A Rare Case of Masked Septal Abscess in a Patient with Lower Respiratory Tract Infection on Prolonged Antibiotic Therapy

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Case Report
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Abstract

Background: In today's time, nasal septal abscess are rare. It is a condition most commonly seen after trauma or surgery due to the accumulation of pus under the mucoperiosteum. With the injudicious use of antibiotics, masked infections are a real threat.

Case Presentation: We present this rare case of masked nasal septal abscess in a middle -aged male with restrictive lung pathology and nasal trauma when treated with prolonged systemic antibiotics for the lung pathology.

Conclusion: Our report highlights the importance of recognising masked infection due to prolonged use of systemic antibiotics. We recommend reassessment of a patient with nasal injury 48 to 72 hours for detection of delayed development of septal abscess.

Key Words
Septal Abscess; Masked Infections

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Introduction:

Nasal septal abscess is a highly serious but uncommon condition affecting the nose. With the advent of modern antibiotics this condition has become rare. Nasal septal abscess usually occur after trauma or nasal surgery. Septal abscess develops when pus gets collected under the mucoperichondrial plane resulting in hypoxia of the underlying quadrangular cartilage leading to cosmetic nasal deformities such as septal perforation and saddle nose deformity. The nasal septal abscess can also lead to cavernous sinus thrombosis, cellulitis, leading to intracranial extension of infection[1].

Use of higher antibiotics alters the clinical course of disease with suppression of the presenting signs and symptoms creating a false sense of security in the minds of clinicians[2]. This phenomenon is termed as masked infection. Is not a rare phenomena and has been reported in other otolaryngological inflammation. Our search of literature did not show any evidence where a large nasal septal abscess has been masked by protracted use of antibiotics.

Case Report:

A 59-year-old male, tailor by occupation, had a history of syncope followed by injury to the nose during a social event in February 2018. The patient was brought by relatives with nose bleed and injury to external nose, along with shortness of breath and fever. Complete ENT examination revealed an undisplaced fracture of nasal bones with a few blood clots within the nasal cavity; rest of anterior rhinoscopy was unremarkable. A Computed Tomography of Brain and paranasal sinus was performed confirming the fracture of nasal bone rest of the structures were normal (Figure 1). Plan was to manage the fracture conservatively. The patient also showed tachypnoea with signs of respiratory distress with the use of accessory muscles of respiration. On auscultation, air entry was reduced on right side, with bronchial breathing and crepitations with dull note on percussion. Chest X-ray revealed mid- and lower zone consolidation on right side (Figure 2). ABG revealed partially compensated respiratory alkalosis. The patient was admitted under medical services with a provisional diagnosis of right lobar pneumonia and started on intravenous Beta lactams. Despite a protracted course of systemic antibiotics patient complained of difficulty in breathing and distress especially at night or on lying down and was eventually discharged on oral macrolides and bronchodilators. Pulmonary function tests revealed a restrictive curves and hence focus of management was centered on lower respiratory tract. Portable saturation monitoring showed hypoxic events especially in night or

Figure 1: Axial view of CT PNS showing undisplaced comminuted fracture of nasal bone

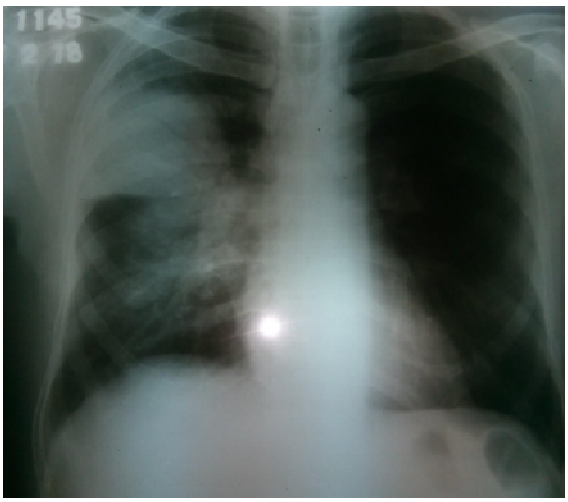

Figure 2: Chest X-ray PA view showing right sided mid- and lower zone consolidation

Figure 3: Large septal abscess

sleeping. As patient had no clinical improvement he was referred to the ENT department in April 2018 to rule out other causes of respiratory distress. The patient was asymptomatic but, on observation, was seen performing mouth breathing. On examination, a large septal abscess blocking both nasal passages was revealed (Figure 3). The patient had no systemic signs of infection, blood investigations showed neutrophilia, and rest of the haematological parameters were within normal limits (Hb 12.9, WBC 9100, Platelet 450x10^3 with neutrophils 73%). The abscess was drained as an emergency

procedure and nose packed for 72 hours post-operatively. On pack removal, the patient showed immediate improvement of symptoms, with marked relief from dyspnoea. Pus culture showed growth of *S. Aureus* sensitive to cephalosporins, β lactams and respiratory fluoroquinolones but resistant to piperacillin and tazobactam. After a short course of antibiotics, patient was mostly symptom-free and on MDI for restrictive lung disease. Patient has developed loss of septal support with saddle nose deformity and loss of tip support, which will be addressed at a later date.

Discussion:

There is limited availability of good quality evidence-based literature regarding the presentation and management of nasal septal abscess. Cloquet in 1810 gives the first report of nasal septal abscess. He gave the first description of draining the nasal septal abscess and reported the development of septal perforation secondary to this condition[3]. Trauma is the most common condition leading to the development of nasal septal abscess but nasal surgery, autoimmune diseases and other condition have been reported to lead to the development of such abscesses. Septal cartilage like rest of the cartilages is avascular and derives its nutrition from the investing layer of mucoperichondrium. Separation of this vital layer either due to a haematoma or an abscess leads to ischemia and cartilage necrosis. Ultimately the framework of the nose loses its integrity and there is collapse of the dorsum leading to saddle nose deformity as well as tip collapse. This was seen in our case also and a plan set up to address the cosmetic deformity.

S. aureus was isolated in our case and remains the most common pathogen isolated from nasal septal abscesses, methicillin-resistant *S. aureus* should be suspected in nosocomial settings[4]. The other organisms found in the culture of nasal septal abscess are *S. epidermidis*, *S. pneumoniae*, beta-hemolytic group A Streptococcus, *H. influenzae*, and anaerobic bacteria. There are isolated reports of fungal etiology especially in immunosuppressed hosts[5].

The signs and symptoms expected in suspicion of the nasal septal abscess are swelling, pain, redness and tender nose. Injudicious antimicrobial therapy is an under reported medical issue with a huge impact on the community. Such ill practices increase the risk of resistance in microorganisms and put the patient at unwarranted risk of allergic reactions and toxic effects. It creates an economic burden on the patient and his or her family[6]. Yet, what is often missed is the masking of signs and symptoms, thus delaying the correct diagnosis and late initiation of appropriate therapy. The reports of masked bacterial infection came soon after the antibiotic era started and have increased ever since[7]. Our case exemplifies the masking of symptoms of fever, pain, and clinical signs such as congestion and erythema and tenderness on palpation over the tip of nose when the patient was on systemic antibiotics.

CT scan is a useful tool in assessment of craniofacial trauma. In case of septal abscess apart from evaluation of trauma, CT helps to screen other possible causes such as rhinosinusitis and dental infections. It also acts as a tool to rule out possible complications. Yet in our case, the very early timing of CT scan before the onset of development of haematoma raises a red flag. This reiterates the point that a single point assessment of nasal trauma is often misleading and patient must be observed over few hours for the evolution of complications especially a haematoma. Prompt detection and drainage of nasal haematoma avoids the formation of abscess and subsequent sequelae. We want to stress the importance of follow up of cases with nasal trauma and a keen watch for septal bulge at least 48 to 72 hours post initial evaluation in emergency department.

Nasal obstruction has a negative effect on respiration during sleep, and nasal packing may cause nocturnal dip in oxygen saturation. This has been attributed to the naso-pulmonary reflex[8]. Our case also highlights the nasopulmonary reflex where nasal obstruction due to abscess was associated with hypoxia in our patient, with inadequate pulmonary reserve. This intermittent hypoxia in our patient was initially interpreted as a sign of restrictive lung disease and led to clinical confusion. We recommend ensuring nasal patency in all cases of intermittent hypoxia occurring after a history of nasal trauma or surgery.

Conclusion:

This rare case highlights the importance of masked infection and diligence in examination of nasal trauma. It shows that keeping close follow-up for 48 to 72 hours is vital to detect complications at an early stage. Nasal abscesses should be drained immediately to prevent infective, as well as cosmetic, sequelae. Long term nasal obstruction can lead to nocturnal hypoxia and should be kept in mind in elderly patients and in patients with reduced pulmonary reserve.

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