Case Report

A Nasal Septal Abscess in a Pediatric Patient

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Abstract Nasal septal abscess is an uncommon condition. This paper describes a case of nontraumatic, nasal septal abscess in an immune-competent child with no evidence of sinusitis or other localized infections. A 7-month-old infant with a 2-day history of nasal obstruction, fever, and a swollen, erythematous nose was admitted to our hospital. Physical examination revealed that the swelling of the nasal mucosa emanated from the septum. Computed tomography of the sinuses revealed a nasal septal abscess encompassing the entire nasal cavity. After drainage, the patient showed satisfactory recovery. Early diagnosis and prompt treatment, including incision and drainage and appropriate antibiotic coverage, are required to avoid serious complications.

Keywords nasal septum; abscess; MRSA

1. Introduction
A nasal septal abscess is uncommon, usually associated with poor immunity or secondary to nasal trauma, leading to hematoma and abscess formation. There are other, less common, causes such as abscess formation secondary to sinusitis or dental infections. Few reports are present concerning nontraumatic, nasal septal abscess formation in immune-competent patients. We present the case of a nontraumatic, nasal septal abscess in a healthy infant with no evidence of sinusitis or other localized infections.

2. Case presentation
A 7-month-old male infant with a 2-day history of nasal obstruction, fever, and a swollen, erythematous nose was admitted to our hospital. There was no history of trauma, immunodeficiency, or localized infections. Physical examination revealed that the swelling of the nasal mucosa emanated from the septum. The swelling of the nasal mucosa caused obstruction of both nasal cavities (Figure 1). Laboratory tests showed a white blood cell count of 22.5 × 10^9/L. (neutrophils, 61). The C-reactive protein (CRP) level was 6.8. Computed tomography (CT) of the sinuses revealed a nasal septal abscess encompassing the entire nasal cavity (Figure 2).

Under local anesthesia, needle aspiration was performed with an 18-gauge needle and the aspirated pus was cultured.

![Figure 1: Physical examination revealed marked swelling of the nasal septum and obstruction of both nasal cavities. S: septum.](image)

The swelling of the nasal mucosa emanating from the septum improved after the aspiration. The patient was started on intravenous clindamycin (CLDM; 40 mg/kg/day; 4 times/day). Subsequently, his pus culture revealed methicillin-resistant *Staphylococcus aureus* (MRSA), which was sensitive to CLDM. In order to investigate the patient’s cellular immune status, the immunoglobulins (IgA, IgM, and IgG) and the lymphocyte subsets (CD3, CD4, CD8, and CD19) were analyzed during the hospitalization. There were no abnormal findings in either the immunoglobulin or lymphocyte subset analyses. Although after 7 days of antibiotic therapy, the blood study normalized, the patient experienced a recurrent nasal obstruction with significant bilateral septal bulging.

Owing to the recurrence of nasal obstruction, we incised and drained the anterior portion of the left nasal septum under general anesthesia. The abscess cavity was irrigated with normal saline. A gauze strip was inserted into the abscess cavity to facilitate drainage. The gauze was removed 2 days later. One week later, the patient’s nasal mucosa had healed well and physical examination revealed only slight edema. The nasal airways remained patent and in excellent condition during follow-up over a 6-month period.
Figure 2: Computed tomography (CT) examination revealed a thin-walled, cyst-like collection with peripheral enhancement involving the nasal septum.

3. Discussion
Nasal septal abscess is rather uncommon and is defined as a collection of purulent material between the cartilaginous or bony septum and the overlying mucoperichondrium or mucoperiostium [1]. Characteristically, the nasal septum appears unilaterally or bilaterally swollen; especially in the anterior, cartilaginous portion. Nearly 75% of nasal septal abscesses are secondary to trauma [1]. Other reported etiologies include furunculosis of the nasal vestibule, dental infection, acute sinusitis, nasal surgery, and immune deficiency [3, 4, 7]. Thus far, only 1 previous report of a nontraumatic, nasal septal abscess in an immune-competent child has been reported [6].

Clinically, the diagnosis of a nasal septal abscess is made by inspection with anterior rhinoscopy. When a nasal septal abscess is suspected, a CT scan of the paranasal sinuses is essential to evaluate the extent of the abscess and differentiate the mass from a neoplasm. Delayed treatment can result in a saddle-nose deformity or more serious complications such as brain abscess, meningitis, cavernous sinus thrombosis, or subarachnoid empyema. Immediate incision and drainage, in addition to antibiotic therapy, are of paramount importance in obtaining successful treatment outcomes. Antibiotic therapy alone is insufficient. Prior to surgical incision and drainage, needle aspiration should be performed to reduce the pressure caused by the mass (thus decreasing the incidence of intracranial extension [11]) and the fluid cultured for identification of specific pathogens. The most commonly cultured organism from nasal abscesses is \textit{S. aureus} [1, 2]. Other pathogens include \textit{Streptococcus pneumonia}, \textit{S. milleri}, \textit{S. viridans}, \textit{S. epidermidis}, \textit{Haemophilus influenza}, and other anaerobic species [2]. In our patient, the Gram stain and culture revealed the presence of MRSA (which has previously not been reported as a causative pathogen for nasal septal abscesses formation). We hypothesize that the MRSA infection may have occurred at a pediatric clinic, where medical staff might have suctioned the infant’s nasal mucus with a nelaton catheter.

We performed a vertical incision in the septal mucosa and placed a drain, as previously reported [1]. Some authors recommend a horizontal incision from the posterior to anterior side, across the swollen mucosa, and as low as possible on the septum, to prevent subsequent formation of purulent loculation [5, 8]. We consider that it is not incision direction that is important but performing sufficient incision and drainage.

4. Conclusion
Nasal septal abscess is an uncommon condition in a healthy child that necessitates urgent surgical management in order to prevent serious complications. The incidence of severe complications is directly related to delays in diagnosis and treatment. Our report emphasizes a prompt and correct diagnosis immediately followed by appropriate treatment including incision and drainage and appropriate antibiotic coverage is necessary.

References