Recurrent Nasal Septal Hematoma and Abscess: A Rare Manifestation of Leukemia

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Nasal septal abscess and hematoma are rare clinical entities. To the best of our knowledge, there have only been 2 cases of nasal septal abscess associated with haematological malignancy reported in the literature. Herein, we present a unique case of recurrent spontaneous nasal septal hematoma and abscess in a patient prior to and after the diagnosis of acute myelogenous leukemia. Its rarity in immunocompromised population, clinical presentation, treatment and complications are further discussed.

Keywords: Nasal septum; Hematoma; Abscess; Leukemia

Nasal septal hematoma and nasal septal abscess are often associated with facial and nasal trauma,¹ and they are more often seen in the pediatric population.² This represents a surgical emergency that, if left untreated, can result in not only cosmetic distortion to the shape of the nose, but also to a variety of potentially life threatening complications such as brain abscess, meningitis, and cavernous sinus thrombosis.¹ Although it has notable potential complications, spontaneous nasal septal hematoma and abscess have been given little attention in the medical literature due to their rarity particularly in the group of immunocompromised population. Thus, early recognition of this rare clinical entity is imperative, particularly in the immunocompromised population. The prognosis is often favorable with timely intervention. Herein, we present a case of recurrent spontaneous nasal septal hematoma and abscess in a patient with acute myelogenous leukemia.

Case Report

A male patient, aged 51 years, with underlying schizophrenia presented to us with insidious onset of bilateral nasal blockage with increasing painful swellings in the nasal cavity of 2 weeks duration. This was associated with shortness of breath for 3 days prior to the presentation. He denied any major or minor facial

trauma in the weeks prior, nor did he have any history of sinusitis, septal furuncle, or high risk behaviors. He denied constitutional symptoms. Clinically, he had hyponasal speech.

Nasal endoscopic examination demonstrated tender, erythematous, swollen nasal septum at bilateral nasal cavities (Figure 1). Incision and drainage of the left septal swelling was performed, with evacuation of 10 cc purulent material from the submucoperichondrial plane. Post drainage, anterior septal cartilage appeared to be eroded. Penrose drain and nasal packings were employed to prevent the re-accumulation of the blood and pus. The patient was treated for a septal abscess and started on intravenous antibiotics.

Laboratory investigations reported normal blood counts of total white cells of 10, hemoglobin of 14.4 g/dL, and platelet count of 438×10^9 per liter, with an elevated erythrocyte sedimentation rate (ESR) of 99 mm/hour. Pus and fungal culture and sensitivity (C&S) demonstrated no growth. Pus acid fast bacilli (AFB) direct smear and Montoux test were equally negative. Histopathological examination of the tissue taken from the nasal mucosa edge revealed acute inflammation with no malignant cells seen. Chest radiograph revealed no abnormality. Serological testing was not performed.

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Figure 1. Clinical photograph illustrates swollen nasal septum at bilateral nasal cavities.

The patient improved and was discharged home after a week, and upon evaluation after a month, he showed complete resolution of his nasal symptoms, although his external nose appeared to be saddled. Nasal endoscopic examination at that time revealed normal findings.

Approximately 4 months after the episode of nasal septal abscess, the patient was admitted to the medical ward for community acquired pneumonia with type one respiratory failure. At this time, his blood counts demonstrated bicytopenia with hemoglobin level of 6.2 g/dL and platelet count of 25×10^9 per liter. He was then diagnosed with acute myelogenous leukemia (AML). Full blood picture (FBP) and bone marrow aspirate and trephine (BMAT) revealed 68% and 35% blast cells, respectively. He underwent multiple episodes of platelet and packed cells transfusion and was then started with chemotherapy.

While undergoing chemotherapy, the patient again presented with multiple episodes of recurrent septal hematoma, and multiple aspirations were performed. Cytology content of aspirate revealed no evidence of malignancy.

A month later, the patient again presented with septal hematoma. However, he refused aspiration or any surgical intervention. During follow-up, upon completion of chemotherapy, the patient was asymptomatic of nasal symptoms, and the nasal septum swelling appeared to have completely subsided.

Discussion

Nasal septal hematoma and nasal septal abscess are both rare clinical entities. Septal hematoma is more commonly seen after facial trauma, followed by iatrogenic causes such as after septal surgery, ethmoid or sphenoid sinusitis, nasal furuncle, and tobacco snuffing.^{1,3} Septal abscess can be a sequela of untreated septal hematoma. Rarely, septal abscess has been

reported in the immunocompromised population including diabetes⁴ and HIV.^{5,6} To the best of our knowledge, there have only been two cases of nasal septal abscess associated with hematological malignancy reported in the literature.⁷

Nasal septal hematoma or abscess is defined as accumulation of blood or purulent material in the space between the cartilaginous or bony septum and the mucoperichondrium or mucoperiosteum layer.^{2,7} The mucoperichondrium layer has submucosal vessels that supply the septal cartilage. The formation of the blood collection separates the mucoperichondrium from the septal cartilage and impedes the blood supply to the nasal septum. As a consequence, it may lead to pressure necrosis and ischemia of the septal cartilage, hence causing severe cosmetic distortion of the nose.⁸ Septal hematoma formation can also be an ideal medium for the colonization of bacteria that leads to the formation of septal abscess, which can have a more disastrous outcome.^{7,8}

Prevalence of septal hematoma in adults is lower as compared to in the pediatric population. This is because children have a softer and more flexible septal cartilage combined with a loosely adherent mucoperichondrium making a septal hematoma more common even after a minor trauma.⁹ A spontaneous, recurrent nasal septal hematoma or abscess is far less common in the adult population. It has been reported that the Nigerian population has a higher occurrence of spontaneous septal hematoma; however, on detailed follow-up, these patients were found to use tobacco snuff, which could be a precipitating factor for septal hematoma and abscess.³

Our case is of particular interest as the septal abscess and recurrent septal hematoma occurred spontaneously in an immunocompromised patient, though it could be attributed to the underlying thrombocytopenia and immunosuppression. Debnam et al⁷ reported two cases of nasal septal abscess

associated with immunosuppression. In one case, an elderly patient with acute myelogenous leukemia was diagnosed with nasal septal abscess 5 months after the diagnosis of leukemia; in another, a teenager with T cell lymphoblastic lymphoma was reported to have septal abscess after minor nasal trauma. Both patients were undergoing chemotherapy at the diagnosis of concurrent nasal septal abscess, and both were successfully treated with surgical drainage.⁷ Avcı et al¹⁰ also reported a rare case of spontaneous nasal septal hematoma in a patient with idiopathic thrombocytopenia and chronic renal failure in Turkey.¹⁰

In our case, we postulate that the formation of spontaneous nasal abscess in the patient was due to his immunosuppression, while the spontaneous septal hematoma could be due to his underlying thrombocytopenia adding to his immunosuppressed condition. There may be a relationship between nasal septal hematoma and abscess with hematological malignancy, though to date there is no comprehensive literature about it, other than the two reported by Debnam.⁷ Our case report serves as the third one.

Nasal presentations in hematological malignancies or granulomatous disorders are not uncommon. The list of differential diagnosis often is broad and includes natural killer (NK)/T cell lymphoma, granulomatosis polyangiitis (GPA), sarcoidosis, and fungal infections. NKT cell lymphoma often presents as extensive midline necrotic lesions that involve the maxillary sinus, nasopharynx, oropharynx, and palate.¹¹ Contrary to that, GPA often manifests as septal perforation with cartilage destruction, which results in saddle nose deformity.¹² Leukemia associated with fungal infections like aspergillosis, mucormycosis, and phaeohyphomycosis in the nose and paranasal sinuses are not rare. A review conducted on the association of mucormycosis with leukemia revealed 58.6% of the patients with mucormycosis had underlying leukemia, with the initial site of involvement being sinus and nose.¹³ Singer et al¹⁴ reported two cases of invasive aspergillus sinusitis, and Douer et al¹⁵ reported a case of nasal phaeohyphomycosis associated with leukemia. This is mainly because hematological malignancies compromise the host's immune system, hence fungal organisms can easily invade and blossom. However, these fungal sinonasal conditions are different entities as compared to the case that we report, as nasal septal hematoma and abscess are mainly a condition with boggiess confined within the nasal septum with no invasion to other parts of the nasal cavity or paranasal sinuses, and the content of the nasal septum hematoma and abscess are mainly sterile. This is further supported by the study done by Nwosu and Nnadede¹⁶ in which the culture of only 2 out of 53 patients with nasal septal hematoma and abscess reported as staphylococcus aureus, whereby the remainder were sterile content. Despite these reports, the association of nasal septum hematoma and abscess with hematological malignancy, as seen in our case, has not been much reported in the literature.

Spontaneous nasal septal hematoma or abscess is not a common presenting symptom or sign of leukemia, but it could be a sign of underlying immunosuppression in a patient, which should lead to further work-up and investigation in the clinical setting. As in our patient, who presented with nasal septal abscess 5 months prior to the diagnosis of acute leukemia, this could prompt us to earlier evaluation and diagnosis of his immunosuppressed condition. Additionally, our patient had recurrent spontaneous nasal septal hematoma upon undergoing chemotherapy after the diagnosis of acute myelogenous leukemia, which sheds light on the importance of nasal presentation in hematological malignancy.

Nasal septal hematoma as a clinical entity, which although exceedingly rare, should never be overlooked, especially in the immunocompromised population. Clinical manifestations of nasal septal hematoma and abscess include nasal obstruction (95%), pain (50%), rhinorrhea and fever (25%), nasal bone fracture (15%), and bleeding (10%).² In differentiation with nasal septal abscess, which is often painful, nasal septal hematoma often presents as painless nasal swelling.¹⁷ Clinical examination, particularly nasal endoscopic examination, often demonstrates smooth boggiess or swollen nasal septum.⁹ Though at times septal hematoma/abscess may be misdiagnosed as deviated nasal septum or inferior turbinate hypertrophy by a less experienced clinician,^{6,18} diagnosis can be confirmed with needle aspiration.² Therefore, a diligent history taking and meticulous clinical evaluation are of the utmost important in aiding diagnosis. Surgical drainage of septal hematoma and abscess with implementation of antibiotics are of paramount importance in treating the condition, relieving the pressure on the septal cartilage and obtaining specimen for culture and sensitivity. Penrose drain and nasal packings are likewise important to prevent re-accumulation of the collection.¹⁶ Though culture of septal hematoma content is often sterile, etiological organisms like *Staphylococcus aureus* and fungi have been reported mainly in the immunocompromised population.^{6,16} Serological testing like cytoplasmic and perinuclear anti-neutrophil cytoplasmic antibodies were not done in our case, as the clinical presentation demonstrated smooth boggiess over bilateral nasal septum, and the aspiration clearly showed nasal septal hematoma. However, it is valuable in aiding the diagnosis in cases with extensive necrotic septal cartilage lesion, which is a common presentation of GPA or NKT lymphoma.¹²

Nasal septal hematoma and abscess can often lead to a variety of catastrophic sequelae that encompass local, systemic, intracranial, and orbital complications. Local cosmetic distortion—saddled nose—is a commonly known complication of septal hematoma/abscess. Life threatening intracranial complications include brain abscess, meningitis, and cavernous sinus thrombosis, which spread via veins in the nasal septum. Direct invasion or congenital dehiscence can be life threatening and fatal, particularly in the immunocompromised population.¹

In conclusion, spontaneous nasal septal hematoma and abscess are rare clinical entities, but it should never be overlooked, particularly in the immunocompromised population with hematological malignancy. Though exceedingly uncommon, nasal septal abscess or hematoma is a rhinological emergency that should be treated meticulously and promptly. We encourage a heightened index of suspicion and awareness towards nasal septal hematoma and abscess in atraumatic immunocompromised population; hence, early surgical treatment can be implemented to avert possible disastrous outcome.

References

1. Ambrus PS, Eavey RD, Baker AS, Wilson WR, Kelly JH. Management of nasal septal abscess. *Laryngoscope*. 1981;91(4):575-582.
2. Canty PA, Berkowitz RG. Hematoma and abscess of the nasal septum in children. *Arch Otolaryngol Head Neck Surg*. 1996;122(12):1373-1376.
3. Chukuezi AB. Nasal septal haematoma in Nigeria. *J Laryngol Otol*. 1992;106(5):396-398.
4. Dinesh R, Avatar S, Haron A, Suhana, Azwarizan. Nasal septal abscess with uncontrolled diabetes mellitus: case reports. *Med J Malaysia*. 2011;66(3):253-254.
5. Sandel HD IV, Davison SP. Three spontaneous occurrences of nasal septal abscess in patients with chronic asymptomatic HIV-the need for early intervention and reconstruction. *Ear Nose Throat J*. 2009;88(8):1058-1066.
6. Shah SB, Murr AH, Lee KC. Nontraumatic nasal septal abscesses in the immunocompromised: etiology, recognition, treatment, and sequelae. *Am J Rhinol*. 2000;14(1):39-43.
7. Debnam JM, Gillenwater AM, Ginsberg LE. Nasal septal abscess in patients with immunosuppression. *AJNR Am J Neuroradiol*. 2007;28(10):1878-1879.
8. Sanyaolu LN, Farmer SE, Cuddihy PJ. Nasal septal haematoma. *BMJ*. 2014;349:g6075.
9. Mooney CP, Rimmer J. Spontaneous nasal septal haematoma and abscess: a case report and literature review. *Rhinology Online*. 2018;1(1):122-126.
10. Avcı D, Sahin MI, San F. Spontaneous septal hematoma developing on underlying idiopathic thrombocytopenia: a rare case. *Praxis of Otorhinolaryngology*. 2016;4(3):142-144.
11. Karaman E, Yilmaz M, Alimoglu Y, Edizer DT, Isildak H, Ozek H. Extranodal sinonasal natural killer/T-cell lymphoma presenting as chronic sinusitis and necrotic wound infection. *J Craniofac Surg*. 2009;20(6):2095-2096.
12. Ralli M, D'Aguzzo V, Falasca V, Turchetta R, Greco A, de Vincentiis M. Nasal manifestations in granulomatosis with polyangiitis: A case report and review of the literature. *Otolaryngol Open J*. 2018;4(2):22-25. Available at: <https://dx.doi.org/10.17140/OTLOJ-4-149>.
13. Sarvestani AS, Pishdad G, Bolandparvaz S. Epidemiology and clinical characteristics of mucormycosis in patients with leukemia; A 21-year experience from Southern Iran. *Bull Emerg Trauma*. 2014;2(1):38-43.
14. Singer MS, Seibel NL, Vezina G, Choi SS, Dinndorf PA. Successful treatment of invasive aspergillosis in two patients with acute myelogenous leukemia. *J Pediatr Hematol Oncol*. 2003;25(3):252-256.
15. Douer D, Goldschmied-Reouven A, Segev S, Ben-Bassat I. Human Exserohilum and Bipolaris infections: report of Exserohilum nasal infection in a neutropenic patient with acute leukemia and review of the literature. *Med Mycol*. 1987;25(4):235-241.
16. Nwosu J, Nnadede P. Nasalseptal hematoma/abscess: management and outcome in a tertiary hospital of a developing country. *Patient Prefer Adherence*. 2015;9:1017-1021.
17. Chung JC-K, Wong AT-K, Ho W-K. Spontaneous nasal septal abscess presenting as complete nasal obstruction. *International Journal of Otolaryngology and Head & Neck Surgery*. 2013;2(03):79-81. Available at: <https://dx.doi.org/10.4236/ijohns.2013.23019>.
18. Adnane C, Adouly T, Taali L, et al. Unusual Spontaneous Nasal Septal Abscess. *Journal of Case Reports and Studies*. 2015;3(3):5-7. Available at: <http://www.annexpublishers.co/articles/JCRS/volume-2-issue-6/Unusual-Spontaneous-Nasal-Septal-Abscess.pdf>

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