rocks: markedly thinned and sometimes not recognizable posterior walls-higher than some mastoid cells, bilaterally". The case was treated conservatively, with improvement in symptoms in the two weeks following the disappearance and objective picture during the 30-days of careful follow-up, with recovered fully even the brain framework testified to control CT. Given the overall benignity of the symptomatology and the resolution of the clinical picture, it was not considered necessary to perform a myelogram CT scan to locate a loss of cerebrospinal fluid.

## Discussion

The pneumoencephalus is defined as the presence of intracranial gases. The air can be located in the epidural space, subdural, sub arachnoid, intraventricular and intraparenchymal. The majority of cases have a base or iatrogenic traumatic [1-3]. The non-traumatic spontaneous form is an uncommon condition. Patients with clinically significant pneumocephalus may complain of nausea, vomiting, fever, headache, confusion, agitation, syncope, lethargy, speech disorder, aphasia, visual disturbances, seizures, paralysis, ataxia, rhinorrhea [4-7]. Typical causes of pneumocephalus are not the spontaneous traumatic barotrauma, Valsalva maneuvers, adjacent sinusitis, bacteremia, and air hyperpneumatization of cells [8-14]. Even tumors can give pneumocephalus and, rarely, may be the result of air entering retrograde by an intravenous infusion device [15-17]. With standard radiological investigations serve at least 2 milliliters of air because the pneumocephalus is visible, but with the advent of CT also 0.5 ml can be displayed, even with incidental findings (absence of signs, symptoms or causes of disease), from which the recognition and the description of an increasing number of cases in the literature [18,19]. The conservative medical treatment consists of bed rest, analgesia, preservation of the high chief, avoid coughing, blowing your nose, sneezing or Valsalva maneuvers. Other therapeutic recommendations can be the use of laxatives (to avoid the increase in

intra-abdominal pressure) and oxygen to accelerate the resorption of pneumocephalus [20]. The hyperosmolar therapy with mannitol can be used as an intervention waiting for the surgery when indicated. In the case of cerebrospinal fluid leakage and pneumocephalus secondary to trauma of lasts they are self-limiting and do not require antibiotic prophylaxis. Surgery is indicated in cases of significant intracranial hypertension, persistent losses, persistent pneumocephalus (longer than a week). In these cases, the antibiotic is indicated (even if there are no signs of infection) awaiting surgery [21-24]. The patient clearly had a CSF leak, and the next step would be to do a CT myelogram to locate the etiology of the CSF leak. However, no such investigation was done although the leak did resolve spontaneously as many of these do [25-27].

## Conclusions

The balance disorder diagnosis is not easy and often requires a multidisciplinary approach, which starts from the general practitioner and then affect the neurologist, the otolaryngologist, the geriatrician, the ophthalmologist. The presence of a pneumocephalus implies the presence of air or gas inside the skull from the box and skull-Dural barrier injury or producing intracranial gas, relief of this sign on CT pushes to investigate the find. Some cases require surgery, but if there is no evidence of infection, leakage of cerebrospinal fluid, rest and a remote control with a neuroimaging is the alternative treatment of choice (other than the case-rare-the pneumocephalus hypertensive emergency clinic because the condition creates a mass effect on the brain tissue: It is necessary to pay attention in particular to rapid changes in level of consciousness). In the cases treated conservatively, once the source of air is identified or controlled, the air resorption occurs in the first week; the majority of patients no significant signs or symptoms of intracranial hypertension can be observed clinically.

## Contributors

Magro VM was the primary researchers and wrote the manuscript. Coppola C and Scala G provided research and editing assistance to the manuscript. Magro VM, Coppola C, Scala G and Verrusio W contributed to overall article design, data collection as well as revising and approving the manuscript.

## Conflict of Interest and Disclosures

None declared.

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