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Benign Asymptomatic Cerebellar Neuroglial cyst. A Case Report and Review of the Literature

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Abstract

The imaging differential of a cystic cerebellar lesion is vast. Differential concerns include non-emergent diagnosis, such as the sequelae of remote trauma or infection. However, distinguishing a cyst from cystic neoplasia is critical. Primary parenchymal cysts of the brain, otherwise known as neuroglia cysts are exceedingly rare, and even more so when located in the cerebellum. This case report presents this entity, which can reliably be differentiated from additional concerns. Similarly, once diagnosed by the neuroimager, conservative management is the best option in the asymptomatic patient.

Key Words: Cerebellar, Parenchymal Cyst, Neuroglial Cyst, Neurosurgical

Introduction

Neuroglia cysts, also known as parenchymal cysts of the brain as distinctly rare, accounting for approximately one percent of all intracranial cysts [1, 2)]. When present, they are usually in the cerebrum. A review of the literature reveals two studies limited to the neurosurgical literature which discuss cerebellar neuroglial cysts. Both of these studies provide intraoperative confirmation, as these patients experienced symptomatology felt to be secondary to the cerebellar cyst and thus required resection.

This case presents an asymptomatic 37-year female who presents to the neurosurgical department with a history of cerebellar neuroglial cyst. The cyst was initially detected on a Computed Tomography (CT) evaluation at age 24 which was performed on an emergent basis for evaluation for post concussive syndrome. Magnetic resonance imaging (MRI) was obtained at time of neurosurgical consult. MRI revealed the cyst followed normal cerebral spinal fluid signal characteristics on all sequences and did not enhance. Follow up imaging seven years later revealed the cyst to be stable in appearance.

Case Report

37-year-old female with a history of post concussive syndrome at age 24. CT evaluation (not submitted) of the brain performed at time of trauma revealed a cerebellar cyst. No gliosis or encephalomalacia was noted to suggest the sequelae of remote trauma nor infection.

The patient was subsequently evaluated by the neurosurgical service. MRI of the brain was performed to assess for stability of the cyst at age 37. The MRI revealed a stable cerebellar vermian cyst without enhancement measuring 2 cm x 2.5 cm in size (figure 1). The patient subsequently underwent repeat MRI at age 44. Follow up MRI reveals the cyst to be stable in size, signal characteristics, without enhancement. She remained asymptomatic. Specifically, she denied headache, nausea, vomiting, light sensitivity, dizziness, and balance incoordination (figure 2)

Figure 1

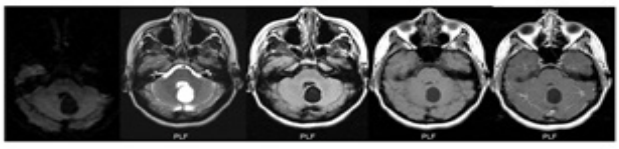

Figure 1: Magnetic resonance imaging performed at patient age 37 reveals a cerebellar vermian cyst. Imaging is performed in the axial plane, from right to left, and includes Diffusion Weighted Imaging, T2, T2 FLAIR, T1 weighted images and post gadolinium images. The cyst follows cerebral spinal fluid signal characteristics on all sequences and did not enhance.

Figure 2

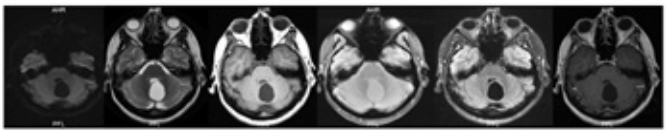

Figure 2: Follow up magnetic resonance imaging evaluation performed seven years following the initial MR evaluation demonstrates stable cyst size and signal characteristics are not enhancement. Imaging is performed in the axial plane, from right to left, and includes Diffusion Weighted Imaging, T2, and T1 weighted images, gradient echo, T2 FLAIR, and post gadolinium images.

Discussion

A review of the literature reveals two studies discussing cerebellar neuroglial cysts, the first submitted in 1981 and the latter in 1994. The 1981 study [3] is mired in controversy as the editor suggested that the neurosurgeons missed the mural nodule during the resection and felt that the lesions represented a low-grade cerebellar astrocytoma. The 1994 study presents a single case but lists an additional 14 patients dating to the year 1926, including both patients from the above mentioned 1981 study [4]. Both of these studies are derived from the neurosurgical literature with intraoperative confirmation, as these patients' experienced symptomatology felt to be secondary to the cerebellar cyst and thus required resection. Otherwise, three additional authors presented articles regarding parenchymal cysts remote from the cerebellum. Andrews et al, in 1984 from the neurosurgical literature presents two cases in the posterior fossa which were at surgery located in the cerebellar pontine angle and fourth ventricle; therefore, extra axial and not parenchymal in location [5]. In 1990, Sherman et al reported eight parenchymal cysts, seven within the temporal lobe and the one cyst within the thalamus [6]. Guermazi et al in 1998 presented a case series of five patients. Three cysts were located in the thalamus, while one was located in the brainstem. Finally, one cyst was noted to be intraventricular [7].

Cerebellar parenchymal cysts are rare. It is imperative that the neuroradiologist be aware of this entity as the differential diagnosis in the noninfected patient is neoplasm. Additional etiologies for a parenchymal cyst would include the sequelae of remote trauma and infection, although these entities generally result in pericystic leukoencephalomalacia, invariably absent in the brain adjacent to the neuroglial cyst. The neuroglial cyst will maintain cerebral spinal fluid characteristics on all MR imaging sequences and will not enhance. Subsequent imaging will demonstrate stability, further differentiating the cyst from neoplasm. The novel case report demonstrates that asymptomatic neuroglia cysts of the cerebellum may be conservatively treated. Therefore, the radiologist must be aware of the entity so as not to consider neoplasm and dramatically alter the patient management.

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