AMERICAN SOCIETY OF EMERGENCY RADIOLOGY- CASE OF THE DAY

A CURIOUS CASE OF VERTIGO

CASE REPORT PART II: THE SOLUTION

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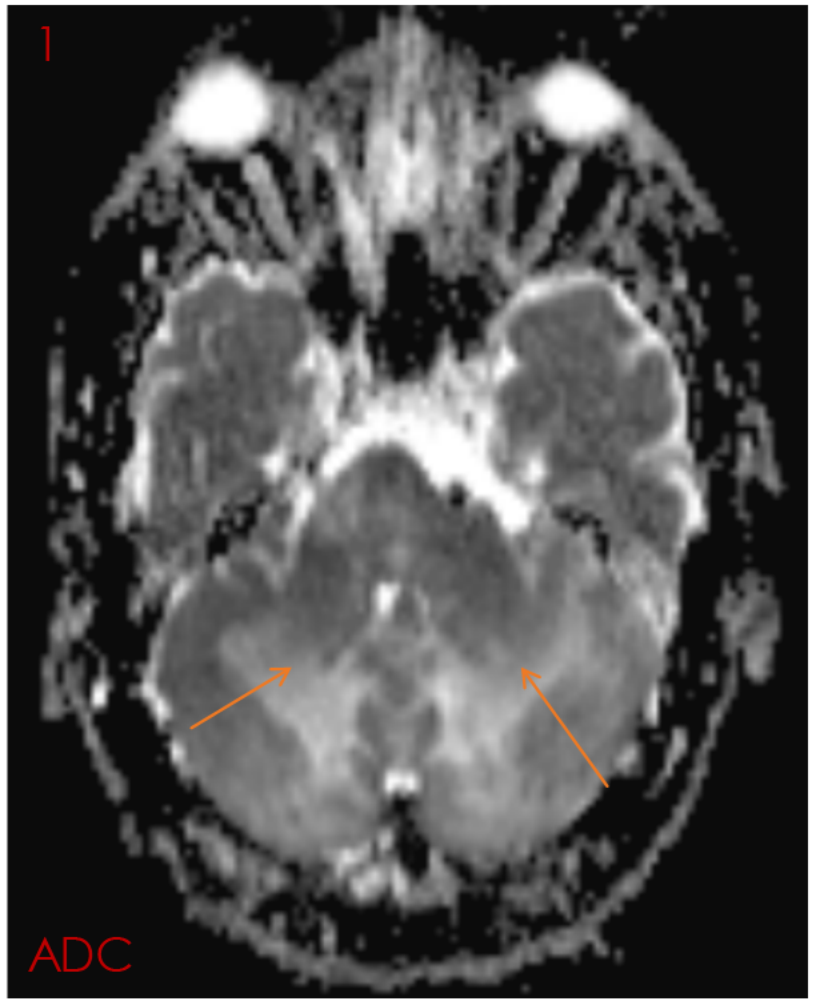
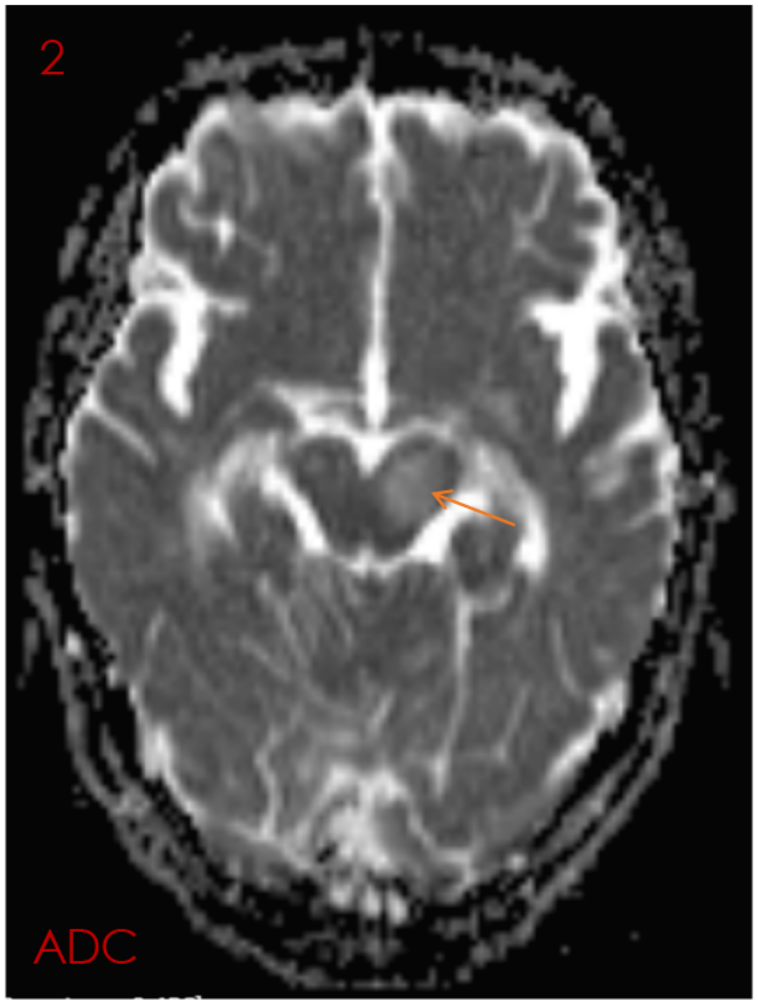
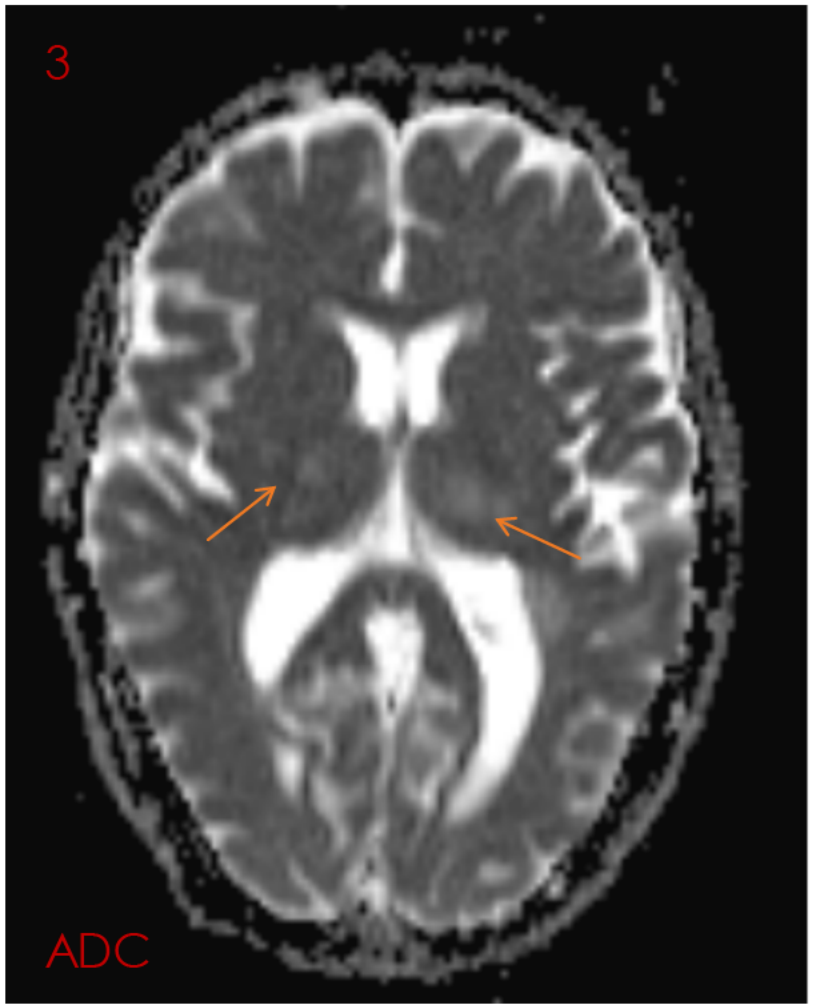
FINDINGS

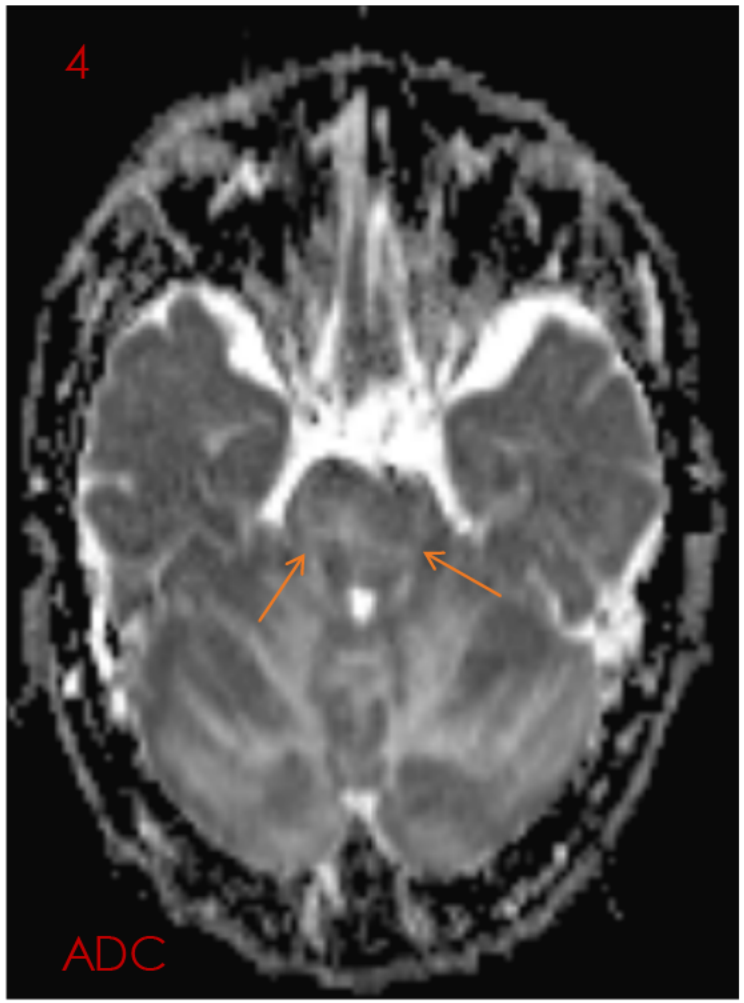
MRI BRAIN



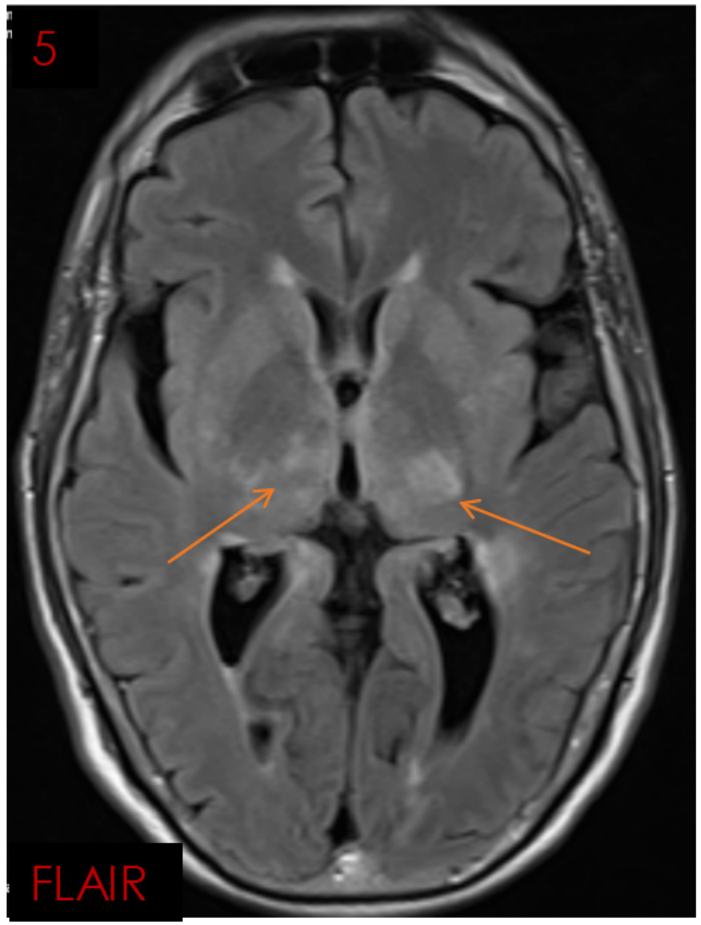


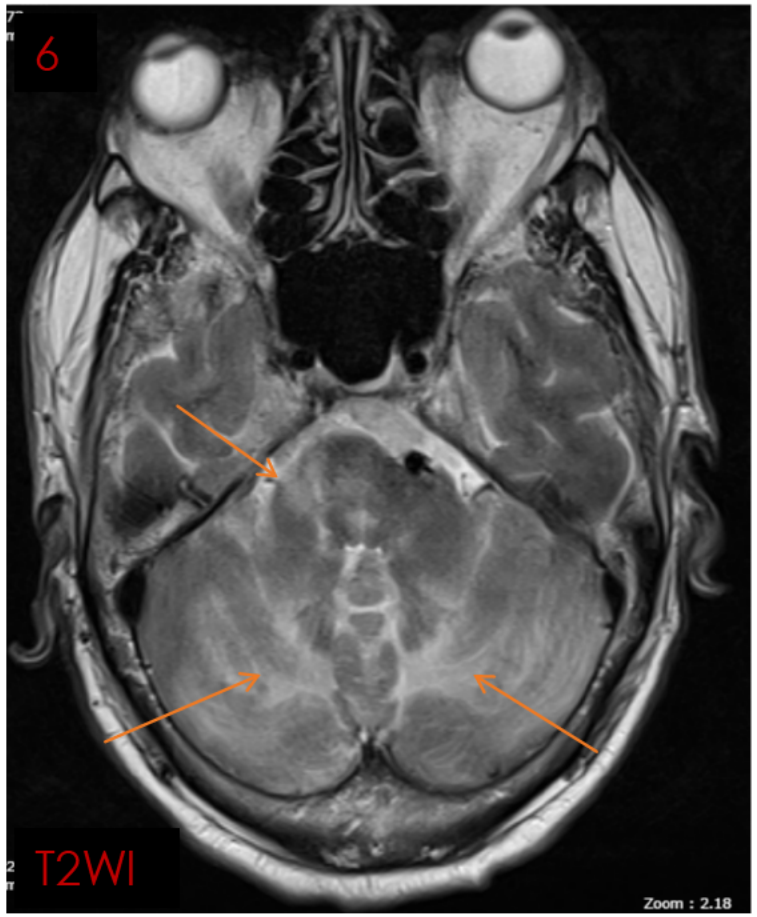
Hyperintensities noted in bilateral cerebellar hemispheres, vermis and midbrain on ADC as shown by the arrows in Figs. 1 & 2.

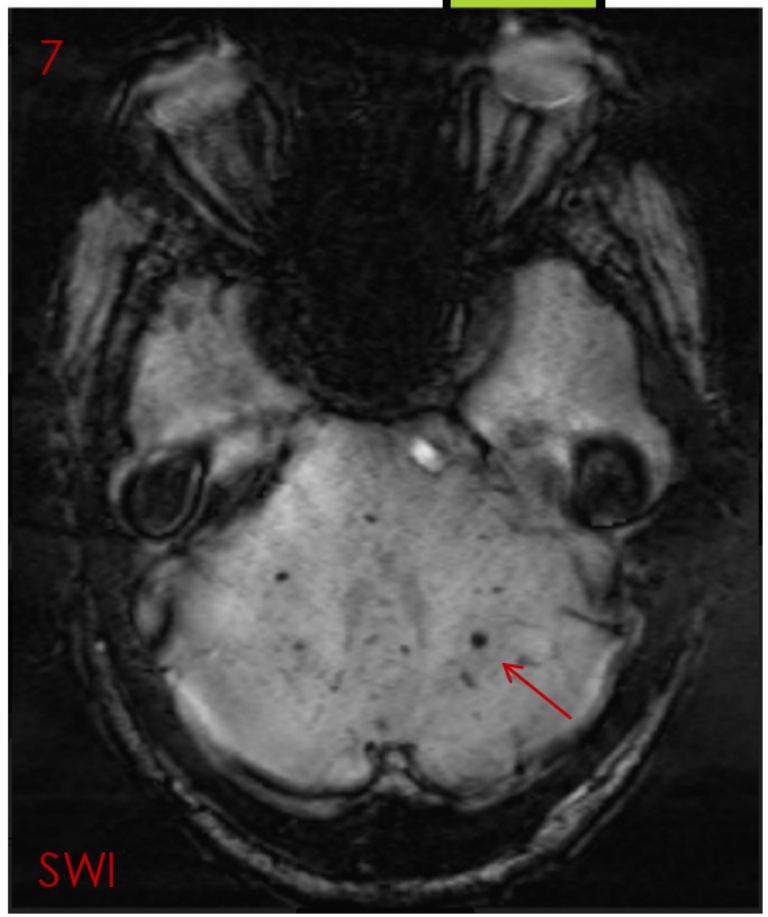




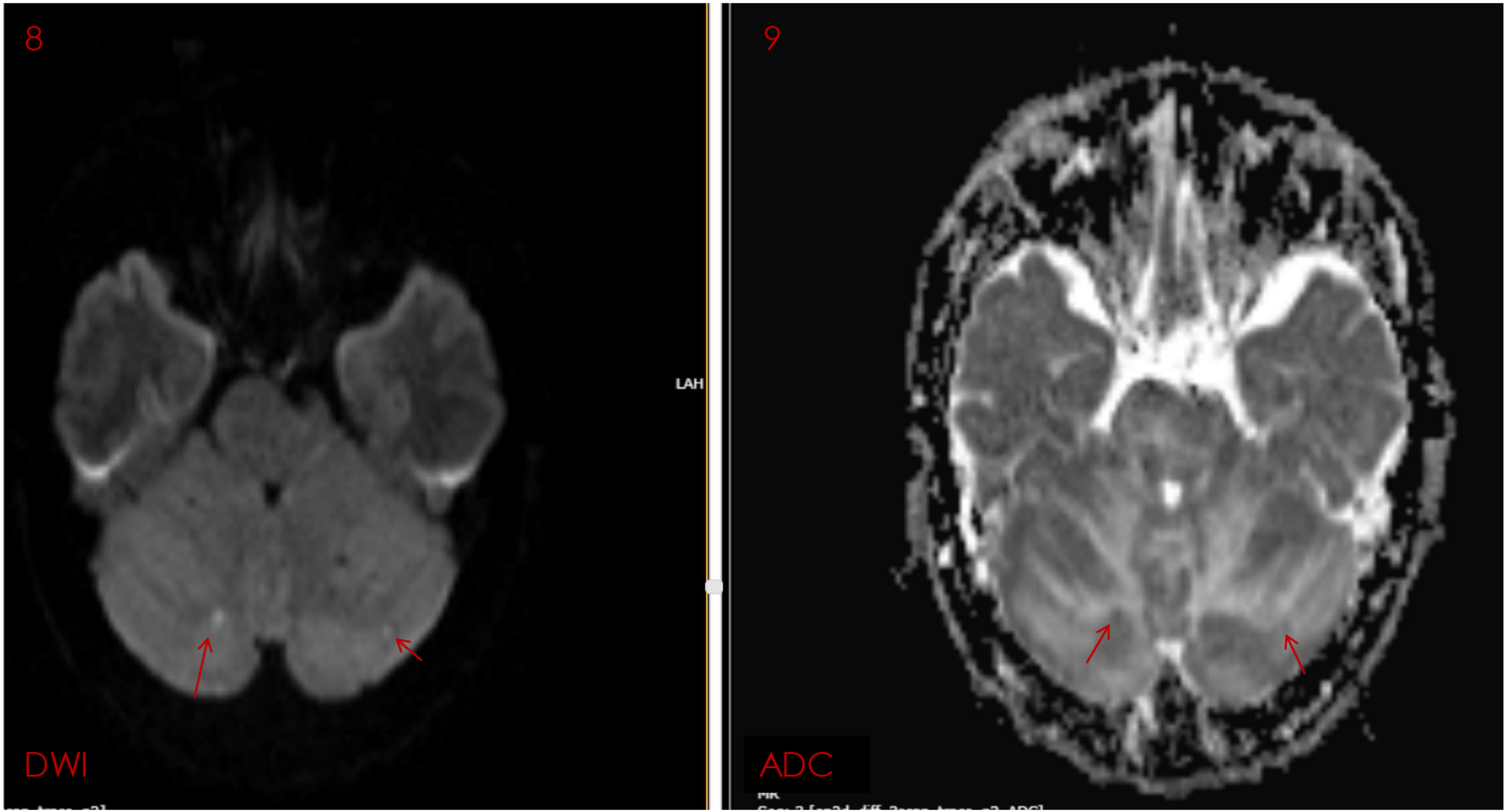
Hyperintensities noted in both halves of Pons and bilateral thalami on ADC (arrows in Figs. 3 & 4)
Similar hyperintensities on ADC were noted in medulla and left cerebral peduncle (not shown here)
The corresponding areas appeared isointense on DWI (not shown here)



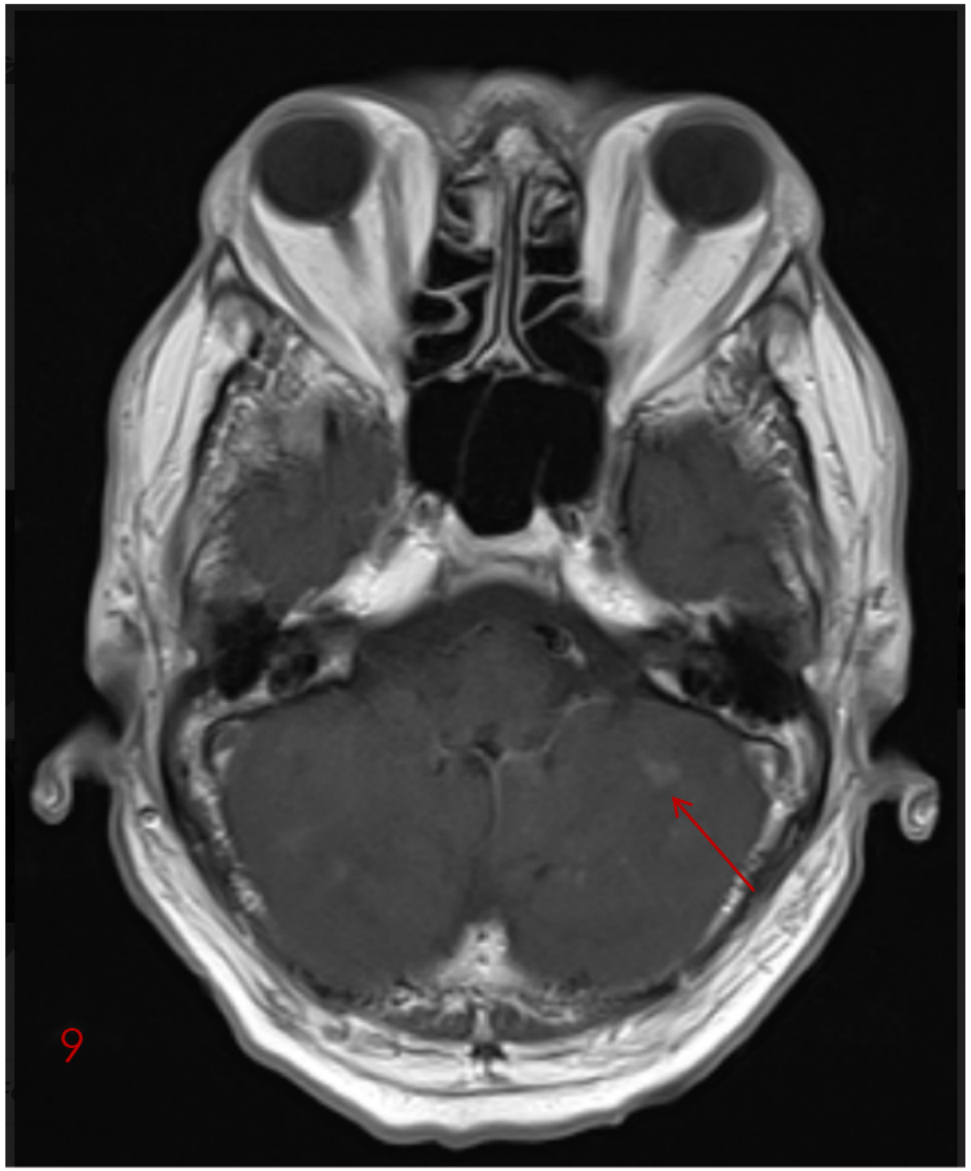


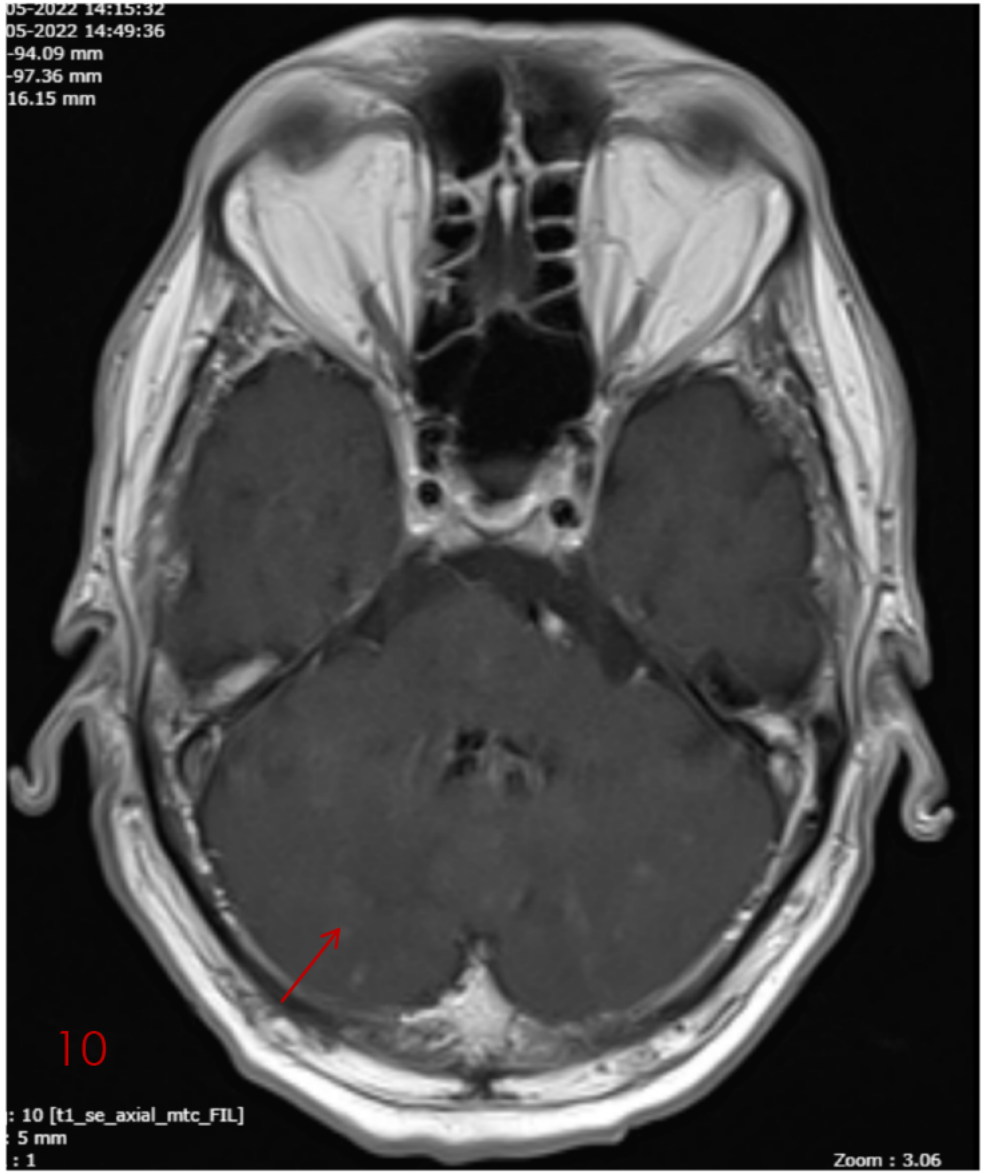


The corresponding areas also appear hyperintense on T2 and FLAIR (Figs. 5 & 6). Foci of blooming noted in bilatreal cerebellar hemispheres and Pons (arrow in Fig.7)



Few foci of restricted diffusion noted in bilateral cerebellar hemispheres (arrows in Figs.8 & 9)





Multiple foci of nodular enhancement in bilateral cerebellar hemispheres (arrows in Figs. 9 & 10)

CASE SUMMARY

Examination

- Ataxic gait
- De Novo Hypertension

MRI BRAIN

- Vasogenic oedema in Pons, cerebellum, dorsal midbrain, left cerebral peduncle, bilateral thalami.
- Haemorrhagic foci in Pons and cerebellum
- Foci of fresh infarction in cerebellum
- Nodular contrast enhancement in cerebellum

History

- Vertigo
- Headache

“Patient’s symptoms resolved completely on treatment of Hypertension”

DIFFERENTIAL DIAGNOSIS	FINDINGS SUPPORTING THE DIAGNOSIS	FINDINGS AGAINST THE DIAGNOSIS
1) TOP OF BASILAR SYNDROME	T2 and FLAIR hyperintensities in the territory of the basilar artery	Will usually show homogenous diffusion restriction
2) CHRONIC LYMPHOCYTIC INFLAMMATION WITH PONTINE PERIVASCULAR ENHANCEMENT RESPONSIVE TO STEROIDS (CLIPPERS)	Involvement of Pons and areas rostral and caudal to Pons like the cerebellar hemispheres	Clinical presentation of patient does not fit the diagnosis CLIPPERS shows typical punctate, patchy and linear regions of contrast enhancement in the Pons
3) CENTRAL VARIANT OF POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME	Hypertension is a cause of PRES Involvement of Thalami, cerebellum and brainstem with sparing of frontal, parietal and occipital cortices and subcortical white matter Microhemorrhages which are described in upto 50% of patients with PRES. Complete resolution of symptoms on treatment of hypertension	Atypical Presenting symptom of Vertigo

DIFFERENTIAL DIAGNOSIS	FINDINGS SUPPORTING THE DIAGNOSIS	FINDINGS AGAINST THE DIAGNOSIS
4)TUMEFACTIVE DEMYELINATION	T2 and Flair hyperintensities in the brainstem and cerebellum	Will show Restricted Diffusion in the acute phases Hemorrhages are absent Lesions will also be noted in the supratentorial periventricular zones, corpus callosum, juxtacortical and subcortical white matter.
5) PRIMARY CNS LYMPHOMA	T2 hyperintense lesions in the peri-ventricular region.	• Will show homogenous enhancement • And homogenous diffusion restriction • Hemorrhage is not a feature
6) CENTRAL OR EXTRA PONTINE MYELINOLYSIS	T2 and FLAIR hyperintensities in the typical areas of involvement like the Pons, Cerebellum and bilateral thalami	Central fibres of Pons will be affected with sparing of periphery Will show homogenous diffusion restriction Will show diffuse contrast enhancement Electrolyte abnormalities will be present Does not show hemmorhage

DIFFERENTIAL DIAGNOSIS	FINDINGS SUPPORTING THE DIAGNOSIS	FINDINGS AGAINST THE DIAGNOSIS
7) VIRAL ENCEPHALITIS	T2 and FLAIR hyperintensities with presence of hemmorhage in the involved areas.	Often exibhits cranial nerve symptoms Has an infectious presentation

FINAL DIAGNOSIS

CENTRAL VARIANT OF PRES

DISCUSSION

- Final diagnosis "central variant of PRES"

- PRES is a reversible clinico-radiological syndrome with a multitude of etiologies - HTN in our case

- The pathophysiology of PRES: Break in BBB secondary to
  - Hyperperfusion
  - vasospasm

- Typical presentation: vasogenic edema in the cortex and subcortical white matter, (predominantly posterior circulation)

- In the central variant there is **sparing of the cortex** and **subcortical white matter** with involvement of the **brainstem, basal ganglia, cerebellum and periventricular white matter.**

- Other atypical features: Parenchymal and subarachnoid hemorrhage (50% of PRES cases)

- Restricted diffusion present in less than 20% of cases.

- Contrast enhancement is said to be variably associated with PRES, depending on the etiology.

- Dilemma in this case: Atypical presentation and clinico- radiological mismatch.
- Vertigo as an isolated presenting complaint is rare in PRES
- Features supporting the Final diagnosis of Central variant of PRES in this case:
  - Accelerated HTN
  - Imaging features
  - Complete resolution of vertigo with the treatment of HTN support our diagnosis
- **"SWI"** was the **"crusader"** which, with its microbleed appearance gave us the most probable of all the differential diagnoses

REFERENCES

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THANK YOU