Multinodular and Vacuolating Posterior Fossa Lesions of Unknown Significance

- Benign, nonaggressive lesion that remains stable over time.
- When incidentally discovered, surveillance imaging is adequate.
- When supratentorial and if proven to cause symptoms such as seizure, surgery may be considered

Imaging (MVNT)

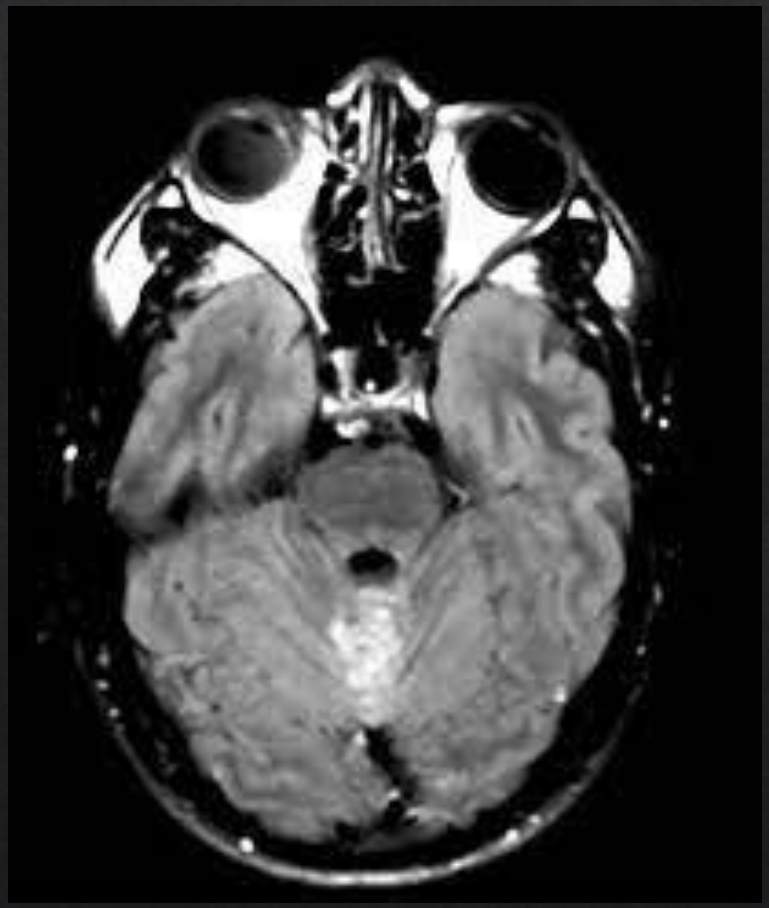
- T1: hypointense to adjacent gray and white matter
- T1 C+ (Gd)
  - usually no enhancement
- some faint focal enhancement may be seen 3,4
- T2
  - hyperintense to grey and white matter, almost as high as CSF
  - occasional central hypointense dot (also hypointense on FLAIR)
- FLAIR: does not suppress (remains high signal)

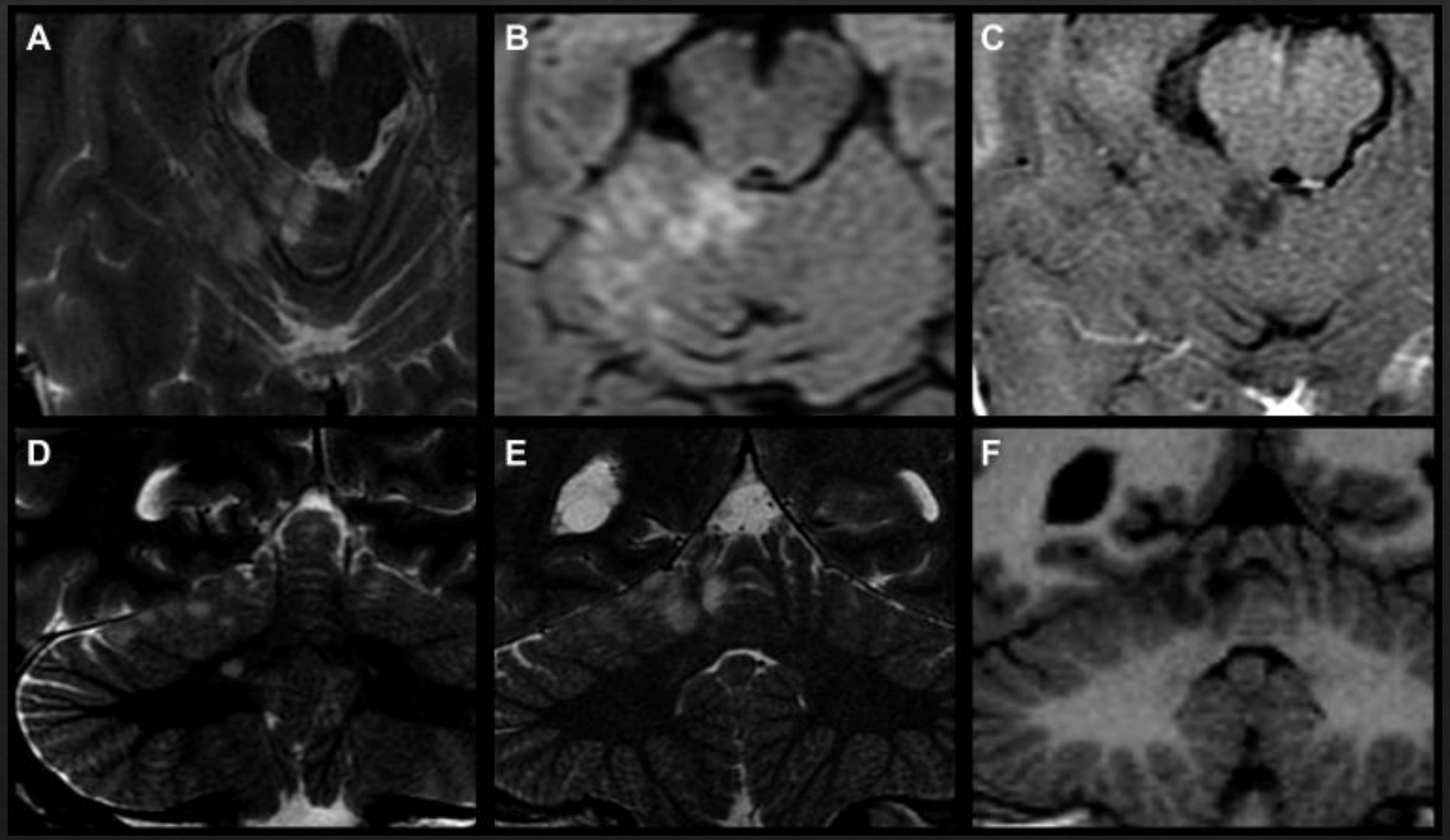
MV-PLUS imaging features

- Consist of the coalescence of small T1WI hypointense and T2-FLAIR hyperintense nodules in subcortical and juxtacortical areas.
- They are very similar to those described in MVNT, a rare and recently described brain tumor,8-14 which was added in the World Health Organization Classification of Tumors of the Central Nervous System in 2016.
- MR imaging showed neither restriction on
- DWI nor intratumoral susceptibility signal on T2* or SWI

Differential diagnoses for posterior fossa intra-axial lesions

- Ischemic lesions
- Inflammatory diseases like multiple sclerosis,
- Infectious diseases,
- Vascular malformations
- Neoplastic lesions
- Degenerative lesions like ataxias
- Toxic lesions
- Malformative lesions like dysplastic cerebellar Gangliocytoma
- Normal variants like enlargement of perivascular spaces.
- However, both the location in juxtacortical or subcortical regions and typical features such as the presence of clusters of discrete or confluent high T2-FLAIR signal intensity small nodules make the diagnosis of MV-PLUS very likely

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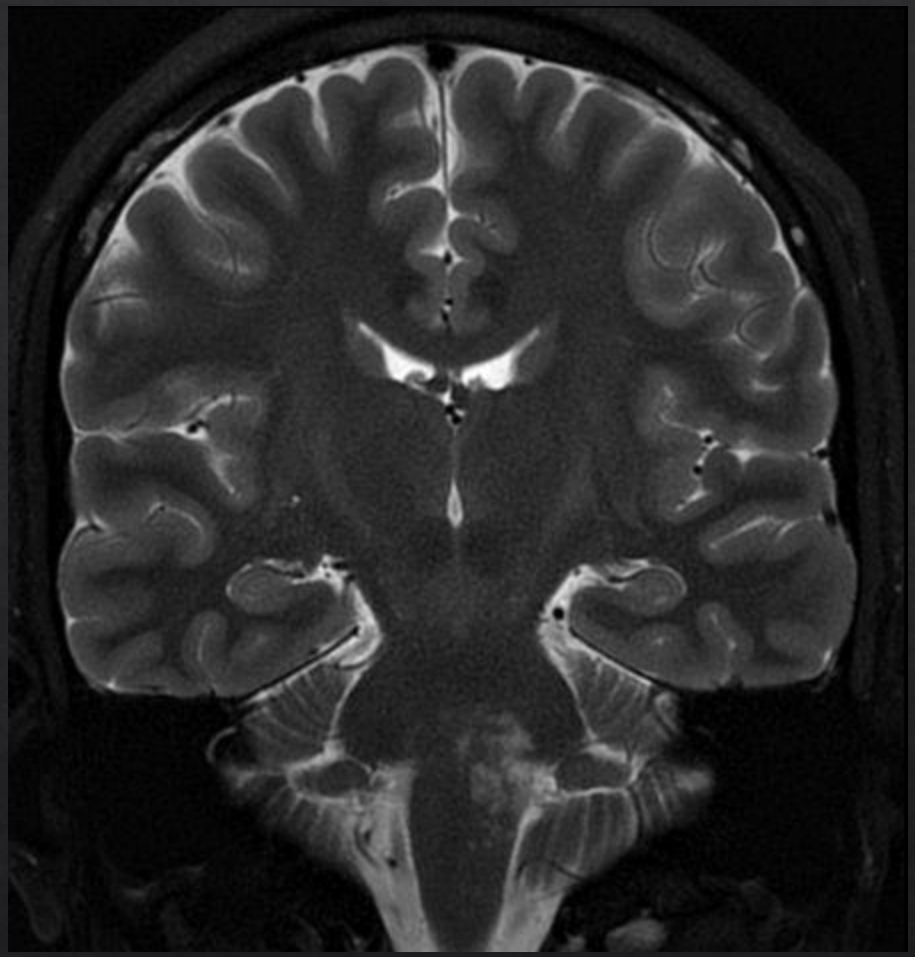

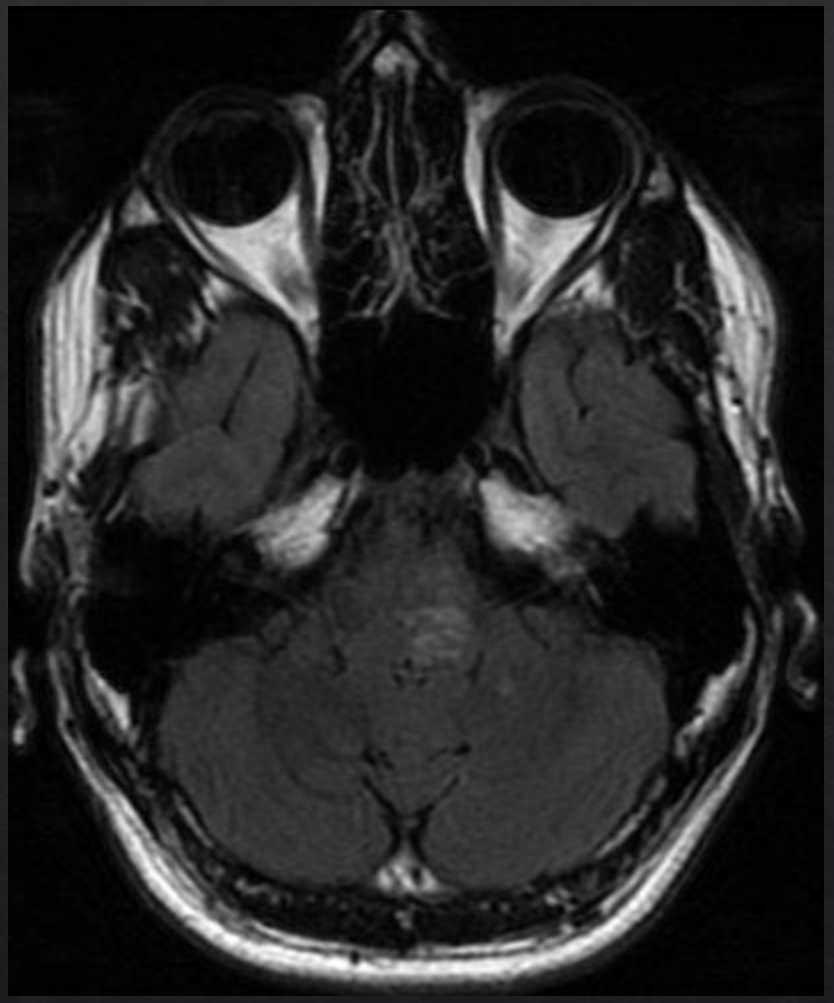

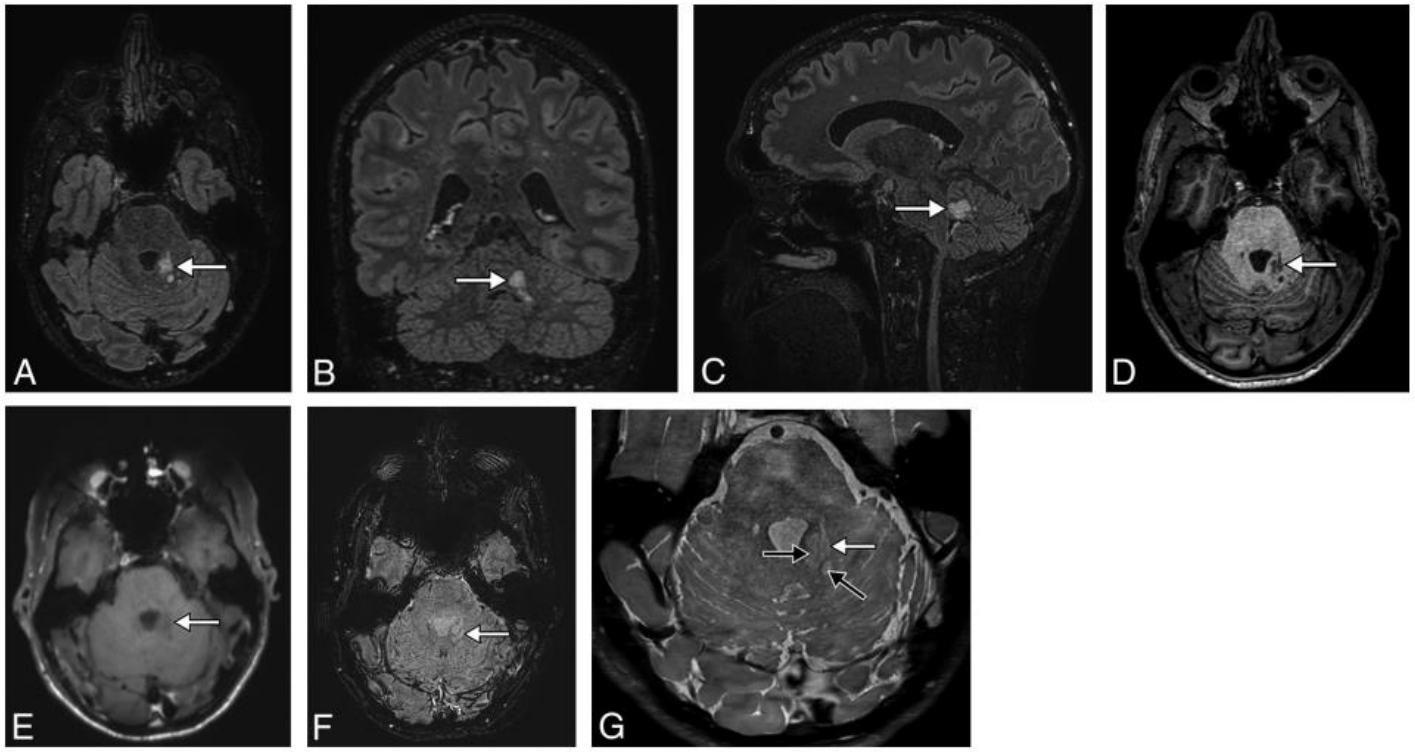

FIG 1. A 38-year-old man presenting with headache. 3D-T2-FLAIR reformatted in the axial (*A*), coronal (*B*), and sagittal (*C*) planes shows a high-signal intensity lesion (*white arrow*) of the posterior part of the left cerebellar peduncle, consisting of a coalescence of small nodules, highly suggestive of MV-PLUS. The lesion is hypointense on axial T1WI (*D*) and does not enhance on postcontrast T1WI (*E*). SWI (*F*) shows no blooming or intratumoral susceptibility signal. High-resolution T2WI (*G*) shows hypointensity in the center of hyperintense nodules (*black arrows*), consistent with a central dot sign. Note the small mass effect and distortion of the lateral margin of the fourth ventricle.

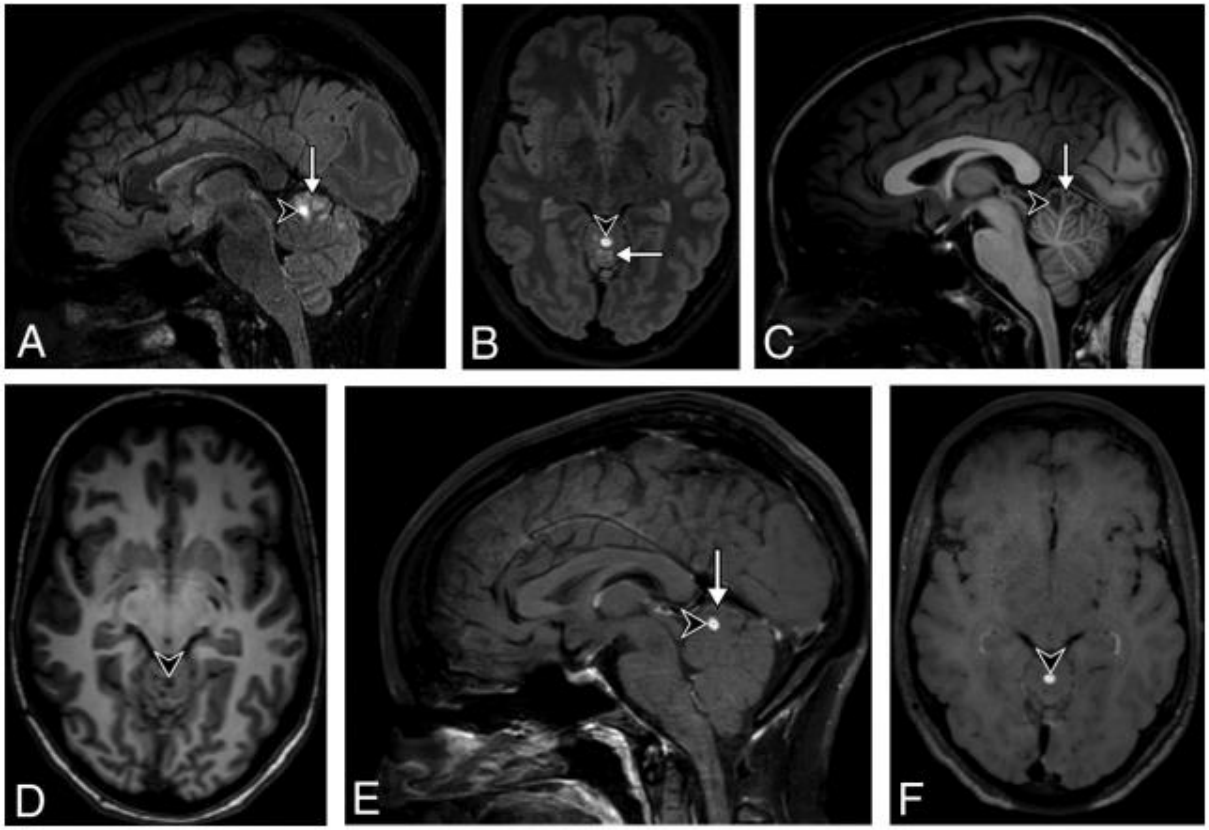

FIG 2. A 31-year-old woman presenting with headache. 3D-T2-FLAIR reformatted in the sagittal (*A*) and axial (*B*) planes shows a high signal intensity multinodular lesion (*arrow*) of the upper vermis, highly suggestive of an MV-PLUS. Almost all clustered nodules are hypointense on 3D-TIWI reformatted in the sagittal (*C*) and axial (*D*) planes and do not enhance on postcontrast 3D-TIWI reformatted in the sagittal (*E*) and axial (*F*) planes. One anterior nodule (*arrowhead*) shows a substantially higher T2-FLAIR and lower TI signal intensity than all the others, with a marked enhancement after contrast injection. Note the T2-FLAIR hypointense central dot sign does not enhance on postcontrast TIWI.