Virchow-Robin (VR) spaces or perivascular spaces of the brain refer to spaces that accompany the cerebral vessels as they pass from subarachnoid space into the brain parenchyma. They are visualized on routine MR examinations as CSF intensity spaces and are normally <2 mm in size. These spaces may rarely enlarge massively and can be mistaken for more ominous pathologic processes on CT scan and even on MRI, but careful examination on special sequences and follow-up examination can clear the uncertainty. We describe a case of a young male who presented with mildly progressive neurological symptoms and the imaging findings were typical of enlarged VR spaces. Patient was advised follow up and is doing well.

Key-words: Brain, cysts – Brain, MR.

Case report

A 14-year-old male presented to Paediatrics Outpatient Clinic with the history of mild headache and vertigo for the past two years which were progressively increasing in severity. There was no history of any fever, convulsions, blurring of vision, tinnitus or any other neurological symptoms. Family history and past history were unremarkable.

On physical examination patient was anxious, however vitals were found to be stable. Otological and neurological examinations were within normal limits.

MRI examination was done and it revealed multiple, variable sized, altered signal intensity lesions in left temporal and occipital lobe, bilateral basal ganglia and thalami, along subependymal lining of temporal, occipital horn and body of left lateral and 4th ventricle, left periventricular white matter, left cerebellar hemisphere and vermis. Lesions were variable in size with larger ones measuring up to 2 centimetres. The lesions were hyperintense on T2W sequence, hypointense with hyperintense margins on FLAIR sequence and hypointense on T1W sequence. There was no evidence of restriction on diffusion weighted imaging (DWI) or enhancement on post contrast sequences. Also there was no evident mass effect. Thus a diagnosis of giant perivascular or VR spaces was made. Patient was advised followed up with MR examination after 6 months.
MRI revealed stable lesions with out any change in size and appearance of the lesions. Patient clinical condition remains stable and clinical improvement was seen with symptomatic treatment.

Discussion

VR spaces are seen surrounding the walls of vessels as they pass from the subarachnoid space to the brain parenchyma, however they do not directly communicate with the subarachnoid space. Few studies have found a relationship between VR spaces and multiple sclerosis, traumatic brain damage and psychiatric disorders, however no definite casual relationship has been established (2, 3). Dilated VR spaces are seen in MR imaging as round to oval well defined cystic lesions with CSF signal intensity on all MR sequences and no enhancement on contrast scans. On diffusion weighted imaging they do not show any restriction and FLAIR sequences usually shows normal signal intensity similar to CSF in all MR sequences with normal adjacent brain parenchyma and no enhancement after contrast administration is virtually diagnostic of Virchow Robin spaces.

VR spaces do not require biopsy or any invasive examination for diagnosis. Regular timely follow up MR examinations are usually sufficient to detect any increase in size of the lesions. In few rare cases, dilated VR spaces in the mesencephalothalamic region may cause compression of the ventricles leading to obstructive hydrocephalus and may have to be relieved by an operative shunt (8, 9). Our patient was advised follow up MR examination after 6 months, which did not reveal any change in status of the lesions.

References


Fig. 2. — On Axial FLAIR image (A) the lesions appear hypo-intense with hyperintense margins. On the fat-suppressed T1WI (B) no contrast enhancement is noted after IV injection of gado-linium.