Case 1758

Tumefactive perivascular spaces
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Section: Neuroradiology
Technique: MR
Case Type: Clinical Cases
Authors: S. Cakirer
Patient: 24 years, female

Clinical History:
The patient presented with severe headache.

Imaging Findings:
The patient presented with severe headache. A cranial MRI was performed on a 1.5T MRI scanner, with SE T1-weighted, FSE T2-weighted and FLAIR sequences in three planes. A multi-cystic lobulated mass that was located along the pons, mesencephalon and subthalamic areas was detected, with cerebrospinal fluid intensity on all sequences. The sizes of the lateral and third ventricles were detected to mildly increased as well. The diagnosis of “tumefactive perivascular spaces” was made on the basis of the imaging findings, and on the exclusion of other diseases such as mucopolysaccharidoses causing dilatation of perivascular spaces with the characteristic clinical and laboratory findings.

Discussion:
Perivascular spaces (PVSs), also called Virchow-Robin spaces, are pial-lined spaces filled with cerebrospinal fluid (CSF) containing arteries supplying the brain parenchyma. Although enlarged PVSs are seen at all ages, they tend
to increase in size and number with aging. PVSs that are very large in size, and have an expanding appearance are called tumefactive PVSs. The basal ganglia, midbrain and white matter are the most common sites for tumefactive PVSs. They are round, ovoid, linear or punctuate in appearance. They have the same CT density and MRI signal intensity characteristics as CSF. Adjacent brain parenchyma is normal in most cases, without oedema or contrast enhancement, however a mild surrounding gliosis may rarely be observed around PVSs. Very large tumefactive PVSs may have a focal mass effect, and may even cause hydrocephalus.

Lacunar infarcts, inflammatory cysts, and cystic neoplasms may easily be ruled out in the differential diagnosis, with their typical imaging appearances. Massive dilatation of the PVSs can be observed in the mucopolysaccharidoses and other similar storage diseases, however affected patients in the mucopolysaccharidoses are commonly macrocephalic, and the cystic spaces are found in the corpus callosum and periventricular white matter in much smaller sizes compared to tumefactive perivascular spaces. The patients have characteristic urinary mucopolysaccharides, they have mental and motor retardation, and moreover the patients usually die during first 2 decades if untreated due to cardiac or pulmonary failure.

Tumefactive PVSs do not usually cause any clinical findings other than headache-like nonspecific symptoms. They are most commonly detected incidentally. They usually remain stable in size, and do not need treatment.

**Differential Diagnosis List:** Tumefactive perivascular spaces

**Final Diagnosis:** Tumefactive perivascular spaces

**References:**


Description: Spin-echo T1-weighted sagittal image shows multi-cystic lobulated prominent perivascular spaces along the brainstem with CSF signal intensity. Origin:
**Description:** Fast spin-echo T2-weighted axial image shows multi-cystic lobulated prominent perivascular spaces in the midbrain with CSF signal intensity. **Origin:**
**Description:** Fast spin-echo T2-weighted coronal image shows multi-cystic lobulated prominent perivascular spaces with CSF signal intensity along the midbrain and subthalamic area. Note that the lateral and third ventricles are mildly dilated. **Origin:**

**Description:** Coronal FLAIR image shows absence of any signal intensity of the multi-cystic mass. **Origin:**