

Pott's Puffy Tumor Elicited by *Klebsiella Pneumoniae*: An Uncommon Clinical Entity

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ABSTRACT

A lesser-known clinical non-neoplastic entity was first described in 1775, known as Pott's puffy tumor (PPT). PPT is characterized by frontal bone osteomyelitis with an associated subperiosteal abscess. The diagnosis is usually confirmed with a computed tomography scan of the paranasal sinuses. Early treatment is the law as there is imminent substantial morbidity if left untreated. Herein, we presented a case of a 27-year-old male with a Pott's puffy tumor due to *Klebsiella Pneumoniae* that was effectively treated with surgery and antibiotics for a total of 3 weeks. Even rare it is a terrifying complication, making it fundamental importance to make an early diagnosis and a correct surgical combined with medical management.

Keywords: Pott's Puffy tumor, *Klebsiella Pneumoniae*, Frontal sinusitis, Endoscopic Frontal Sinus Surgery, Frontal bone osteomyelitis.

INTRODUCTION

In 1775, Percival Pott first described a condition named Pott's Puffy tumor [1]. Pott's puffy tumor (PPT) is a misnomer and a non-neoplastic condition characterized by subperiosteal abscess and osteomyelitis (SPOA) of the frontal bone [2, 3]. It is a rare condition, because of the advancement of modern antibiotic therapy. But one must have a great suspicion for this, as if left untreated it can increase the risk of the complications such as epidural empyema, meningitis, frontal lobe abscess, and cavernous sinus thrombosis [1, 3, 4].

CASE REPORT

A 27-year-old healthy male with a history of chronic sinusitis presented with complaints of left-sided headache, left nasal blockage, rhinorrhea, post nasal drip, and left side forehead swelling for 2 years. He denied having any addictions. He previously had been

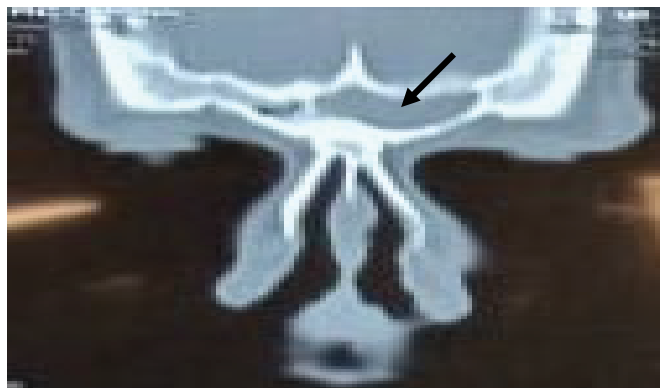


Fig. (1): Arrow showing left frontal sinus opacification.

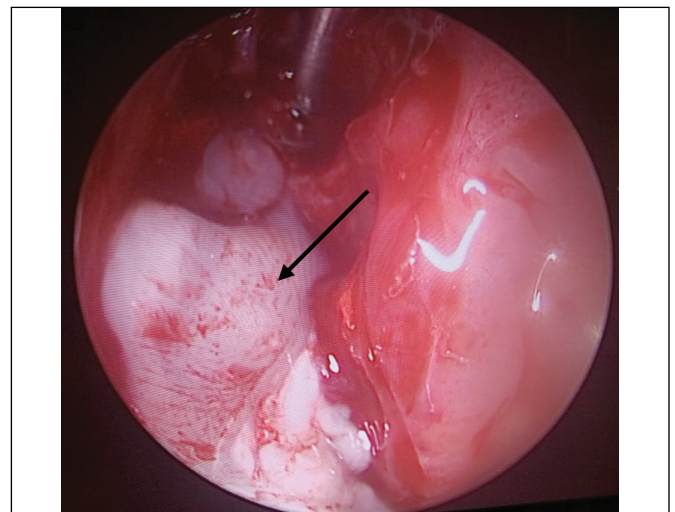


Fig. (2): Endoscopic view of frontal sinus showing mucopurulent discharge (black arrow).

operated on thrice for chronic sinusitis. His first surgery was 7 years back, the second surgery was 2 years back and the last nasal surgery was 1 year back but symptoms did not resolve. No cultures were obtained at the time. His fiberoptic examination of the left nasal cavity showed adhesions present between the septum and lateral wall, which is blocking the frontal sinus. A middle turbinate was not present due to previous surgery. CT scan showed complete opacification of the left frontal sinus (**Fig. 1**). He underwent the Draf IIb procedure and per-operatively there was a mucopurulent discharge from the left frontal sinus (**Fig. 2**), which was sent for culture and sensitivity. The postoperative period went uneventful. Cultures were obtained, which grew *Klebsiella Pneumoniae*, and the patient got discharged on Ceftriaxone, and nasal douching for 3 weeks. At 6 months follow-up, his symptoms had resolved.

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DISCUSSION

In the 18th century, Percival Pott reported a puffy, inflammatory, circumscribed condition causing osteomyelitis of frontal bone, and subperiosteal abscess named Pott's puffy tumor [1, 5]. It is usually affecting children more than adults [3]. The etiology is multifactorial and includes recurrent bacterial sinusitis, head trauma, malignancy, substance abuse, dental infection, insect bite, mastoiditis as well as contiguous spread along neurovascular bundles [2, 6-10]. It is more prevalent in males [5]. Pathogenesis of the disease is that it involves the frontal sinus, and frontal bone following osteomyelitis [5, 11]. Or the infection may involve the frontal bone directly through the sinus wall, or by causing retrograde thrombophlebitis of diploic veins [12, 13]. For the spread of infection, the anterior wall or floor of the frontal sinus shows the minimum resistance [11]. If the external bone table eroded that results in a subperiosteal abscess. If the extension is through the inner table that leads to an epidural abscess [12]. Intra-operatively cultures are important to be obtained for further medical management of the disease against the culprit organism. The variety of micro-organisms from sinuses that are reported in literature included alpha-hemolytic streptococci, beta-hemolytic Streptococci, Streptococcus pneumoniae, Staphylococcus, Haemophilus influenzae, and less commonly Proteus, Fusobacterium, Pseudomonas and Actinomyces naeslundii [1, 3]. Up till now, in literature, only one patient had Klebsiella Pneumoniae as the causative organism that supports this case [6, 7]. These organisms are more communal in this condition due to the low level of oxygen in the blocked frontal sinus [1].

CONCLUSION

Pott's puffy tumor (PPT) is an otorhinolaryngological crisis. Although a rare condition but a precise diagnosis, and quick treatment are necessary in achieving an optimal outcome. Surgical drainage remains the mainstay of therapy. Microbiological pathogen identification is important for the administration of the most appropriate and prolonged antimicrobial therapy.

CONSENT FOR PUBLICATION

Consent taken. We have ensured to not report any potentially identifying information about the patient in the manuscript.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest.

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