Article published online: 2024-01-22

Brief Report

Unusual Presentations of Sellar and Suprasellar Space Occupying Lesion: Our Institutional Experience

Ramalingam Giridharan[1] Nirmal Kumar[1] J. Srisaravanan[1]

[1] Department of Neurosurgery, Madurai medical College and Hospital, Madurai, Tamil Nadu, India

Indian J Neurosurg

Address for correspondence Giridharan Ramalingam, MS, 34/5 KVR Apartments, Indira Street, Next to Shameem Gastro Hospital, Anna Nagar, Madurai 625020, Tamil Nadu, India (e-mail: ragiridharan@gmail.com).

Abstract

A pituitary abscess (PA) is a rare intracranial lesion. It is a critical disorder caused by an infectious process where purulent material accumulates inside the sella turcica. It occurs either as a primary disease or because of an infection and is associated with poor prognosis. In this article, we share our experience with PA. At our institution, we operated on five cases of pituitary abscess since 2016. All the cases presented with bitemporal hemianopia and headache. None of them had fever. Pituitary hormones were normal except in two patients with a previous history of hypothyroidism. Magnetic resonance imaging (MRI) of the brain showed pituitary macroadenoma. They underwent the endoscopic transnasal transsphenoidal approach. Postoperatively their vision has improved. Endocrine functions were normal in all the patients following surgery. Culture sensitivity was sterile in all the patients. Diagnosis of pituitary abscess is highly difficult before surgery. Hence, the diagnosis should be considered when a patient presents with fever, headache, and signs of pituitary dysfunction and meningeal inflammation. Surgical and medical management leads to a lower mortality rate and a higher probability of hormone function recovery.

Keywords

- pituitary abscess
- endoscopic trans nasal trans sphenoidal approach

Introduction

A pituitary abscess (PA) is very rare, accounting for 0.2 to 0.6% of all pituitary lesions.[1] It can develop in a normal pituitary gland (70%) or in a preexisting pituitary pathology (30%). The majority of PAs are thought to arise primarily from normal pituitary tissue. Approximately 30% are associated with a pituitary adenoma,[2] craniopharyngioma,[3] or Rathke's cleft cyst.[4] Organisms include gram-positive *Staphylococcus*, *Streptococcus*, and gram-negative organisms. In most cases, pathogens are not clear.[5] Treatment of choice is surgery. Most pituitary lesions present as an incidental finding on magnetic resonance imaging (MRI), symptoms of mass effect, or hormonal disturbances.

Case Presentation

A 46-year-old woman came to our department with complaint of headache for the last 3 months. The headache was insidious in onset and gradually progressing with dull aching pain, intermittent in nature. History of presenting illness included holocranial headache, diminished vision, and turning her sides to see objects while cooking and other household works. The patient used to bump into objects while walking. Visual acuity of the patient was 6/12 on the right eye and 6/24 on the left eye. On examination of her field of vision, she was found to have bitemporal hemianopia. Color vision was normal in both eyes. The fundus examination was normal. The brain MRI (►**Fig. 1**)

DOI https://doi.org/10.1055/s-0043-1778130.
ISSN 2277-954X.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

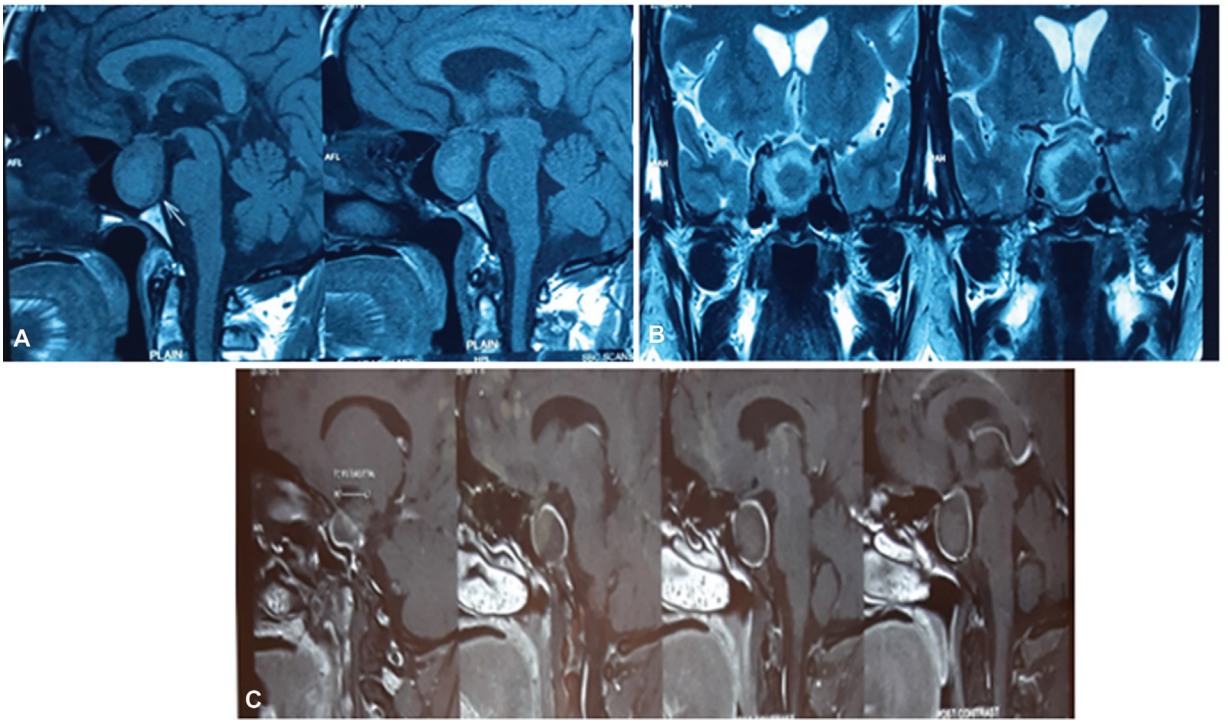

Fig. 1 Magnetic resonance imaging (MRI) of the brain. (**A**) Sagittal view of the T1-weighted image (T1WI) showed an iso- to hyperintense lesion. (**B**) Coronal view of the T2WI showed a hyper- to isointense lesion in the sellar region. (**C**) On contrast, a peripheral rim enhancement was observed.

showed a well-defined lobular mixed intense lesion, suggestive of a pituitary macroadenoma. The patient underwent routine endocrine function test, which was within normal limits. We proceeded with an endoscopic transnasal transsphenoidal (►**Fig. 2**) excision of the lesion. Intraoperatively we found it to be a PA. We evacuated the sample collected from the abscess and sent it for culture sensitivity for bacteria and fungus. Later it was found to be a sterile culture. Postoperatively the patient has recovered well without any complications.

Discussion

We have operated on five patients with PA since 2016. All of them presented with a headache. Visual disturbances were noted in all five of them. The hormonal status was normal in three of them, while two patients had a previous history of hypothyroidism. Both the patients were treated with thyroxine. MRI of the brain suggested pituitary macroadenoma in all five patients. They all underwent an endoscopic transnasal transsphenoidal surgery, which revealed a PA. Postoperatively all of them were treated in the intensive care unit with close monitoring. They were treated with stronger antibiotics. All the patients recovered well. Culture sensitivity did not show any growth including fungus and tuberculosis. The histopathological fining was consistent with granulation tissue of the abscess wall (►**Fig. 3**).

Radiological Criteria for Pituitary Abscess

On radiological examination, on T1-weighted imaging (T1WI), the PA appears with isointensity to low intensity compared with brain parenchyma (►**Fig. 1a**).[1,6] There was peripheral rim enhancement following gadolinium administration (►**Fig. 1c**). On T2WI, a PA (►**Fig. 1b**) often demonstrates signal intensity close to the cerebrospinal fluid (CSF). According to Takao et al, diffusion-weighted imaging (DWI) sequences of a PA show high signal intensity with a corresponding low apparent diffusion coefficient.[6] Necrotic brain tumors in this same region have a reverse profile. DWI may be useful for distinguishing between active abscess and necrotic tumor regions within the sella.[6] The criteria for the diagnosis of the pituitary abscess includes a triad of mass effect in the pituitary area, fever, and typical MRI findings. Drainage of pus with or without isolation of organisms. Evidence of acute inflammation and abscess wall on histopathological examination. Infiltration of the abscess wall by polymorphonuclear leukocytes or macrophages with underlying necrosis. Most of the cases reported in the literature are negative in terms of detection of organism, and positive rates for Gram staining or cultures ranged from 0 to 64%.

Conclusion

Cases of PA are uncommon, accounting for 0.2 to 0.6% of all pituitary lesions.[1] A PA may occur either as a primary lesion

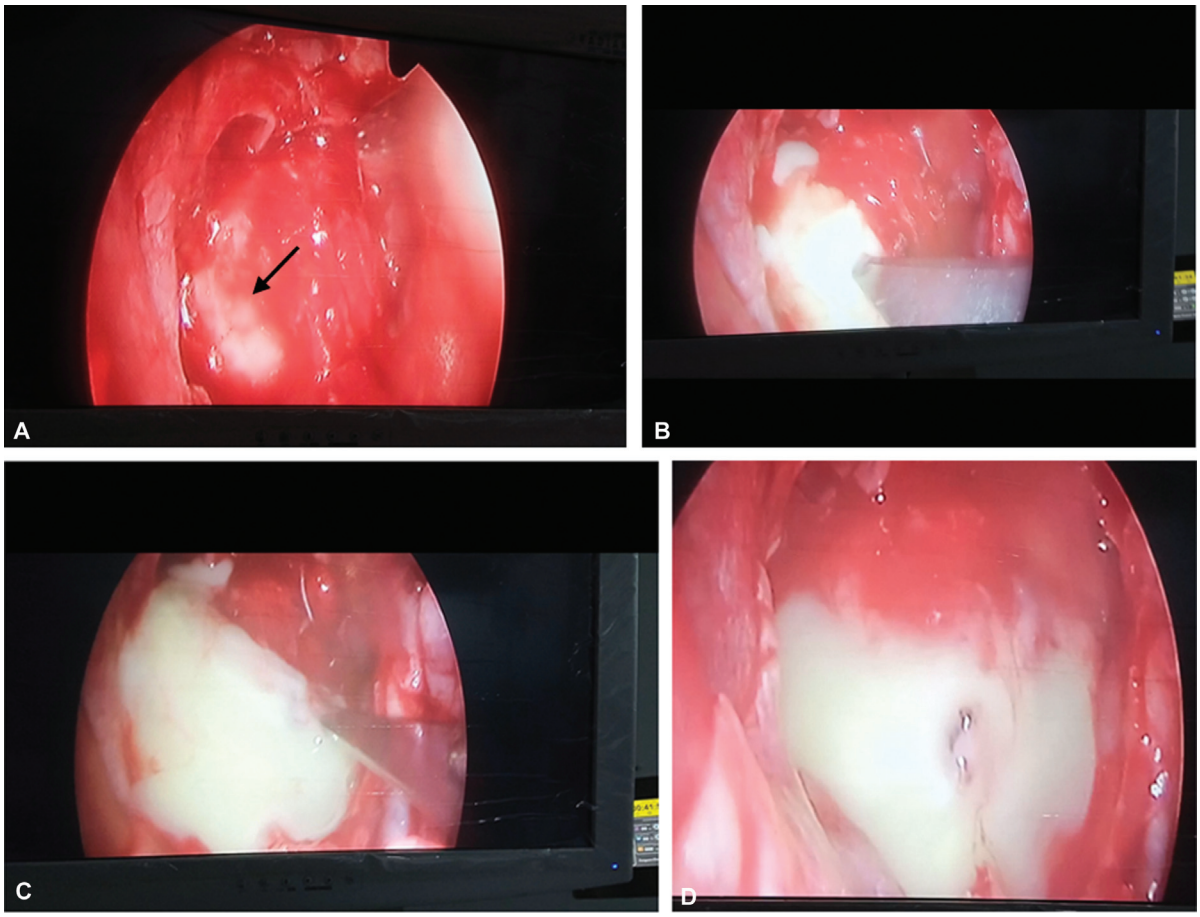

Fig. 2 Endoscopic transnasal transsphenoidal approach. (**A**) Abscess cavity was observed (*arrow*). (**B**) Opining the cavity. (**C,D**) Abscess drainage.

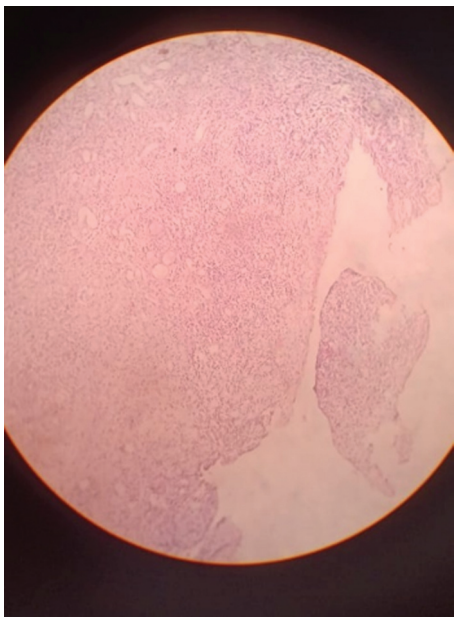

Fig. 3 Histopathological examination slide.

in a healthy normal pituitary gland or can occur secondarily with a preexisting lesion in the pituitary region such as a pituitary adenoma,[2] craniopharyngioma,[3] or Rathke's cleft cyst.[4] Moreover, known risk factors for PA also include immunosuppression, previous irradiation, or pituitary surgeries. Infection of the pituitary can arise from local spread of a regional process such as sinusitis,[7] meningitis,[5] cavernous sinus thrombophlebitis and dental caries,[8] and sepsis.[9] The most common organisms isolated from PA are *Staphylococcus* and *Streptococcus* and gram-negative organisms such as *Neisseria*, *Escherichia coli*, and *Corynebacterium*. All patients must undergo a surgical intervention, preferably the endoscopic approach.[10] Recovery and post-op outcomes are good in early diagnose and treatment.

Conflict of Interest
None declared.

References

1 Liu F, Li G, Yao Y, et al. Diagnosis and management of pituitary abscess: experiences from 33 cases. Clin Endocrinol (Oxf) 2011; 74(01):79–88
2 Hatiboglu MA, Iplikcioglu AC, Ozcan D. Abscess formation within invasive pituitary adenoma. J Clin Neurosci 2006;13(07): 774–777
3 Obrador S, Blazquez MG. Pituitary abscess in a craniopharyngioma. Case report. J Neurosurg 1972;36(06):785–789
4 Celikoglu E, Boran BO, Bozbuga M. Abscess formation in Rathke's cleft cyst. Neurol India 2006;54(02):213–214

5 Guillaume D, Stevenaert A, Grisar T, Doyer P, Reznik M. Pituitary abscess with recurrent aseptic meningitis. J Neurol Neurosurg Psychiatry 1990;53(10):925–926
6 Takao H, Doi I, Watanabe T. Diffusion-weighted magnetic resonance imaging in pituitary abscess. J Comput Assist Tomogr 2006;30(03):514–516
7 Shono T, Nishio S, Muratani H, Yasuda T, Fukui M, Moutai K. Pituitary abscess secondary to isolated sphenoid sinusitis. Minim Invasive Neurosurg 1999;42(04):204–206
8 Kroppenstedt SN, Liebig T, Mueller W, Gräf KJ, Lanksch WR, Unterberg AW. Secondary abscess formation in pituitary adenoma after tooth extraction. Case report. J Neurosurg 2001;94(02):335–338
9 Jung Y, Kim JD, Chadaga R, Tandatnick J, Caccamo LP. Pituitary abscess following general sepsis in a diabetic patient. JAMA 1976; 235(14):1476
10 Ciappetta P, Calace A, D'Urso PI, De Candia N. Endoscopic treatment of pituitary abscess: two case reports and literature review. Neurosurg Rev 2008;31(02):237–246, discussion 246

