

Pott's Puffy Tumor, an Exceptional Complication of Frontal Sinusitis: About a Case Report

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Abstract

Case Report

Pott's puffy tumor is a rare entity, characterized by the association of a subperiosteal abscess and osteomyelitis of the frontal bone. It is often secondary to frontal sinusitis. The diagnosis of Pott's puffy tumor is difficult and often confused with a tumor, infection or hematoma. Although this condition is frequently observed in children, rare cases in adults have been described. We report the case of a 23-year-old man who presented with right frontal inflammatory tumefaction, and in whom the scanner showed a Pott's puffy tumor following frontal sinusitis. He was successfully treated with antibiotic therapy and percutaneous drainage of the abscess under the frontal periosteum. We reviewed cases of Pott's puffy tumor in adults published in the literature and discussed the particularities of this condition.

Keywords: Osteomyelitis, Pott's puffy tumor, CT.

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INTRODUCTION

Pott's tumor or "Pott's Puffy Tumor" (PPT) is a clinical entity that has become rare with the advent of antibiotic therapy [1, 2]. It is characterized by frontal osteomyelitis responsible for a cortical rupture of the walls of the frontal sinus, a subperiosteal abscess [3, 4]. Clinically, it results in a painful fluctuating forehead swelling [3]. It is a rare complication of frontal sinusitis or, more rarely, following trauma in this region [2, 5]. The most incriminated infectious agents are *Staphylococcus Aureus*, streptococci and anaerobic germs [3, 5]. The objective of this observation is to demonstrate the interest of CT-imaging in the diagnosis of this pathology and the search for intracranial complications.

CASE REPORT

We report a case of a 23 years old man, with no particular pathological history, who presented with a

fluctuating and painful frontal swelling that had been evolving for a month.

The clinical examination objectified an inflammatory and painful swelling of the frontal region. The biological assessment showed hyperleukocytosis with an increase in CRP.

The craniofacial computed tomography revealed a right frontal collection enhanced peripherally by the contrast and containing air bubbles, the presence of an ipsilateral maxillary and bilateral fronto-ethmoidal sinusitis with a large anterior bone defect but no abnormality in the brain parenchyma (figure1 and 2).

The treatment consisted of surgical drainage of the frontal collections, antibiotic therapy. The postoperative period was simple.

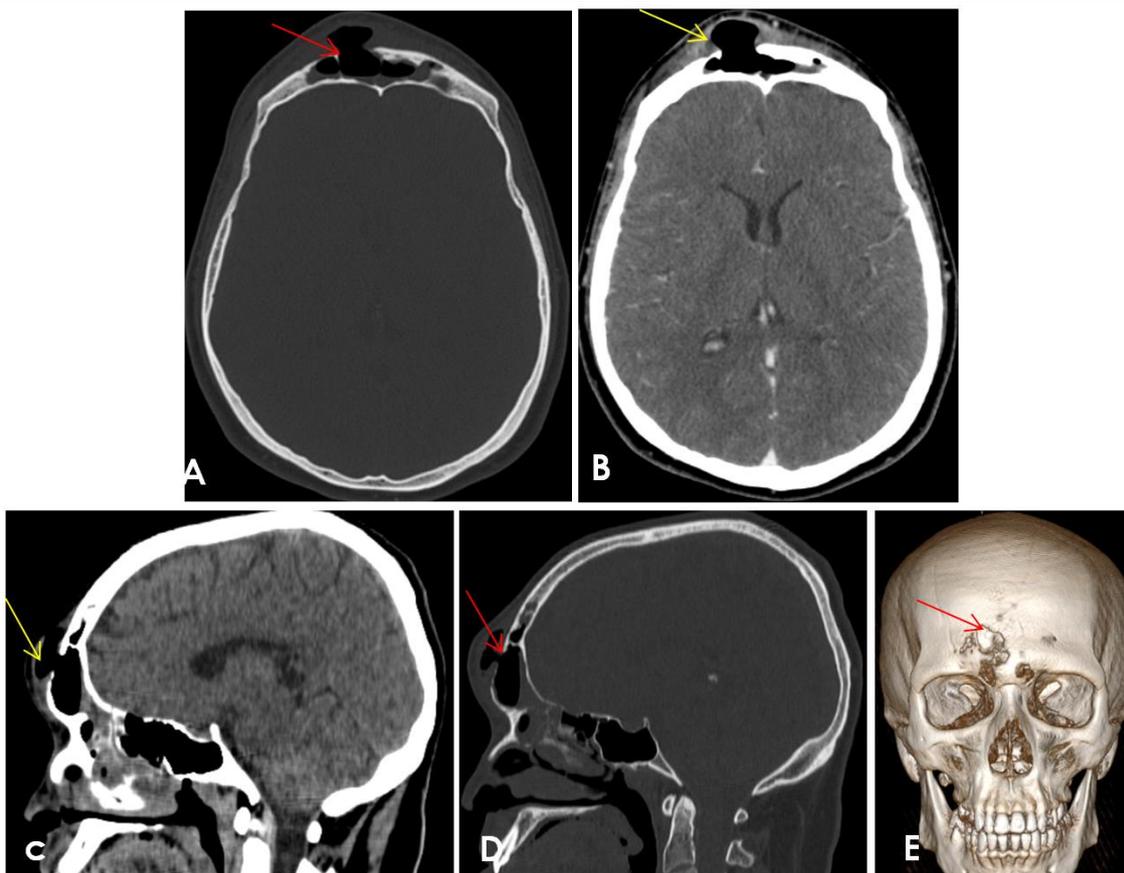


Figure 1: Cranio-facial CT in axial (A, B, C) and sagittal (D and E) sections with VRT reconstructions (F): a right frontal collection enhanced peripherally by contrast and containing air bubbles (yellow arrow), with anterior bone defect (red arrow), but no abnormality in the brain parenchyma

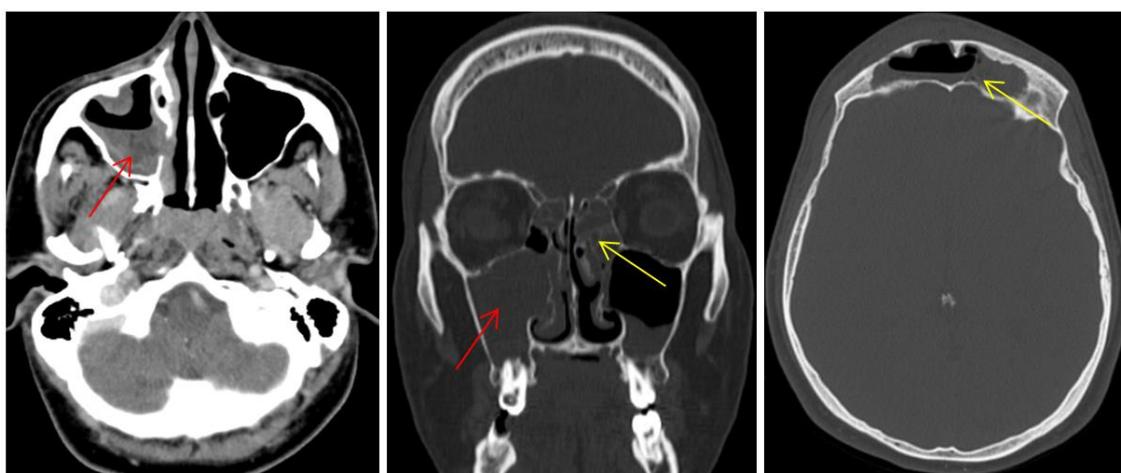


Figure 2: Craniofacial CT in axial (A) and sagittal (B) sections: the presence of right maxillary sinusitis (red arrow) and bilateral fronto-ethmoidal sinusitis (yellow arrow)

DISCUSSION

The term Pott's puffy tumor is actually misleading because it is not a tumor but an infection. Sir Percivall Pott, an 18th century British surgeon, was the first to describe it in 1768 as a complication of head trauma. Later in 1775, a clear relationship was established between this lesion and frontal sinusitis [3]. Subsequently, several observations have described it as

a complication of frontal sinusitis [4, 6, 7]. Other cases of PPT were observed following the use of intranasal cocaine [6, 7] or in the late follow-up to frontal region surgery [8].

This condition is less and less reported with the advent of antibiotics, [8, 9].

Epidemiologically, it is a pathology of adolescents and young adult males [10]. From frontal sinusitis frontal osteomyelitis occurs either directly or by thrombophlebitis of diploic veins. Cortical erosion can occur with subperiosteal abscess generating fluctuating and painful frontal swelling [1]. Erosion of the internal table allows intracranial extension [11].

The diagnosis of PPT must be suspected clinically in the presence of fluctuating and painful frontal swelling, in the context of a frontal sinus infection or following trauma to this region. It can be confused with skin tumors, soft tissue infections, and infected hematoma [13]. The intracranial extension of the infection is the cause of serious complications. The graves complications observed are subdural empyema, extradural abscess, intra-parenchymal abscess and cerebral thrombophlebitis [11, 12].

Cerebral thrombophlebitis is initially due to involvement of the superior longitudinal sinus [14]. The infection can also spread intra-orbitally causing abscesses at this region [15, 16]. Medical imaging first confirms the diagnosis, then searches for any intracranial complications. Craniofacial computed tomography allows a better analysis of the bony structures, the sinuses of the face and a characterization of the mass after injection of contrast. Above all, it allows the search for intracranial complications that can be life-threatening [17, 18]. Treatment is based on surgical drainage of the abscess, removal of necrotic fragments and prolonged antibiotic therapy for a period of 6 weeks, intravenously and adapted to the germ [3, 6].

CONCLUSION

Pott's tumor, although very rare, can be complicated by intracranial extension which can be fatal. It requires early diagnosis and treatment by emergency surgery associated with appropriate antibiotic therapy.

REFERENCES

1. Forgie, S. E., & Marrie, T. J. (2008). Potts puffy tumor. *Am J Med*, 121(12), 1041-2. PubMed.
2. Babu, R. P., Todor, R., & Kasoff, S. S. (1996). Pott's puffy tumor: the forgotten entity: Case report. *Journal of neurosurgery*, 84(1), 110-112.
3. Amanou, L., Van Den Abbeele, T., & Bonfils, P. (2000). Frontal sinusitis. *EMC, ORL*, 20-430-D-10, 9 p.
4. Blackman, S., & Schleiss, M. (2005). Headache and forehead swelling in a 9-year-old boy with sinusitis. *Hospital Physician. Pediatric Rounds*, 43-49.
5. Tattersall, R., & Tattersall, R. (2002). Pott's puffy tumor. *Lancet*, 359, 1060-1063.
6. Chandy, B., Todd, J., Stucker, F. J., & Nathan, C. A. O. (2001). Pott's puffy tumor and epidural abscess arising from dental sepsis: a case report. *The Laryngoscope*, 111(10), 1732-1734.
7. Noskin, G. A., & Kalish, S. B. (1991). Pott's puffy tumor: a complication of intranasal cocaine abuse. *Rev. Infect. Say.*, 13(4), 606-608.
8. Karaman, E., Hacizade, Y., Isildak, H., & Kaytaz, A. (2008). Pott's puffy tumor. *Journal of Craniofacial Surgery*, 19(6), 1694-1697.
9. Gupta, M., El-Hakim, H., Burgava, R., & Mehta, V. (2004). Pott's puffy tumour in a pre-adolescent child: the youngest reported in the post-antibiotic era. *International journal of pediatric otorhinolaryngology*, 68(3), 373-378.
10. Chandy, B., Todd, J., Stucker, F. J., & Nathan, C. A. O. (2001). Pott's puffy tumor and epidural abscess arising from dental sepsis: a case report. *The Laryngoscope*, 111(10), 1732-1734.
11. Dolan, R. W., & Chowdhury, K. (1995). Diagnosis and treatment of intracranial complications of paranasal sinus infections. *Journal of oral and maxillofacial surgery*, 53(9), 1080-1087.
12. Giannon, C. M., Stewart, M. G., & Alford, El. (1997). Intracranial complication of sinusitis. *Laryngoscope*, 107(7), 863-8.
13. Schunknecht, B. (1998). Tributary venous sinus occlusion and septic cavernous sinus thrombosis: CT and MR findings. *AJNR*, 19, 617-26.
14. Kaabia, N., Abdelkafi, M., Bellara, I., Khalifa, M., Bahri, F., & Letaief, A. (2007). Pott's puffy tumor. A case report. *Médecine et maladies infectieuses*, 37(6), 350-353.
15. Bambakidis, N. C., & Cohen, A. R. (2001). Intracranial complications of frontal sinusitis in children: Pott's puffy tumor revisited. *Pediatric neurosurgery*, 35(2), 82-89.
16. Koch, S. E., & Wintroub, B. U. (1985). Pott's Puffy Tumor A Clinical Marker for Osteomyelitis of the Skull. *Archives of dermatology*, 121(4), 548-549.
17. Kung, S. W., Chan, D. T. M., Suen, P. Y., Boet, R., & Poon, W. S. (2002). Pott's puffy tumour. *Hong Kong Medical Journal*, 8(5), 381-2.
18. Riehm, S., & Veillon, F. (2011). Meningo-encephalic complications of ENT infections. *J radio*, 92, 995-101.