Endoscopic Trans-Sphenoidal Drainage of Pituitary Abscess: A Rare Case Report

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Abstract

Background: *Pituitary abscess is less common but life threating which is usually misdiagnosed as pituitary tumor pre-operatively, in spite of radiological advancement. Definite diagnosis is possible only postoperatively.*

Material and Methods: *We report a case of 40 years old woman, admitted in our department with symptoms of headache,visual impairment and pituitary dysfunction. MRI brain revealed sellar and supra-sellar mass consistent with pituitary tumor. She eventually underwent endoscopic trans-sphenoidal removal. Per operatively pus was evident. A month later, she was well and fully recovered pituitary function.*

Results: *The histopathological examination confirmed presence wall of abscess cavity, however, Culture showed no growth.*

Conclusion: *This case report gives emphasis on the importance ofconsidering pituitary abscess as a differential diagnosis in patients withsella/supra-sellar mass. Early diagnosis and Surgical management of a pituitary abscess significantly decreases morbidity and mortality, and it also helps to establish the definite diagnosis.*

Key words: *Pituitary abscess, Pituitary adenoma, Endoscopy, Trans-sphenoidal.*

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Introduction:

Pituitary abscess is a rare, first case reported by Simmonds in 1914, accounts for less than 1% in seller region lesion[1,2].The most common symptom is nonspecific pattern of headache (70–92%), followed by anterior pituitary dysfunction, central DI, visual impairment, fever, meningeal irritation and nonspecific symptoms like vertigo[3,4,5].

It may occur either de novo or as a result of hematogenous spread or spread from a contiguous focus of infection such as meningitis and sphenoiditis3.The most commonly isolated pathogens are Staphylococcus spp. and Streptococcus spp., followed by Neisseria spp., Micrococcus, Citrobacter spp., Escherichia coli, Brucella, Salmonella, Corynebacterium and Mycobacterium[5]. However, in immunosuppressedpatients, Aspergillus, Candida and Histoplasma are themost frequent pathogens[6]. Pre-operative diagnosis is difficult because of rarity of disease, nonspecific symptoms and ring enhancing other pituitary lesions[7].

Endoscopic Trans-sphenoidal excision (TSS) of the lesion with decompression of the sella is the most effective and safe approach for patients presenting with mass effect, followed by antibiotics for 4–6 weeks, seems most acceptable treatment modalities in most of the literatures[8,9,10].

Case Report:

A 40 years old women presented in Neurosurgery OPD with occasional mild headache for 4 months, which was generally relieved by taking paracetamol and had blurring of vision, generalized weakness and amenorrhea for 3 months. She had no significant past history. She was nonsmoker and no history of alcohol consumption. Her menarche was at age of 14. She was married and had healthy children. On her examination, she was obese (BMI-32.3), vital signs – within normal limit. All systemic examinations were

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normal including neurological examination except cranial nerve II i.e. Bitemporal hemianopia. The patient had mild hirsutism over the face and the abdomen. There was no galactorrhea, and secondary sexual characteristics were unremarkable.

Laboratory investigation including CBC, biochemical profile and inflammatory markers, including ESR and CRP levels including urine specific gravity and chest x-ray were all within the normal range. Hormonal evaluation revealed mildly elevated serum prolactin levels of 31.16 ng/mL (1.39–24.2ng/ml), decreased serum thyroid-stimulating hormone (TSH) 0.05¼IU/mL, (normal: 0.47–5.01) with decrease free thyroxine (fT4) 5.35 pmol/L (normal: 9.14-23.81), fT3-1.32(2.62-5.7pmol/L and low morning serum cortisol of 2.6 nmol/L (normal:101.2–535.7nmol/L) with normal adrenocorticotropic hormone (ACTH) 13.9pg/ml (normal: up to 46pg/mL).

Visual evaluation with Humphrey's perimeter revealed bitemporal hemianopsia.

Her MRI of brain showed T1WI-slightly hypo-intense lesion,T2WI-hyper-intense and gadolinium contrast administration showed mild ring enhancement of lesion in seen in sellar/supra-sellar which was compressing the internal carotid arteries and optic chiasma, measuring about 24mmX22 mm (Fig.1). The patient was diagnosed possibly as Pituitary macroadenoma. In the pre-operative period, her hormonal deficiency i.e. thyroid hormone and cortisol were corrected with thyroxin and hydro cortisone respectively.

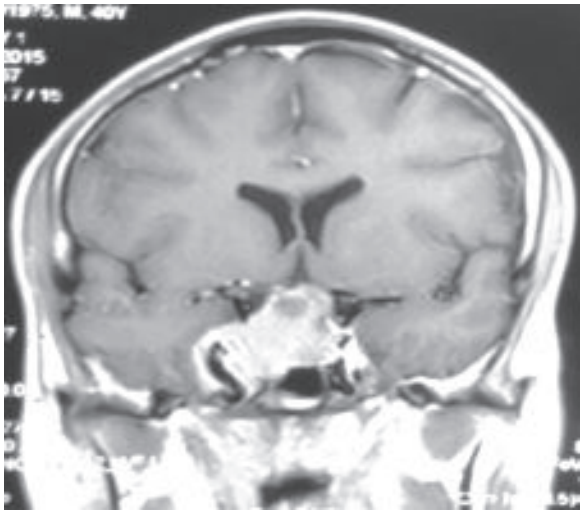

Fig.-1: *MRI of Brain Contrast/ Coronal: mild ring enhancement of lesion seen in sellar/supra-sellar compressing the internal carotid arteries and optic chiasma.*

Operation and post-operative period:

She underwent through endoscopic trans-sphenoidal removal of tumor. Per-operatively significant amount of yellowish colored pus was found with fibrotic tissue (Fig.2)and capsule, which was drained and sent for histopathological examination and culture. Postoperatively, she was managed with empirical intravenous antibiotics Ceftriazone and Amaikacin which were continued for 6 week and followed by 4 weeks' oral antibiotic. No growth was found in culture and histopathology report was consistent with presence of wall of lesion. And hormone replacement was continued. She developed transient diabetic mellitus in early post-operative which was managed with inj. Pitressin. Her immediate CT scan showed no evidence of existence of pre-operative lesion (Fig.3).

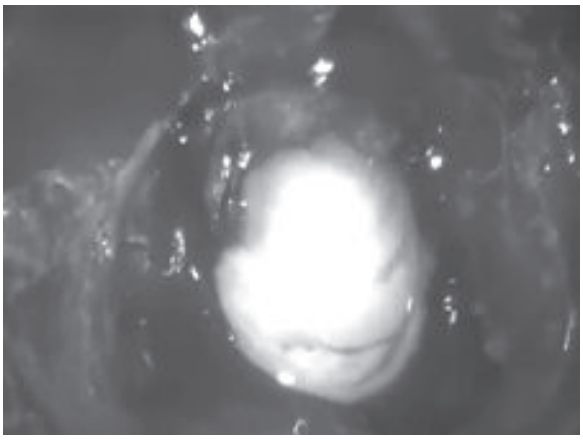

Fig.-2: *Endoscopic Intra-operative picture shows yellowish white colored pus.*

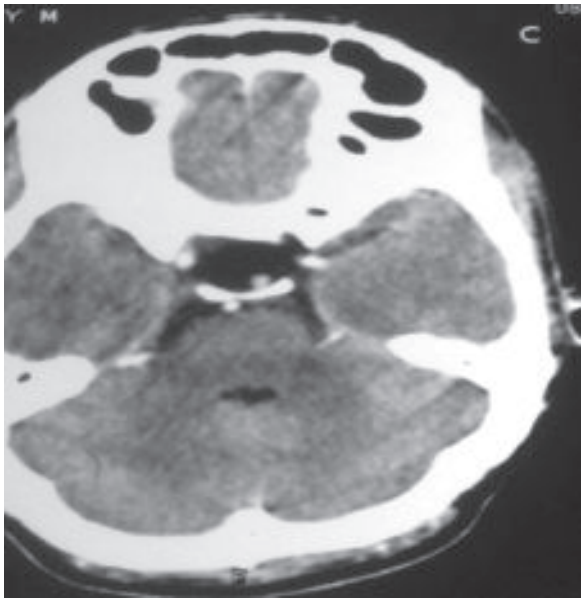

Fig.-3: *Post-operative CT Scan of Brain Axial Contrast: normal sellar and supra-sellar region.*

Outcome and follow up:

One month after surgery, while on cortisol and thyroxin(replacement therapy), her morning cortisoland TSH, T3,T4 were within normal range. So, hormonal replacement therapy was discontinued. Visual field examination was normal and there was no bitemporal hemianopsia, and had fully recovered and regular menstrual cycles resumed after 2 months.

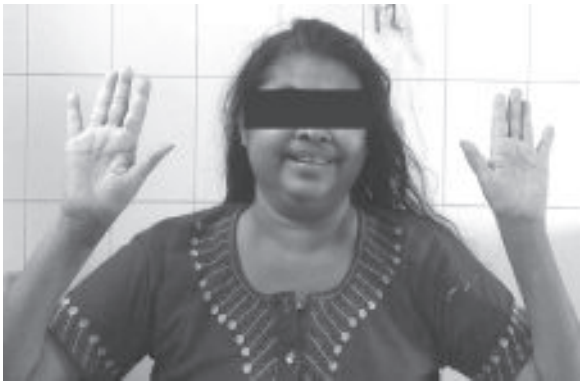

Fig.-4: *Postoperative photograph of patients*

Discussion:

In this case report, we presented 40 years women with no fever and no sign of infection where diagnosis was made as pituitary abscess intraoperatively, however, preoperative diagnosis was Pituitary adenoma. Pituitary abscess accounts for less than 1 % of all pituitary disease. Primary pituitary abscess occurs due to hematogenous seeding or by direct extension of adjacent infection, either in the CSF or in the sphenoid sinus,and more rarely as a complication of thrombosis of the cavernous sinus[11]. Secondary pituitary abscesses occur in a pre-existing lesion, such as an adenoma, a craniopharyngioma or a Rathke cleft cyst. Other risk factors are underlying immunocompromised condition, previous pituitary surgery or irradiation of the pituitary gland [1].

In this case, it was seen *de novo* like Jain et al where 5 cases out of 6had no history of fever and sign of infection. No growth was found in culture despite no preoperative administration of antibiotics. Most common organism are Staphylococcus spp. and Streptococcus spp., followed by Neisseria spp., Micrococcus, Citrobacter spp., Escherichia coli, Brucella, Salmonella, Corynebacterium and Mycobacterium, However, in immunosuppressed patients, Aspergillus, Candida and Histoplasma are the most frequent pathogens [5,6].

This case presented nonspecific pattern of headache, anterior pituitary dysfunction, visual disorders which accounts for 70–92%,54–85%,27–50% respectively and other symptoms may occur like central diabetic insipidus, fever with meningeal irritation and systemin illness with vertigo [3,4,5]. Commonly CT scan enlargement of the sellaturcica and a welldefined low-attenuation rounded lesion demonstrating ring-enhancement[4] and MRI iso or hypo-intense lesion on T1WI,iso or hyper-intense On T2WIand ring enhancement on gadolinium administration[4,12] but in this case mild ring enhancement which signifies lack of matured capsule. The differential diagnosis of sellar cystic lesions include adenoma, carcinoma, abscess, arachnoid cyst, colloid cyst, Rathke cleft cyst, craniopharyngioma and metastasis[13].

Trans-sphenoidal excision (TSS) of the lesion with decompression of the sella is the most effective and safe approach for patients presenting with mass effect[8,9,10]. Endoscopic trans-sphenoidal is most favored over craninal because of more invasive and has a greater complication rate including bleeding, CSF infection, and thus longer hospitalization [14]. Empirical treatment with antibiotics is indicated while awaiting microbiology and histological confirmation. Hence, it is important to do a Gram-staining and culture of the pus and to treat with appropriate antibiotics in the postoperative period to reduce the risk of recurrence. Hormone replacement therapy is administrated based on hormone deficits of the pituitary gland [14,15]. We have treated out patient with empirical antibiotics.

Early diagnosis and treatment decreases mortality from 45 % to 10%[3,16]. Recovery of vision and endocrine function were seen within a month in this case, but it may be shorter or longer period depend upon duration of symptoms.

Conclusion:

Pituitary abscess is a rare disease. Pre-operative diagnosis is difficult because of rarity of disease, nonspecific symptoms and ring enhancing another pituitary lesion. Endoscopic trans-sphenoidal approach is choice of treatment,followed by appropriate antibiotics for 4- 6 weeks, seems most acceptable treatment modalities in most of the literatures. So, early diagnosis and treatment decreases morbidities and mortalities significantly.These patients need to be followed up closely because of the risk of recurrence.

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