Case Report

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Cerebellar Abscess Mimicking Recurrent Pilocytic Astrocytoma: A Case Report

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Cerebellar abscess is a rare condition occurring more commonly in children and adolescents usually caused by otitis media. They can occur following trauma or surgery or from septic focus directly or hematologically. It is sometime hard to distinguish from other space occupying lesion clinically or by imaging modalities. We report a case of an eight year boy who had undergone craniotomy and excision of a pilocytic astrocytoma two years back and now presented with headache and preoperative diagnosis of recurrent pilocytic astrocytoma was made. But, to our surprise, the operative findings showed an abscess which was confirmed with histopathology. The final diagnosis of cerebellar abscess was made.

Key Words: abscess, cerebellum, pilocytic astrocytoma

The incidence of brain abscess varies with geographic location and living standards within a given region. In underdeveloped countries, brain abscess constitutes a disproportionate percentage of space-occupying intracranial lesions compared with industrialized nations.[3,9] They usually follow cranial trauma or surgery or can be secondary to a septic focus elsewhere, spread either directly or haematologically.[2] The most common sites of cerebral abscesses are the temporal lobes (42%) and the cerebellum.[13] Cerebellar abscesses are rare, having been reported to comprise from 6% to 29% of brain abscesses in all ages and 35% of brain abscesses in children.[5,7,14] Early pyogenic abscess following surgery and delayed abscesses due to retained foreign bodies occurring even 13 years after surgical excision of tumor with the clinical and radiological features suggestive of recurrent tumor with malignant transformation have been reported.[12]

Case Report

An 8-year-old boy was admitted in the department of Neurosurgery with the chief complaints of headache since 20 days which was intermittent and mild to moderate in intensity. There were multiple episodes of vomiting during this period. However he had no fever, loss of consciousness, abnormal body movements or trauma. One and half year back he was operated for cerebellar pilocytic astrocytoma WHO grade-I with uneventful postoperative period. On examination his general condition was fair and GCS was 15/15 pupil was 3mm bilaterally equal and reactive to light. His motor and sensory functions were normal. There were no signs of meningism or cerebellar signs however he had mild limping gait. Rest of the systemic examinations were normal. His biochemical, hematological and immunological investigations were

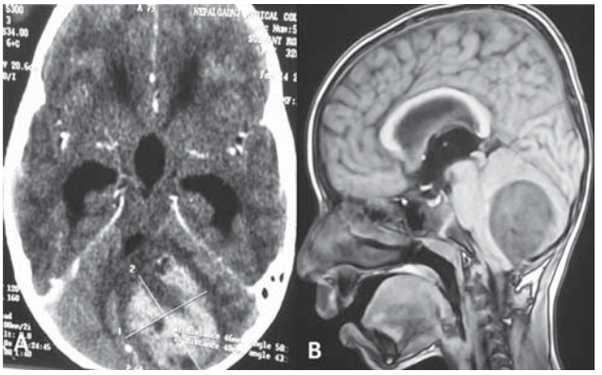

Figure 1: A) CT scan showing posterior fossa mass, B) MRI showing the cerebellar lesion

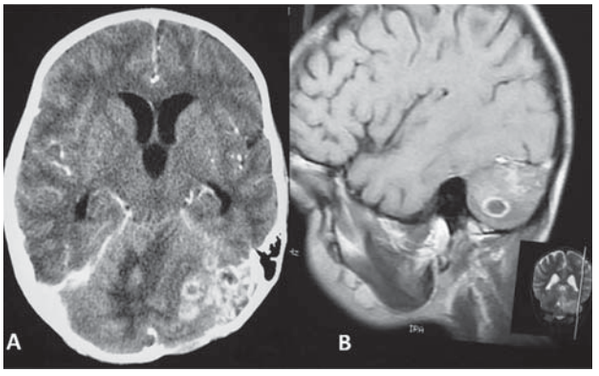

Figure 2: A) CT scan showing mass in posterior fossa, B) MRI showing the mass in the cerebellum

within normal limits. Contrast enhanced CT scan of head was done which revealed heterogeneously enhancing lesion in the cerebellar region on the left with no significant mass effect. MRI of brain also shows the same findings. His present scan was compared to the previous one which showed exactly the same location of the lesion. **Figure 1A and 1B** shows his previous imaging whereas **figure 2A and 2B** shows his recent imaging. With those findings we concluded our diagnosis as recurrent cerebellar pilocytic astrocytoma and planned for surgery.

With sub-occipital approach craniectomy was done which showed multi-loculated abscess cavity in left cerebellum with 1 ml of frank pus and unhealthy granulation tissue. Draining of abscess and excision of the granulation tissue done and pus sent for culture sensitivity, Gram staining and AFB staining of which all were negative except presence of numerous pus cells with the finding compatible with resolving abscess. He was managed with IV antibiotics for 4 weeks. His suture was removed on 10th postoperative day and the postoperative period was uneventful. He was discharged after 4 weeks with GOS 5/5.

Discussions

Development of brain abscess is most commonly associated with suppurative otitis media (20-40% of patients) or sinusitis (15-25% of patients) but only rarely associated with neurological intervention.[4,] In a study of infectious complications of 1143 patients who underwent neurological intervention, a 7% infectious complication rate was noted, the most common of which was an infection of the bone flap.[1] Risk factors for the development of infectious complications after a procedure include the presence of cerebrospinal fluid leak, advanced age, and multiple neurosurgical procedures.[6,8] Cerebellar abscesses are rare, having been reported to comprise from 6% to 29% of brain abscesses in all ages and 35% of brain abscesses in children.[5,7,14] Early pyogenic abscess following surgery and delayed abscesses due to retained foreign bodies occurring even 13 years after surgical excision of tumor with the clinical and radiological features suggestive of recurrent tumor with malignant transformation.[12]

Diagnosis of the patients with brain abscess can be challenging. Only 50% show the triad of fever, headache and a focal neurological deficit and symptoms are often more consistent with a space occupying lesion than an infection. 70 % of patients only report headache, 50% have a focal neurological deficit, 50% nausea and vomiting, 25% have seizure, 25% have papilledema, and later may have mental status change. The general local symptoms of cerebellum abscess are ataxia, vertical or circular spontaneous nystagmus with alteration, weakness in muscles, and incoordination. Due to pressure on the brain stem, intermittent bradysphygmia is frequently present and increases in blood pressure, extensive change in body temperature, and others symptoms are also observed.

Routine laboratory tests are not helpful in diagnosis. According to the study of Hakan et al, there is a significant correlation between leukocytosis (above 20,000) with poor outcome and high fever (>38.5°C) with mortality.[10]

All patient suspected of having any brain abscess should undergo CT scan or MRI of Brain. In a study conducted by Narendra N et al., all the patient underwent CT diagnosis with less than 1% of patients requiring or obtaining an MRI.[11] The classic ring-enhancing appearance of a brain abscess may be mimicked by other disease entities (e.g. Necrotic brain tumor), as seen in two patients. Newer MRI techniques such as diffusion weighted imaging, MRI spectroscopy, and diffusion tensor imaging indices such as functional anisotropy and mean diffusivity can help differentiate brain abscess from a cystic tumor when they are readily available.

In our study MRI and CT scan with history was unable to differentiate the cerebellar abscess from pilocytic astrocytoma because of the location of the disease and the

rare occurrence of the abscess after the surgical procedure which led a diagnostic dilemma.

Conclusions

It is possible that an abscess can occur post-surgical intervention in any patient following trauma or elective tumor excision. So, surgeon should have a high index of suspicion and should try to evaluate it clinically and with imaging.

References

1. Blomsedt G. Infections in neurosurgery: a retrospective study of 1143 patients and 1517 operations. **Acta Neurochir (Wien) 78:** 81-90
2. Corson M, Postlethwaite K, Seymour R. A. Are dental infections a cause of brain abscess? Case report and review of the literature. ***Oral Diseases* 7 (1):** 61–65, 2001
3. Garfield J. Management of supratentorial intracranial abscess: a review of 200 cases. **BMJ 2:** 7–11, 1969
4. Hatta S, Mochizuki H, Kuru Y et al. Serial neuroradiological studies in focal cerebritis. **Neuroradiology 36 (4):** 285-288, 1994
5. Hegde AS, Venkataramana NK, Das BS. Brain abscess in children. **Child's Nervous System 2:** 90-92, 1986
6. Hicks G, Wright J, Jr. Wright J III. Cerebrospinal fluid otorrhea. **Laryngoscope 90:** 1-25, 1980
7. McClelland CJ, Craig BF, Crockard HA. Brain abscesses in Northem Ireland: a 30 year community review. **J Neurol Neurosurg Psychiatry 41:** 1043-1047, 1978
8. Mombelli G, Klastersky J, Coppens L et al. Gram negative bacillary meningitis in neurosurgical patients. **J Neurochirugie 32:** 304-310, 1986
9. Morgan H, Wood MW, Murphey F. Experience with 88 consecutive cases of brain abscess. **J Neurosurg 38:** 698–704, 1973
10. Nadvi SS, Parboosing R, van Dellen JR. Benefits to a regional neurosurgical unit following the introduction of a decentralized imaging facility. **S Afr Med J. 87:** 1669-1671, 1997
11. Narendra N, Pradeep K Narotam, James R. van Delle. Brain Abscess: Management and Outcome Analysis of a Computed Tomography Era Experience with 973 Patients. **World neurosurgery 75 (5/6):** 716-726, 2011
12. Srinivasan V, Anandacoomaraswamy KS, Atlas MD. Sterile abscess mimicking recurrent tumour in the cerebellopontine angle. **The Journal of laryngology and otology 116 (5):** 379-381, 2002
13. Wu P. C, Tu M. S, Lin P. H, Chen Y. S, Tsai H. C. Prevotella brain abscesses and stroke following dental extraction in a young patient: a case report and review of the literature. ***Internal Medicine* 53 (16):** 1881–1887, 2014
14. Yang SY. Brain abscess: a review of 400 cases. **J Neurosurg 55:** 794-799, 1981