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Presentation of Pott's Puffy Tumour in a 71-Year-Old Man with Atypical History

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Abstract

Pott's puffy tumour is a subperiosteal abscess of the frontal bone with osteomyelitis which has become rare because of the widespread use of antibiotics [1]. It is usually seen as a complication of frontal sinusitis [2]. Here we report a case of Pott's puffy tumour (PPT) in a 71-year-old man who visited the accident & emergency department with painful swelling of the forehead but with no reported antecedent history of any symptoms of rhinitis or sinusitis. The application of a high index of clinical suspicion ensured that the appropriate clinical assessment was carried out and the presence of asymptomatic rhinosinusitis was established as aetiology for the PPT. The establishment of the aetiology permitted timely intervention with a combined endoscopic and external sinus drainage procedure. The patient was subsequently managed with parenteral IV antibiotics. Employing a high index of suspicion for occult sinus disease as causation for this presentation ensured that this patient received the intervention, avoiding the possibility of complications such as a retrograde intra-cranial extension.

Subject Areas

Oncology

Keywords

Pott's Puffy Tumour, Osteomyelitis

1. Introduction

Pott's puffy tumour is a subperiosteal abscess of the frontal bone and is associated with osteomyelitis [1]. Although it is more commonly described in children, it should be included in the differential diagnosis of the swelling of the forehead in adults [2]. The treatment of this condition is a combination of med-

ical and surgical approaches to prevent complications. Pott's Puffy Tumour is exceedingly rare following the advent of broad-spectrum antibiotics, hence as it is a particularly unusual clinical entity, and rapid recognition is imperative. We present a case of PPT in an elderly adult patient with an unconventional history.

2. Case Report

A 71-year-old man presented to the accident & emergency department of The Queen Elizabeth Hospital with painful swelling of the right side of the forehead which appeared a month prior to presentation at our hospital (Figure 1 and Figure 2). He had treated for 23 days with flucloxacillin, prescribed by his general practitioner with no improvement in his symptoms. He denied any antecedent history of sino-nasal symptoms which would alert one to the possibility that his presentation was a probable complication arising from sinusitis. A dermatological opinion was initially sought by the emergency department as they suspected that the swelling merely represented a cutaneous infection or carbuncle. A secondary opinion from the ENT team was solicited. Clinical examination of the patient revealed a large, tender, fluctuant swelling on the right side of the forehead extending down to the right eyebrow and upper eyelid. The patient underwent flexible nasal endoscopy which revealed mucopus in middle meatii bilaterally. Patient underwent routine investigations like flexible nasal endoscopy which revealed mucopus in middle meati bilaterally.

Computed tomography of the head showed bony erosion through the anterior table of the frontal sinus with communication into the subcutaneous tissue. There was large rim-enhancing fluid collection overlying the frontal bone and right supraorbital ridge consistent with communicating frontal sinus and subperiosteal abscess (Figure 3 and Figure 4).

The patient underwent a combined approach drainage procedure of the swelling, comprising right endoscopic sinus surgery with external incision and drainage. A large amount of pus was drained which was sent for culture sensitivity. The patient had a corrugated drain inserted, which was left in situ for 48 hours. The swelling decreased after systemic administration of antibiotics for 2 weeks. Bacterial culture of the pus revealed no growth of any organisms.

Figure 1. Frontal swelling (lateral view).

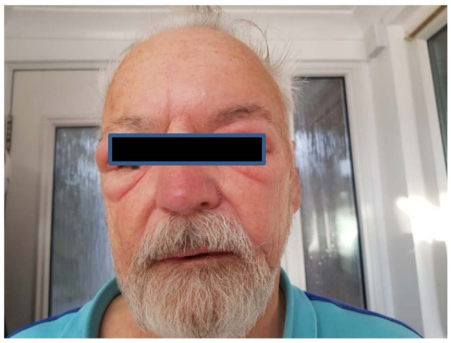

Figure 2. Frontal swelling (A-P view).

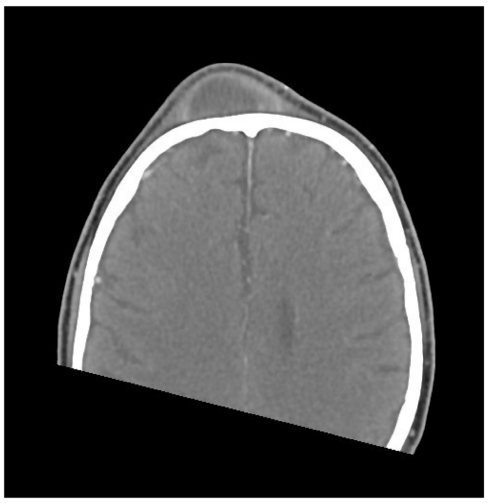

Figure 3. Subperiosteal swelling.

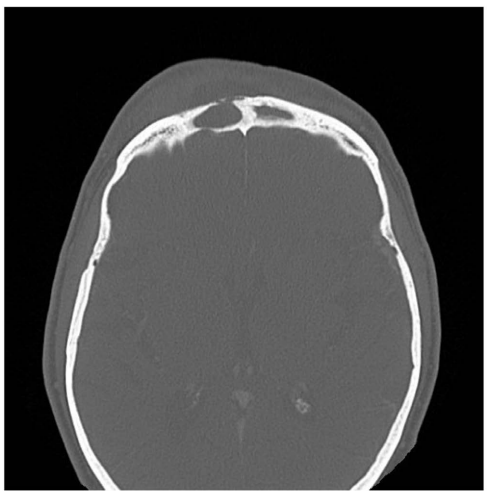

Figure 4. Erosion of anterior table.

3. Discussion

Potts Puffy Tumour was first described by Percival Pott in 1768, after whom it was eponymously named. It was recognised as a complication of frontal sinusitis or trauma to the frontal bone [3].

In patients with frontal sinusitis, infection may spread via the venous drainage routes of the frontal sinus. The venous drainage of the frontal sinus is via the so-called valve less diploic veins of Breschet which are distributed between the external and internal tables of the calvaria. As a result of the frontal sinus infection, thrombophlebitis occurs in these veins, and which contributes to the spread of infection [4]. The spread of infection may be anterograde, in which case, it can result in a subperiosteal abscess overlying the frontal sinus. The anterior table of the frontal sinus may breakdown, secondary to an associated osteomyelitis, leading to direct spread of infection and abscess formation. The clinical manifestation of this anterograde spread is the PPT.

Similarly, spread of frontal sinus infection may equally occur in a retrograde fashion, affecting the posterior table of the frontal sinus. In retrograde spread, the risk is the formation of an extradural cranial abscess that may progress to true intracranial spread—meningitis, subdural empyema, epidural abscess, subarachnoid inflammation or involvement of brain parenchyma.

PPT commonly occurs in young people, and it is thought that the increased prevalence in the young results from an anatomically underdeveloped frontal sinus or as a result of increased blood flow in the diploic veins in adolescence [5] [6].

A review of the literature revealed a number of reports of cases of PPT [1] [5] [7] [8] [9]. It is commonly associated with chronic frontal sinusitis [10]. In the reports, PPT is commonly associated with chronic frontal sinusitis and head trauma. PPT in adults has been associated with intranasal cocaine or methamphetamine abuse [11]. It is more common in males with the male: female ratio having been reported to be approximately 3:1 [12].

PPT has become exceedingly rare following advent of broad-spectrum antibiotics and is now a clinical condition that may not be immediately recognised, especially if the patient gives no history of antecedent sino-nasal symptoms, as was the case in this patient. PPT requires prompt surgical intervention and antibiotic administration, because of the risk of concomitant retrograde spread and intracranial extension. It is therefore essential that the clinician recognise the condition and its origin from the frontal sinus regardless of history [7].

The differential diagnosis for a soft tissue swelling of the forehead includes sub-galeal hematoma, angiosarcoma or erysipelas.

Laboratory investigations are not usually helpful with an equivocal white cell count and a normal erythrocyte sedimentation rate in over 50% of the cases.

In the diagnostic work up for potential intracranial complications of rhinosinusitis, a CT-scan (with contrast) and MRI are complementary. CT-scan provides better assessment of bony involvement and MRI provide better characterization of soft tissue detail and importantly, is helpful in assessing intracranial involvement [13].

In this case, the initial inclination of the attending emergency staff was to refer the patient for a dermatology consultation. This may have been due to the absence of any history of antecedent sino-nasal symptoms or because the condition

is rarely encountered and therefore its association with sinus disease not appreciated. Patients first examined by otorhinolaryngologists, have been reported to more often receive a correct diagnosis of PPT and to less often have intracranial complications than do patients examined by physicians of other departments including dermatology [12].

4. Conclusion

A typical presentation of PPT is headache, fever, and swollen forehead mass set in the context of a pre-existing history of symptoms of rhino-sinusitis. It is rare in the post-antibiotic era. This patient had a history devoid of any antecedent sino-nasal symptoms. We contend that it is imperative that the clinician employs a high index of suspicion of sinusitis in such cases, regardless of history. Management of the condition necessitates clinical examination with nasal-endoscopy and investigation with cross-sectional imaging.

An early appropriate diagnosis is essential for a good clinical outcome and prevention of intracranial complications.

Conflicts of Interest

The authors declare no conflicts of interest.

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