

IMAGE OF THE MONTH

Occipital ventricular levels due to a deposit of neoplastic cell aggregates of epithelial origin

Niveles ventriculares occipitales por depósito de agregados celulares neoplásicos de origen epitelial

A. Ponz de Tienda, * A. Piera Balbastre, R. Chamarro Lázaro

Servicio de Neurología, Hospital Clínico Universitario de Valencia, Valencia, Spain

The interface level images of liquid-liquid or liquid-solid can frequently be seen in the ventricular system of patients affected by different CNS pathologies. These appear when the cerebrospinal fluid enters into contact with another anomalous element, which besides having a different physical density, has a different radiological density or different behaviour in MRI techniques.

These levels are formed as a consequence of the precipitation of the element with the greatest density towards the most sloping ventricular areas. As CNS images are normally taken in the supine position, this phenomenon is more frequently observed in the occipital horns of the lateral ventricles.

Intracranial haemorrhages are the processes where these images are most frequently seen. In pure ventricular haemorrhages, intracerebral haemorrhage with ventricular opening or subarachnoid haemorrhage, the blood enters inside the ventricular system. This blood in suspension tends to form cell aggregates or small clots that deposit themselves due to their greater density in the lower areas of the ventricular system.¹

These ventricular interface levels are less frequently seen in infectious CNS processes.² In meningitis processes or with ventriculitis symptoms, aggregates of pyogenic

material can be deposited in sufficient quantities to be seen with conventional imaging techniques.

We present the case of a patient with images of slow-growing ventricular liquid-solid interface secondary to the aggregate deposit of neoplastic cells of epithelial origin.

We present the case of a 68-year-old female who was admitted with symptoms of progressive generalised headache, rapidly evolving cognitive deterioration and constitutional symptoms. A thoracic computerised tomography (fig. 1) showed a mass in the parahilar region of

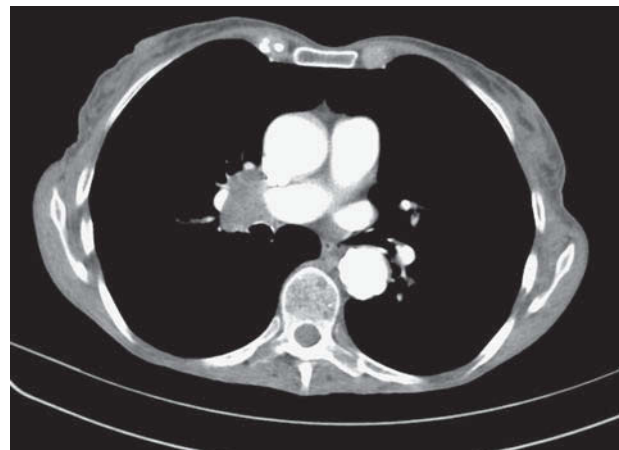


Figure 1 Thoracic CT scan showing a pulmonary mass in the right parahilar region.

* Corresponding author.

E-mail: ponz_ale@gva.es (A. Ponz de Tienda).

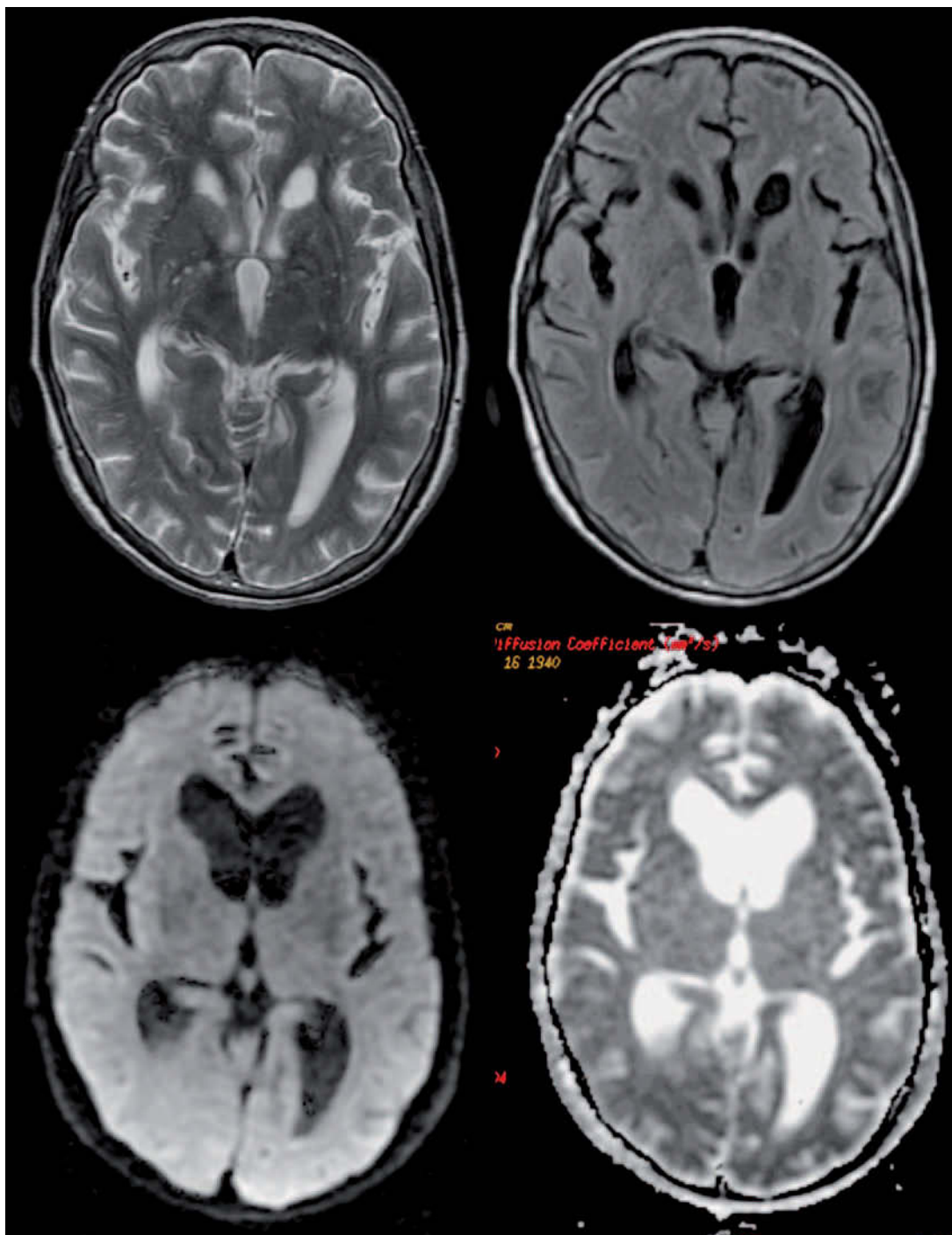


Figure 2 Cerebellar MRI (T2 sequences, FLAIR) that shows a straight liquid-solid level in the left occipital horn with a restriction of free water diffusion (DWI and ADC sequences).

the right lung. A cerebellar MRI was performed as part of the study, showing straight levels of liquid-solid interface in the occipital horns (f g. 2), with free water movement restriction in the ADC sequence and moderately glossy in diffusion sequences. This is highly indicative that it corresponds to cellular deposits.

The CSF study showed 70mg/dl protein and 7mg/dl glucose, as well as a large amount of abnormal, large cell

aggregates with immature chromatin and basophilic cytoplasm of neoplastic characteristics indicative of an epithelial origin (f g. 3). The direct microbiological study and CSF culture were negative.

A posterior MRI showed a discrete increase in ventricular deposits.

In our opinion, the clinical symptoms compatible with leptomeningeal infiltration, the demonstration that there

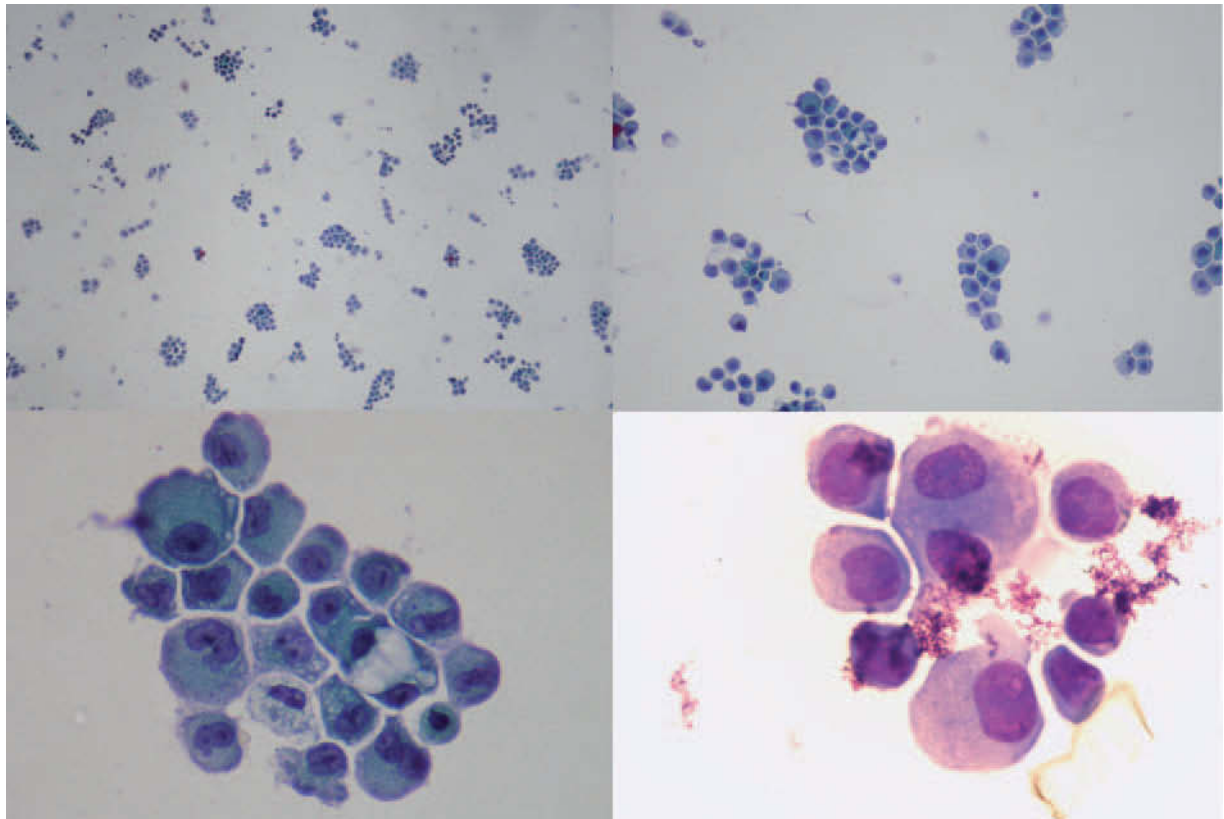


Figure 3 CSF extension in different magnifications that show many abnormal cell aggregates of epithelial origin.

was a pulmonary mass, the MRI behaviour and pathological confirmation of neoplastic fluid infiltration, together with the absence of any other causal factor, would indicate that the liquid-solid interface levels observed in our patient's ventricular system corresponded to the deposit of neoplastic cellular aggregates.

To our knowledge, this is the first description of a neoplastic cellular origin of some ventricular levels.³⁻⁶

References

1. Bakshi R, Kamran S, Kinkel PR, Bates VE, Mechtler LL, Belani SL, et al. MRI in cerebral intraventricular hemorrhage: analysis of 50 consecutive cases. *Neuroradiology*. 1999;41:401-9.
2. Fukui MB, Williams RL, Mudigonda S. CT and MR imaging features of pyogenic ventriculitis. *AJNR*. 2001;22:1510-6.
3. Straathof CSM, De Bruijn HG, Dippel DWJ, Veltchik CJ. The diagnostic accuracy of magnetic resonance imaging and cerebrospinal fluid cytology in leptomeningeal metastases. *J Neurol*. 1999;246:810-4.
4. Koeller KK, Sandberg GD. From the Archives of the AFIP. Cerebral intraventricular neoplasms: radiologic-pathologic correlation. *RadioGraphics*. 2002;22:1473-505.
5. Smirniotopoulos JG, Murphy FM, Rushing EJ, Rees JH, Schroeder JW. From the Archives of the AFIP. Patterns of contrast enhancement in the brain and meninges. *RadioGraphics*. 2007;27:525-51.
6. Pavlidis N. The diagnostic and therapeutic management of leptomeningeal carcinomatosis. *Ann Oncol*. 2004;15 Suppl 4: iv285-291.