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Potts Puffy Tumor, a Rare Pathology Complicated by Calcification of Ethmoid Anterior and the Recesses of the Frontal Sinus: About a Case

Habib Ould Cheikh El Wely*, Karima Ouardi, Mohamed Zalagh, Saloua Ouraini, Aiman Ftouhi, Fouad Benariba, Nourredine Errami

Oto-Rhino-Laryngology and Head & Neck Surgery Department, Mohamed 5 Military Training Hospital, Rabat, Morrocco
Email: *habibcheikhelwely@gmail.com

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Abstract

The Potts puffy tumor is a very rare entity. It presents as an abscess under-périosté performing a swelling front with osteomyelitis of loss front side more often to sinusitis frontal. We report the observation of a patient 67 years old who was admitted to the emergency swelling front. The computed tomography (CT) brain showed a lesion tissue compartment right sinus front seat of calcification and osteomyelitis of the frontal bone with calcification in the frontal sinus recess. The patient was operated on endoscopically endonasal and received a DRAF 2B and broad-spectrum antibiotic therapy with good evolution.

Subject Areas

Otorhinolaryngology

Keywords

Potts Puffy Tumor, Calcification, Frontal Sinusitis

1. Introduction

The Potts puffy tumor is an entity unknown to the fact of its rarity. It presents as a subperiosteal abscess causing frontal swelling with osteomyelitis of the frontal bone most often secondary to frontal sinusitis. Sir Percival Pott described this lesion in relation to an injury front in 1768 and in connection with sinusitis early in 1775. The most feared complications are controlling intracranial [1]-[4]. We

report a case marked by its slow and complicated evolution of ossification of the anterior ethmoid and recess of the frontal sinus. By which we underline the importance and effectiveness of the endonasal endoscopic approach in the management of this disease.

2. Observation

He was a patient aged 67 years, without history of significant, admitted to the emergency room with complaints of swelling front lateralized to the right, starting slow, which progressively increased in volume. The beginning was in 08 months, with the finding of a small swelling right frontal painless (**Figure 1** and **Figure 2**), slowly increasing in volume, not the notion of trauma, the volume of the swelling which becomes inconvenient for the patient, motivating them to present themselves to the emergency room. An examination of the patient was conscious, quiet, afebrile, no rhinorrhea, without any signs of neurological. There was also a swelling front large, slightly firm, painless, with a shiny skin next to it, and without oedema palpebral. Nasal endoscopy in the optical rigid 0 done under local anesthesia with xylocaine naphazolinée, has shown a nasal pit free, no hypertrophy of the turbinate but calcification of the right ethmoidal bulla, with calcification and a total obstruction of the recess of the right frontal (**Figure 3**). A CT brain with contrast material injection was performed and showed a lesion tissue compartment right sinus front seat of calcification, discreetly enhanced after injection of contrast 32.8 - 22.5 mm with ossification of the éthmoïde and the recesses of the frontal sinus ipsilateral (**Figure 4** and **Figure 5**). No mass effect on the parenchyma, cerebral or lysis of the lining of the posterior sinus frontal. On the bone cuts and 3D, wet seen bone erosion front right. In this context, an MRI was performed and demonstrated a sinusitis fronto-ethmoido-maxillary right complicated of a subcutaneous abscess with osteomyelitis of frontal without extension intracranially. On the biological level, the complete blood count (NFS) and C-reactive protein (CRP) were normal, and erythrocyte sedimentation rate (ESR) was not performed. The serological tests made at a later stage showed were negative. The patient was operated on endoscopically endonasal, a DRAF 2b was achieved by milling using a drill diamond, a good marsupialization endoscopically endonasal was carried out with the externalisation of the pus, which was collected and transported immediately to study bacteriological, mycological and parasitological, and then it was a curtage sinus, frontal and under the skin with an abundant message in the serum and the water oxygenated. The patient was put under antibiotic therapy parenteral: amoxicillin + acid clavinalique 3 g/day. Review bacteriological examination of the pus were a germ of the intestinal flora. The patient had returned home after a week of treatment with parenteral and a good evolution. One treatment oral use by ciprofloxacin 750 mg × 2/day, metronidazole 500 mg × 3/day was conducted for 4 weeks. The evolution was favorable with no recurrence after a follow-up of 6 months (**Figure 6**).

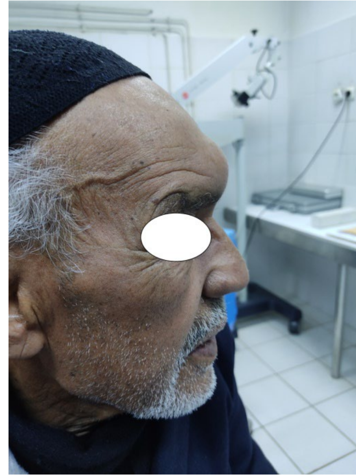

Figure 1. Profile view of the patient before surgery.

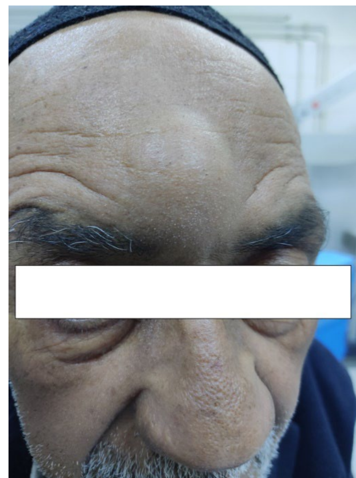

Figure 2. Front view of the patient before surgery.

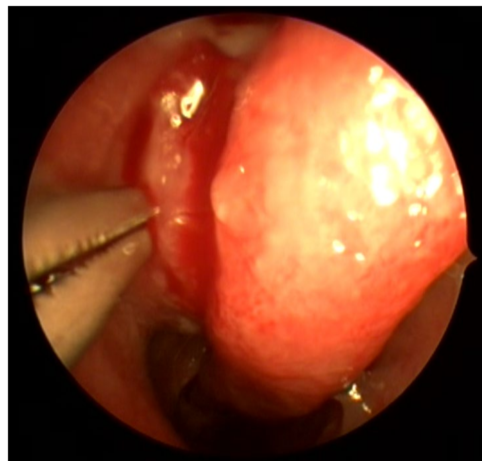

Figure 3. Photo of the endoscopy nasal fossa of right side showing ossification of the bubble and the recesses of the frontal sinus.

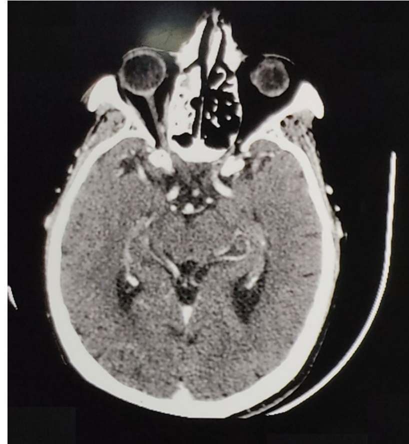

Figure 4. CT brain—sectional sagittal showing an abscess under the skin, and osteolysis of the frontal sinus.

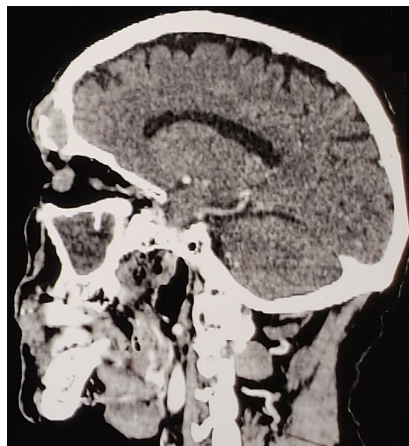

Figure 5. CT brain-sectional (axial) showing ossification of the sinus ethmoidale.

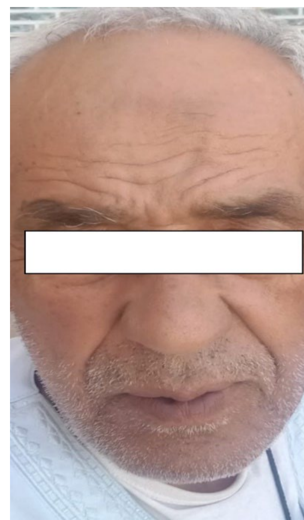

Figure 6. Front view of the patient after 6 months of surgery.

3. Discussion

The term Potts puffy tumor (PPT) is actually misleading because it is not a tumor but an infection. Sir Percivall Pott, a British surgeon of the 18th century, was the first to describe it in 1768, as a complication of a head injury. Later in 1775, a clear relationship was established between this lesion and sinusitis frontal [1]-[3] [5]. The Potts puffy tumor (PPT) is a rare entity that affects mainly children and adolescents. It is less common in adults with 30% of cases, and predominates in men [5]-[7]. The main causes are frontal sinusitis acute or chronic, and traumatic brain injury. You can find also the use of cocaine which inhalation can lead to a perforation of the nasal septum and then a bone involvement frontal. PPT can also occur during chronic renal failure, skull surgery and diabetes [1] [2] [8]. Untreated or poorly treated sinusitis can then become complicated, either by extracranial complications such as a subperiosteal or subgaleal abscess or by intracranial complications such as subdural or epidural empyema, frontal brain abscess mostly, but also thrombosis of the cavernous sinus, thrombosis venous cortical and meningitis acute [1] [2] [4] [5] [8]. Complications of intracranial represent between 60% and 85% of cases in the adult [2] [4] and close to 100% for the child [5]. These complications are most often secondary to frontal osteomyelitis. On the plan pathophysiological we can describe 2 mechanisms that promote the formation of this osteomyelitis. On the one hand, the diffusion by means of the blood is the mechanism the most common. Frontal sinusitis will cause the spread of germs through the plexus of veins of the dura mater through the diploic veins, causing thrombophlebitis septic leading to necrosis of the bone and increasing the risk of complications including intracranial. On the other hand, the direct contamination that may occur during open superinfected head trauma or at a sinusitis frontal with achieving the wall posterior to the frontal sinus [3]-[5]. On the plan bacteriological germs most commonly implicated are staphylococcus, streptococcus and anaerobes [3]-[5] [8] [9]; in half of the cases the reviews bacteriological reveal a flora polymicrobial [8]. More rarely, one can observe the hémophilus, aspergillus [5] and mycoplasma [2]. In our observation, no germ has been identified without a germ of the intestinal flora. The clinical program is in general non-specific and varies with the severity of infection. The signs combine a swelling front renitent sometimes sensitive, headache, fever, inconstant and a catarrh nasal purulent [6] [10]. For some authors, a swelling, erythematous and pasty front associated with fever should be considered as pathognomonic of the PPT [3]. The other signs are related to the extracranial complications (edema, periorbital edema, fistula, skin, diplopia, proptosis) or intracranial (nausea, vomiting, photophobia, nerve damage brain injury, seizures, disorders of consciousness) [2]-[4] [6]-[8] [10]. Our patient had, in addition to headache, and a swelling front, a right ethmoid bulla calcified, with calcification and a total obstruction of the recesses of the right frontal, without any neurological impairment. The positive diagnosis is made by imagery carried out in the emergency, as the evolution and the prognosis of the PPT will depend on the

speed of the support. The CT brain with product injection of contrast is the examination of choice to confirm the diagnosis. It shows frontal sinusitis, osteomyelitis in the form of bone erosion, subperiosteal abscess and extensions, particularly intracranial. In our patient, a CT brain with contrast material injection was performed and showed a lesion tissue compartment right sinus front seat of calcification, discreetly enhanced after injection of contrast 32.8 - 22.5 mm with calcification of the ethmoid and the recess of the frontal sinus ipsilateral. Imagery resonance magnetic (MRI) brain with contrast may represent an ideal if it is available and possible in emergency because she is better studying the complications of intracranial soft tissues [3] [4] [6]-[8] [10]. In our patient, MRI was performed and demonstrated a sinusitis fronto-ethmoido-maxillary right complicated of a subcutaneous abscess with osteomyelitis of frontal without intracranial extension The scintigraphy of the bone can help with the diagnosis, especially at the early stage of osteomyelitis, but cannot be an emergency examination [11]. The differential diagnosis can be discussed with skin infections or sub-cutaneous, frontal tumors, benign or malignant soft tissue, or superinfected hematomas at the frontal. Some cases may be responsible for delay in diagnosis, leading to complications [4] [5] [7]. The therapeutic management of the Potts puffy tumor is an emergency and is based on the combination of a antibiotic therapy and a surgical treatment that would prevent possible complications, especially intracranial and decrease the morbimortality. Antibiotic therapy should be started as quickly as possible after the suspected diagnosis. It is used more often by intravenous injection. It must be broad-spectrum for the majority of germs; it is then adapted to the germ specifically identified in the review bacteriological. The duration of antibiotic therapy is 4 to 8 weeks because of the presence still of osteomyelitis but also complications, especially intracranial. The ideal combination would be penicillin or vancomycin, of cephalosporin of the 3rd generation and metronidazole [2] [3] [5] [8]. Support surgery is variable and may require a multidisciplinary approach between neurosurgeons, ophthalmologists, and otolaryngologists. It may be limited to the percutaneous drainage by needle or trans-nasal endoscopic approach or by trephination, sometimes to the trimming of sub-périosté/sub-galéal abscess. A craniotomy may be necessary in the event of a complication of intracranial [4] [6] [7]. Our patient received an endonasal endoscopic surgery, a DRAF 2b was achieved by milling using a drill diamond, and a good marsupialization endonasal endoscopic was carried out with the externalization of the pus, which was collected and transported immediately to study bacteriological, mycological and parasitology, and then it was a curtage sinus, frontal and under the skin with an abundant rinsing with the serum and the water oxygenated. The evolution was good with no recurrence after a follow-up of 6 months and then the patient was lost to sight.

4. Conclusion

The Potts puffy tumor is a rare and little-known tumor, most often secondary to

sinusitis, untreated or poorly treated. This lack of knowledge raises fears of an evolution towards complications, particularly intracranial, which worsen morbidity and mortality. Any frontal swelling should be given special attention so as not to suffer from this condition. Drainage of the frontal sinus using a DRAF 2b using an endoscopic endonasal approach seems promising with its satisfactory results.

Conflicts of Interest

The authors declare no conflicts of interest.

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