

# Primary pituitary abscess presenting as cystic pituitary adenoma

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Pituitary abscess is a potentially life-threatening and rare condition. This report presents the case of a young male who was investigated for progressive headache. Magnetic Resonance Imaging (MRI) showed a cystic sellar lesion with ring enhancement that was diagnosed firstly as cystic pituitary adenoma. The patient was operated on with a sublabial transphenoidal approach to the pituitary gland. After dural opening, yellowish purulent material was obtained, with no tumor tissue detected. Pus examination showed many white blood cells (WBC) and gram positive diplococci. Culture was negative. After surgery, the patient was given antibiotics for 6 weeks and he made a good recovery. **Chiang Mai Medical Journal 2013;52(1-2):37-41.**

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**Keywords:** pituitary, abscess, sellar

## Introduction

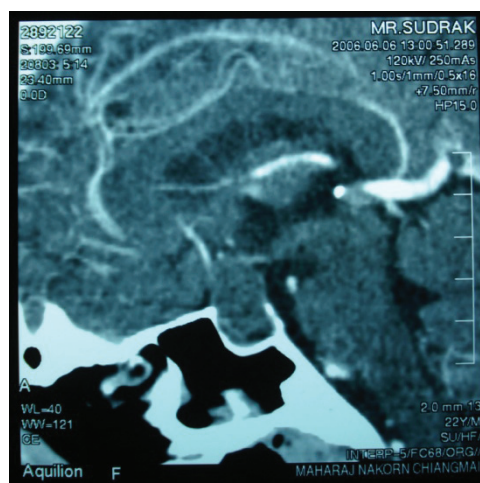
Pituitary abscess is a rare but potentially life threatening condition consisting of pituitary lesions. It was first reported in 1914 by Simmonds [1]. Only about 210 cases have been reported in the literature. Pituitary abscesses represent about 0.2-1% of all pituitary lesions. Generally, they are referred to as primary if they involve a normal pituitary gland, or secondary when there is underlying pituitary lesions such as pituitary adenoma and Rathke's cyst. Infection in various adjacent organs, for example, sphenoid sinusitis, meningitis, cavernous sinus thrombosis and systemic infection, may involve

the pituitary gland. Most pituitary abscesses are of pyogenic bacterial origin, although no organisms are isolated in 50% of cases. In the main, most abscesses are not diagnosed before treatment, due to ambiguous clinical features and imaging findings, but diagnosis has been made during surgical exploration.

## Case

A 22 year-old male patient presented with progressive headache. He had a history of lost libido, weight loss and somnolence over the previous 3 months, and developed recurrent vomiting and altered sensorium within the last 7 days.

He did not have a history of smoking or intravenous drug use, and did not suffer from fever or other sources of infection. On examination, the patient was drowsy, but responded to verbal commands. His blood pressure was 90/60 mmHg. Physical examination showed no focal neurologic deficit and fundoscopic examination did not find papilledema. Investigation revealed hyponatremia ( $\text{Na}=118 \text{ mEq/L}$ ). A complete blood count revealed mild leukocytosis and no anemia. Urine examination and liver function tests were within the normal limit. A chest x-ray failed to identify lung infiltration, but he reached the hypothyroid and hypocortisol level. Magnetic resonance imaging (MRI) revealed an enlarged pituitary gland, with central hypointensity and peripheral rim enhancement, [Figure 1, 2] and the patient was managed with 3% saline, glucocorticoid and L-thyroxine. After treatment, his consciousness and blood pressure improved. Therefore, pituitary surgery was performed by using the transphenoidal approach, which drained 3 cc of pus, and a smear showed gram positive cocci. Pus culture for bacteria, fungi and TB were negative. The patient received augmentin for 6 weeks, with hydrocortisone and L-thyroxine replacement. At three months follow up, he had no headache and normal visual function.

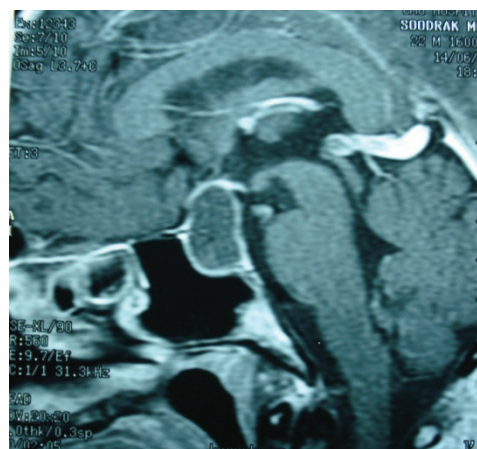
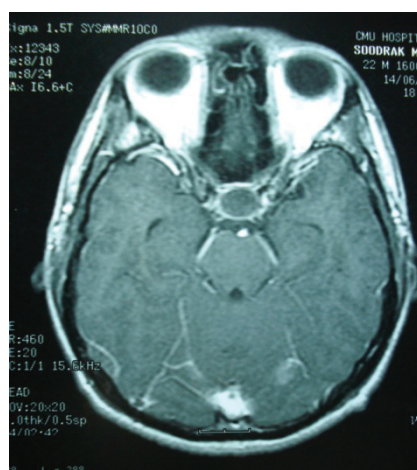


**Figure 1.** CT scan showing an isodense lesion in the sellar and suprasellar area.

## Discussion

Pituitary abscess was first reported by Simmonds in 1914, [1] and its incidence is low. Jain et al. reported that pituitary abscesses constituted 0.6% of all pituitary lesions when operating at their center during the last 10 years, and Ricardo et al. reported that 0.2% of pituitary abscesses were found from 503 transphenoidal approaches [2, 3]

The etiology of pituitary abscesses was divided into three groups. Firstly, abscesses may compli-



**Figure 2.** T1 post contrast by MRI showing a low signal intensity of abscess with peripheral rim enhancement.

cate preexisting lesion growth, which is usually pituitary adenoma. Tumors are possibly vulnerable to infection because of impaired circulation, areas of necrosis or local immunological impairment. Furthermore, pituitary abscesses may occur from adjacent infection, meningitis or infected cerebrospinal fluid (CSF). Finally, intrasellar abscess may result from pituitary surgery. A source of infection could not be identified in this case, and pathologic examination failed to determine a tumor cell in the lesion wall. Therefore, a primary pituitary abscess was identified [4-6].

Primary abscess can occur in a normal pituitary gland source (70%) or pre existing pituitary pathology (30%). Although a source of infection could not be found in this case, pus examination found gram positive cocci and the culture was negative. In a previously reported case, many organisms were described including gram positive cocci (50%), gram-negative bacilli, fungi, amoeba and yeast [3, 6] When a culture is positive, the most common organisms identified are *Staphylococcus sp*, *Streptococcus*, *Neisseria sp*, and *E. coli*. Cases of mycotic abscesses are caused by aspergillus, candida coccidioidomycosis, histoplasmosis and blasmycosis, and those of parasitic pituitary infection have been reported, including cysticercosis and echinococcosis. However, in a majority of cases, organisms could not be isolated and the diagnosis was based on other circumstantial evidence.

The clinical features of pituitary abscesses were present with either endocrine abnormality from destruction of the pituitary gland or symptoms related to mass effect [5, 7, 8]. Headache without a specific pattern may be the only symptom. Triad of fever, meningism and leukocytosis, which are suggestive of pituitary abscess, were present in only 25% and 35% of cases reported by Vates et al, and headache, endocrine abnormalities and visual changes were the most common clinical features. Jain et al. reported six cases of pituitary abscess and all of the patients presented with visual symptoms. Vates et al. reported that half of their 24 patients had visual disturbances [6] Dutta *et al* reported four

cases with hormonal disturbances. In all of their cases, two had visual symptoms and three fever and headache [4]. There were no preoperative diagnoses that specified pituitary abscess. However, patients who presented with clinical pituitary mass (headache, visual disturbance, hormonal dysfunction) and clinical signs of infection (fever, meningism, leukocytosis) suggested its presence [9]. The case in this report presented only the sign of endocrine disturbance, but no indication of infection such as fever or meningism.

The advent of computed tomography (CT) and MRI has improved the diagnosis of pituitary abscess. However, its preoperative diagnosis remains difficult because radiological differentiation of intramural pituitary abscess from the necrotic part of adenoma is complicated. CT and MRI findings usually show cystic pituitary mass with ring enhancement. Firstly, the diagnostic of this case was pituitary apoplexy. Diagnosis of pituitary abscess was made after drainage of purulent discharge from the pituitary mass. Differentiation of the pituitary abscess from cystic pituitary adenoma, or pituitary apoplexy, is oftendifficultbecause radiological features of these lesions may be almost indistinguishable. Bossard et al. suggested two important signs, with the first being disparity between the important sphenoid features (effusion in sinus, wide sellar floor destruction) and relatively small volume of the pituitary lesion. The second is enhanced sellar lesion with simultaneous extension to the sphenoid sinus [10].

Early surgical drainage is the standard treatment of pituitary abscess [11-13]. Although preoperative diagnosis is difficult, the transphenoidal approach is recommended more than craniotomy, because craniotomy may result in intracranial dissemination of infection [14]. Four to six weeks of parenteral antibiotics is recommended following surgical drainage.

The mortality rate in the study of Dutta was 25%, and 8.3% in Vates series. Headache and visual disturbance improved well, but patients with endocrine dysfunction generally did not recover to normal pituitary function [4, 6] The

case in this report still had endocrine dysfunction and received thyroid hormone and steroid replacement.

## Conclusion

Bacterial pituitary abscess is rare and diagnosis is difficult because its manifestation is similar to other pituitary masses with headaches, visual disturbance and hormonal abnormality. The diagnosis should be suspected if there is triad of sepsis, mass effects due to pituitary enlargement and rim enhancement on imaging. Early surgical drainage is rewarding and the transphenoidal approach is recommended more than open craniotomy. Parenteral antibiotics should be continued 4-6 weeks after drainage.

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**ผีต่อมได้สมอง: รายงานผู้ป่วย**

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ผีต่อมได้สมองเป็นพยาธิสภาพที่พบไม่บ่อยแต่มีอันตรายถึงแก่ชีวิตได้ ผู้เขียนได้รายงานผู้ป่วยชายมาโรงพยาบาลด้วยอาการปวดศีรษะ เอกซเรย์คลื่นแม่เหล็กไฟฟ้าพบก้อนถุงน้ำขอบทึบรังสี ผู้ป่วยได้รับการวินิจฉัยเป็นเนื้องอกต่อมได้สมอง ผู้ป่วยได้รับการผ่าตัดรักษาโดยวิธีการผ่าตัดผ่านทางสฟีนอยด์ไชนัส หลังจากเปิดเยื่อหุ้มสมองพบหนองสีเหลืองข้น จากการตรวจไม่พบว่ามึเนื้องอกบริเวณต่อมได้สมอง ผลการตรวจหนองที่ได้พบเชื้อแบคทีเรียแบบแกรมบวก โดยที่ผลการเพาะเชื้อเป็นลบ หลังจากผ่าตัดผู้ป่วยได้รับยาปฏิชีวนะเป็นเวลา 6 สัปดาห์ และฟื้นตัวเป็นปกติ **เชียงใหม่เวชสาร 2556;(52):37-41.**

**คำสำคัญ:** ผีต่อมได้สมอง เนื้องอกต่อมได้สมอง