Turkish Journal of Neurology

Turk J Neurol 2025;31(2):251-253
Doi: 10.55697/tnd.2025.315

IMAGES IN CLINICAL NEUROLOGY

Multinodular and vacuolated neuronal tumor diagnosed with characteristic neuroradiological features

Fettah Eren[1], **Hakan Cebeci**[2], **Merve Akbaş**[1]

[1]Department of Neurology, Selçuk University Faculty of Medicine, Konya, Türkiye
[2]Department of Radiology, Selçuk University Faculty of Medicine, Konya, Türkiye

Multinodular and vacuolated neuronal tumor (MVNT) is a rare brain tumor first described in 2013 and included in the list of central nervous system tumors in 2016. It is usually asymptomatic and incidental. Therefore, its frequency and pathophysiology are not clearly known. It is often characterized with nodular lesions in subcortical and juxtacortical areas in T2-weighted and fluid-attenuated inversion recovery (FLAIR) sequences on magnetic resonance imaging (MRI). Contrast enhancement is usually absent, but it can occasionally show some faint focal enhancement. The disease can sometimes present with epilepsy. In addition, lesions such as dysembryoplastic neuroepithelial tumor, focal cortical dysplasia, and gangliocytoma should be kept in mind in the differential diagnosis.[1-5] In this article, the radiological features of MVNT in a case of peripheral facial paralysis were evaluated.

A 20-year-old female patient was admitted with complaints of slowed movement on the right half of the face and inability to close her eyelid. Magnetic resonance imaging demonstrated multiple, nodular, and millimetric subcortical lesions in the pars opercularis of the inferior frontal gyrus in the right frontal lobe. There was no contrast enhancement (Figure 1). The patient was treated with corticosteroids for two weeks. The patient's brain MRI performed eight months later had similar findings to the previous MRI (Figure 2). The patient's peripheral facial paralysis resolved, and no disability remained related to this episode.

In conclusion, MVNT is considered a "do not touch" lesion, as there is no evidence of malignancy, with no changes in follow-up MRIs. Therefore, it is important for clinicians to recognize these neuroradiological findings.[3-5]

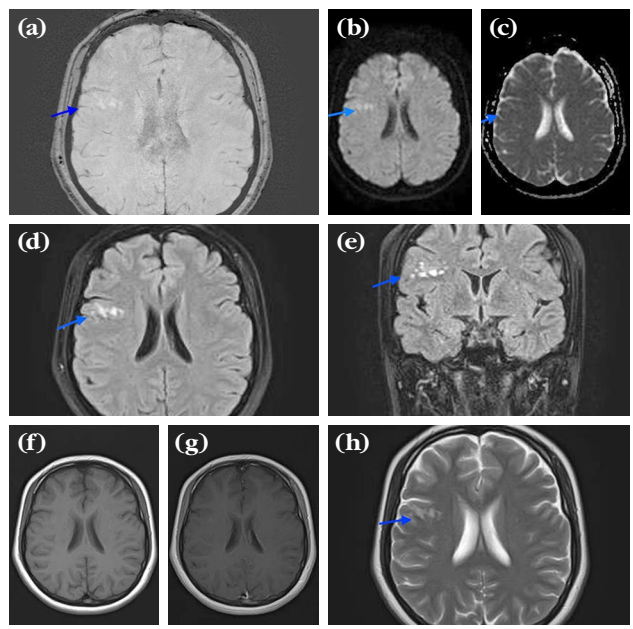

Figure 1. Magnetic resonance imaging (initial MRI) **(a)** Susceptibility-weighted imaging, **(b)** Diffusion-weighted imaging, **(c)** ADC, **(d)** Axial FLAIR, **(e)** COR FLAIR FAT SAT, **(f)** Axial T1-weighted imaging, **(g)** Axial T1-weighted imaging + CE, **(h)** Axial T2-weighted imaging.

MRI: Magnetic resonance imaging; ADC: Apparent diffusion coefficient; FLAIR: Fluid-attenuated inversion recovery; COR: Coronal; FAT SAT: Fat saturation; CE: Contrast enhancement.

Correspondence: Fettah Eren, MD. Selçuk Üniversitesi Tıp Fakültesi Nöroloji Anabilim Dalı, 42250 Selçuklu, Konya, Türkiye.
E-mail: dreren42@hotmail.com
Received: September 19, 2024 **Accepted:** February 26, 2025 **Published online:** May 05, 2025
Cite this article as: Eren F, Cebeci H, Akbaş M. Multinodular and vacuolated neuronal tumor diagnosed with characteristic neuroradiological features. Turk J Neurol 2025;31(2):251-253. doi: 10.55697/tnd.2025.315.

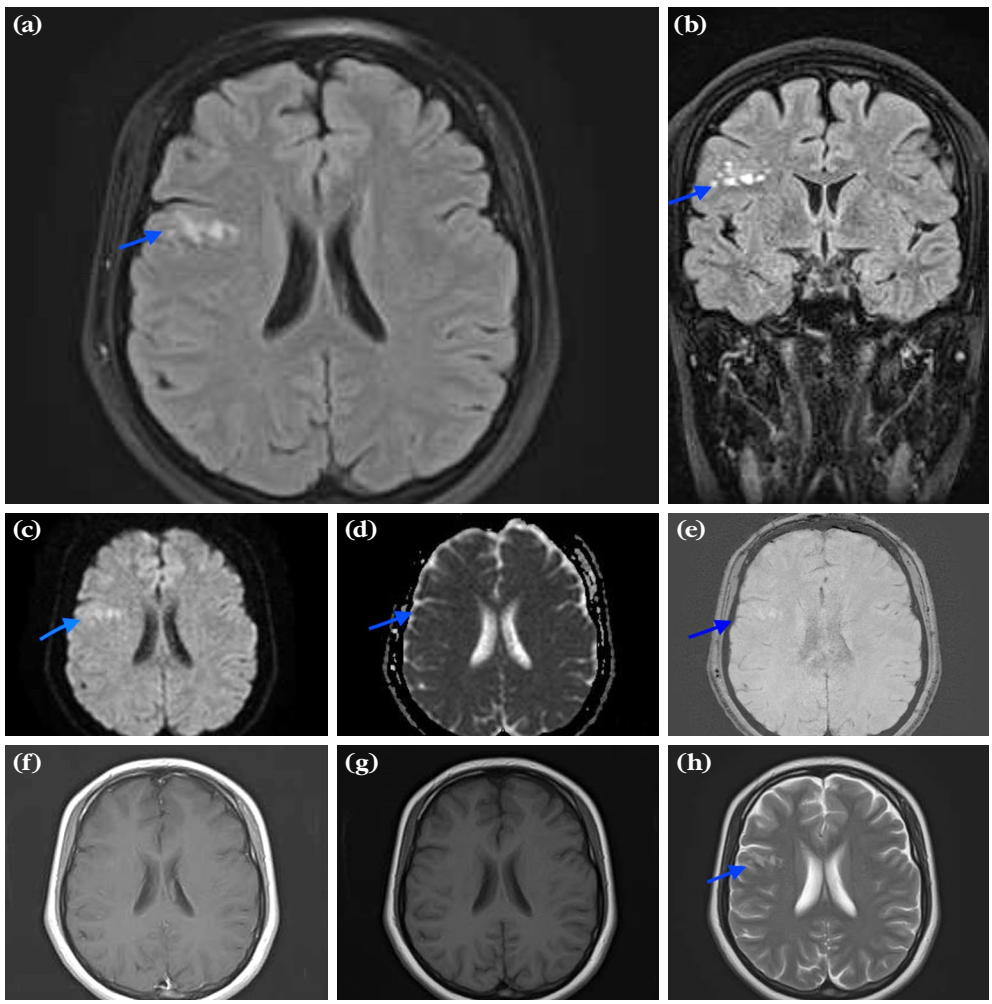

Figure 2. Magnetic resonance imaging (eighth month). **(a)** Axial FLAIR, **(b)** COR FLAIR FAT SAT, **(c)** Diffusion-weighted imaging, **(d)** ADC, **(e)** Susceptibility-weighted imaging, **(f)** Axial T1-weighted imaging, **(g)** Axial T1-weighted imaging+CE, **(h)** Axial T2-weighted imaging.

FLAIR: Fluid-attenuated inversion recovery; COR: Coronal; FAT SAT: Fat saturation; ADC: Apparent diffusion coefficient; CE: Contrast enhancement.

To the best of our knowledge, few cases were published in the literature.[3-5] Therefore, this case was considered noteworthy for presentation.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: Made contributions regarding the idea and the concept of this article: F.E., H.C; Has reviewed the literature and written the article: F.E., M.A.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

REFERENCES

1. On TJ, Alcantar-Garibay O, Xu Y, Abramov I, Eschbacher JM, Tiwari N, et al. Multinodular and vacuolating neuronal tumor in the thalamus: Case report and systematic review of literature. Acta Neurochir (Wien) 2024;166:340. doi: 10.1007/s00701-024-06230-8.
2. Gonzalez-Quarante LH, Ruiz-Juretschke F, Sola Vendrell E, Gil de Sagredo Del Corral OL, Agarwal V, et al. Multinodular and vacuolating neuronal tumor of the cerebrum. A rare entity. New case and review of the literature. Neurocirugia (Astur: Engl Ed) 2018;29:44-55. doi: 10.1016/j.neucir.2017.08.003.
3. Bodi I, Curran O, Selway R, Elwes R, Burrone J, Laxton R, et al. Two cases of multinodular and vacuolating neuronal tumour. Acta Neuropathol Commun 2014;2:7. doi: 10.1186/2051-5960-2-7.

4. Fukushima S, Yoshida A, Narita Y, Arita H, Ohno M, Miyakita Y, et al. Multinodular and vacuolating neuronal tumor of the cerebrum. Brain Tumor Pathol 2015;32:131-6. doi: 10.1007/s10014-014-0198-9.

5. Thom M, Liu J, Bongaarts A, Reinten RJ, Paradiso B, Jäger HR, et al. Multinodular and vacuolating neuronal tumors in epilepsy: Dysplasia or neoplasia? Brain Pathol 2018;28:155-71. doi: 10.1111/bpa.12555.