

RADIOLOGICAL FINDINGS IN A RARE CASE OF EYELID SWELLING: POTT'S PUFFY TUMOR

H.N. Özcan, S. Avcu, M. Lemmerling

Pott's puffy tumor (PPT), or osteomyelitis of the frontal bone, is a rare entity especially in adults. PPT is believed to occur as a complication of fronto-ethmoidal sinusitis or trauma to the frontal bone. We present the computed tomography and magnetic resonance imaging findings in such a rare case of Pott's puffy tumor.

Key-word: Bones, infection.

Osteomyelitis of the frontal bone (eponymously known as Pott's puffy tumor) is an extremely rare and potentially life-threatening complication of frontal sinusitis. The entity was first described by Sir Percival Pott, an 18th century neurosurgeon, as a complication of trauma to the frontal bone (1). It is also a recognized complication of fronto-ethmoidal sinusitis. In the era of modern antibiotics, PPT is a rarely encountered entity, which has been reported in children and adolescents. We present the computed tomography (CT) and magnetic resonance (MR) imaging findings in a case of PPT in a previously healthy young man with a worsening headache and swelling of the upper eyelid.

Case report

A 27-year-old man visited our ENT department for reasons of headache and swelling of the right upper eyelid for one week. He described the swelling of the right upper eyelid to be insidious but progressively

increasing. Local examination of the right eye showed erythema and edema of the eyelid. The rest of the ocular examination was unremarkable with full range of extraocular movements in both eyes. On systemic examination, nasal congestion was observed. The patient was noted to be afebrile with normal vital signs. The remainder of the physical examination was noncontributory. Due to his persistent headache and swelling of the eyelid, a conventional radiological evaluation of the paranasal sinuses was performed. This showed air-fluid levels in the right frontal and maxillary sinuses (Fig. 1A). Accordingly, the patient was treated with antibiotics for a suspected diagnosis of preseptal cellulitis and sinusitis. Although the patient's complaints did not improve, he only revisited our hospital two months later. A new physical examination revealed inflammatory signs of the paranasal sinuses and persistent edema of the right upper eyelid. The edema was extending to the right frontal region resulting in a soft and

fluctuant swelling over the forehead. On general examination, he was afebrile, well appearing and well oriented. Neurological evaluation was completely normal. CT scan of the paranasal sinuses was performed with axial, and reformatted coronal and sagittal images (Fig. 1B and 1C), which showed an extensive bony erosion of the superior margin of the right orbit and destruction of the frontal bone. The communication between the orbit and frontal sinus indicates inflammatory changes at the superomedial side of the right orbit. MR examination displayed soft tissue swelling with edema around the superior border of the right orbit, and with slight proptosis (Fig. 2A,B). On the basis of the findings of the clinical and radiological investigations the diagnosis of PPT was made. The patient was initiated on intensive intravenous antibiotic treatment and underwent subsequent endoscopic sinus surgery. No further complications occurred.



Fig. 1. — A. On this conventional X-ray of the sinuses an air-fluid level is seen in both frontal sinuses (arrows), but obliteration is more extensively present on the right side. On these coronal (B) and sagittal (C) reformatted CT images bony erosion is seen of the superior margin of the right orbit (arrows). The communication between the orbit and frontal sinus indicates inflammatory changes at the superomedial side of the right orbit.

From: AZ Sint-Lucas Hospital, Department of Radiology, Gent, Belgium.
Address for correspondence: Dr H.N. Özcan, Gayret Mah. Istiklal Cad 2/M daire 37 Yeni Mahalle, Ankara, Turkey. E-mail: drhnozcan@yahoo.com

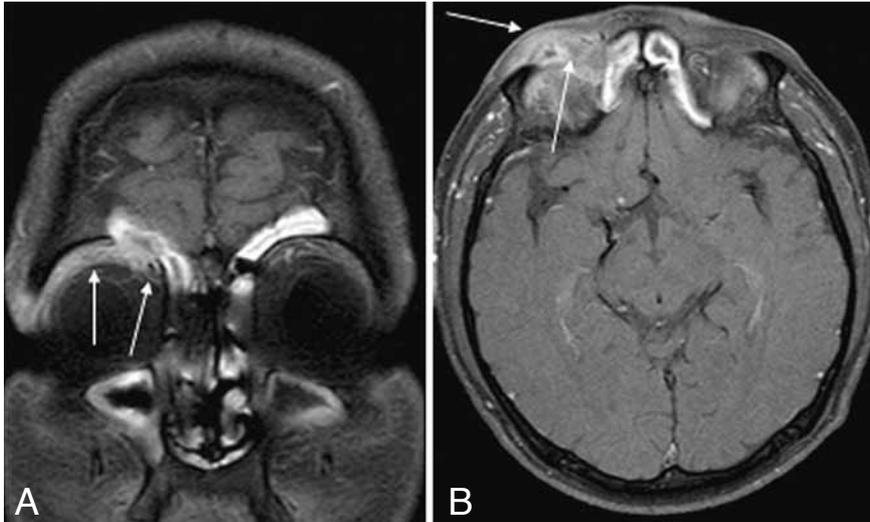


Fig. 2. — On the coronal (A) and axial (B) fat-suppressed T1-weighted images after intravenous injection of gadolinium soft tissue swelling with edema around the superior border of the right orbit and of the forehead on the right side is present (arrows) and enhances strongly.

Discussion

"But the inflammation of the dura mater and the formation of matter between it and the skull, in consequence of contusion, is generally indicated and preceded by one [sign] I have hardly ever known to fail; I mean a puffy, circumscribed, indolent tumor of the scalp and a spontaneous separation of the pericranium, from the skull under such tumor" (2). Sir Percival Pott originally described the condition as a complication of trauma, but it is more commonly observed as a complication of frontal sinusitis, as is the case in our patient who mentioned no prior trauma. PPT can also be seen a complication of a frontal reconstruction also rarely can occur as complication of dental implantation procedures (3-4). The condition is described as a frontal bone osteomyelitis resulting in a subperiosteal abscess presenting as a fluctuant mass over the forehead and scalp. In our patient the

presentation was slightly atypical with a most prominent swelling rather present in the eyelid.

PPT can be associated with subdural empyema, brain abscess, cortical vein thrombosis and epidural abscess. Because the mucosal venous drainage of the frontal sinus occurs through diploic veins, which communicate with the dural venous plexus, septic thrombi can potentially evolve from foci within the frontal sinus and propagate through this venous system. Thus intracranial involvement is possible with or without direct erosion of the frontal bone (5). In our patient no intracranial complications were seen, and the overall condition of the patient was good.

PPT is a quite rare disease and is almost always encountered in the pediatric and adolescent population. Furthermore, with the recent worldwide use of antibiotics, it has only occasionally been reported the last decades. Especially in the past

5 years, the frequency of published pediatric cases has increased. Undiagnosed or partially treated frontal sinusitis may lead to this serious complication, and the apparent increase in incidence rate may suggest that this complication of frontal sinusitis could be underestimated in clinical practice (6).

As a conclusion, a high index of suspicion based on the history and clinical examination is necessary to identify this rare but severe condition of a Pott's puffy tumor. When a patient with preseptal cellulitis either following sinusitis or trauma presents with a fluctuant swelling of the forehead, imaging is suggested with contrast enhanced CT or MRI. This case illustrates that the same alertness can be necessary if a patient only presents with swelling of the eyelid.

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