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

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**Abstract**

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

## **Introduction**

Nasal septal hematoma and nasal septal abscess are often associated with facial and nasal trauma,<sup>1</sup> more often they are seen in the paediatric population.<sup>2</sup> It is a surgical emergency which can result in not only cosmetic distortion to the shape of the nose if left untreated, but also a variety of potentially life threatening complications such as brain abscess, meningitis and cavernous sinus thrombosis.<sup>1</sup> Albeit notable complications, spontaneous nasal septal hematoma and abscess have been given little attention in the medical literature due to its rarity particularly in the group of immunocompromised population. Thus it is imperative to have early recognition on this rare clinical entity particularly in the immunocompromised population. The prognosis is often favourable with timely intervention.

## **Case Report**

A 51-year-old gentleman with underlying schizophrenia presented to us with insidious onset of bilateral nasal blockage with increasing painful swellings in the nasal cavity for 2 weeks duration. It was associated with shortness of breath for 3 days prior to the presentation. Otherwise, he denied any minor or major facial trauma in the weeks prior to this, nor any history of sinusitis, septal furuncle, or high risk behaviours. He denied constitutional symptoms.

Clinically, he had hyponasal speech. Nasal endoscopic examination demonstrated tender erythematous swollen nasal septum at bilateral nasal cavities (Fig. 1).



**Fig. 1.** Clinical photograph illustrates swollen nasal septum at bilateral nasal cavities.

Incision and drainage of the left septal swelling was performed with evacuation of 10 mL 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 as septal abscess and started with intravenous antibiotics.

Laboratory investigations reported normal blood counts of total white cells of 10, haemoglobin of 14.4 g/dL and platelet of  $438 \times 10^9/L$  with a raised 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.

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

Four months after the episode of nasal septal abscess, the patient was admitted to medical ward for community acquired pneumonia with type one respiratory failure. Upon the stay, his blood counts demonstrated bicytopenia with haemoglobin level of 6.2 g/dL and platelet of  $25 \times 10^9/L$ . He was then diagnosed with acute myelogenous leukemia (AML) with full blood picture (FBP) and bone marrow aspirate and trephine (BMAT) revealed 68% and 35% of blast cells respectively. He underwent multiple episodes of platelet and packed cells transfusion and was then started with chemotherapy.

Upon on going 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 swellings appeared to be completely subsided.

## **Discussion**

Nasal septal hematoma and nasal septal abscess are both rare clinical entities. More commonly septal hematoma is seen after facial trauma, followed by iatrogenic cause like

after septal surgery, ethmoid or sphenoid sinusitis, nasal furuncle, and tobacco snuffing.<sup>1,3</sup>

Septal abscess can be a sequela of untreated septal hematoma. Rarely, septal abscess has been reported in the immunocompromised population including diabetes<sup>4</sup> and HIV<sup>5,6</sup>. To the best of our knowledge, there have only been two cases of nasal septal abscess associated with hematological malignancy reported in the literature.<sup>7</sup> Herein, we present a case of recurrent spontaneous nasal septal hematoma and abscess in a patient with acute myelogenous leukemia.

Nasal septal hematoma or abscess is defined as accumulation of blood or purulent material respectively in the space between the cartilaginous or bony septum and the mucoperichondrium or mucoperiosteum layer.<sup>2,7</sup> Mucoperichondrium layer has submucosal vessels that supply to the septal cartilage. The formation of the blood collection, which in turn, separates 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 and hence causing severe cosmesis distortion of the nose.<sup>8</sup> Having said that, septal hematoma formation can also be an ideal medium for the colonization of bacterial that leads to the formation of septal abscess which has a more disastrous outcome.<sup>7,8</sup>

Prevalence of septal hematoma in adult is lower as compared to the paediatric population. It is owing to the fact that child has a softer and more flexible septal cartilage combined with a loosely adherent mucoperichondrium making a septal hematoma more common even after a minor trauma.<sup>9</sup> A spontaneous recurrent nasal septal hematoma or abscess is far less common in the adult population. Though it has been reported that Nigerian population has a higher occurrence of spontaneous septal hematoma however on detailed

follow up they were found to take tobacco snuff which could be a precipitating factor to septal hematoma and abscess.<sup>3</sup>

Our case is of particularly interesting 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 reported 2 cases of nasal septal abscess associated with immunosuppression in which an elderly patient with acute myelogenous leukemia was diagnosed with nasal septal abscess 5 months after the diagnosis of leukemia and another teenager with T cell lymphoblastic lymphoma was reported to have septal abscess after minor nasal trauma. Both patients were undergoing chemotherapy upon the diagnosis of concurrent nasal septal abscess and successfully treated with surgical drainage.<sup>7</sup> Adding to that, Avci and colleagues<sup>10</sup> also reported a rare case of spontaneous nasal septal hematoma in a chronic renal failure patient with idiopathic thrombocytopenia in Turkey.

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. 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 which include natural killer

(NK)/T cell lymphoma, granulomatosis polyangiitis (GPA), sarcoidosis and fungal infections. NKT cell lymphoma often presents as extensive midline necrotic lesions which involve the maxillary sinus, nasopharynx, oropharynx and palate.<sup>11</sup> On the contrary, GPA often manifests as septal perforation with cartilage destruction which results in saddle nose deformity.<sup>12</sup> 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 in which it revealed 58.6% of the patients with mucormycosis had underlying leukemia with the initial site of involvement being sinus and nose.<sup>13</sup> Singer et al. reported two cases of invasive aspergillus sinusitis whereby Douer et al report a case of nasal phaeohyphomycosis associated with leukemia.<sup>14,15</sup> This is mainly due the fact that hematological malignancies compromise the host defence 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 boggy content confined within the nasal septum with no invasion to the other part 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 Nnadede in which the culture of only two out of fifty three patients with nasal septal hematoma and abscess reported as staphylococcus aureus whereby the rest were sterile content.<sup>16</sup> Having said that, 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 immunosuppressed status of a patient

which should lead to further work up and investigation in the clinical setting. As in our patient, he presented with nasal septal abscess 5 months prior the diagnosis of acute leukemia which could prompt us earlier on his immunosuppressed condition. Adding to that, he further had recurrent spontaneous nasal septal hematoma upon undergoing chemotherapy after the diagnosis of acute myelogenous leukemia sheds the light on the importance of nasal presentation in hematological malignancy.

Nasal septal hematoma is a clinical entity, though 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%).<sup>2</sup> In distinction with nasal septal abscess which is often painful, nasal septal hematoma on the other hand often presents as painless nasal swelling.<sup>17</sup> Clinical examination, particularly nasal endoscopic examination, often demonstrates smooth boggy or swollen nasal septum.<sup>9</sup> Though at times septal hematoma/abscess may be misdiagnosed as deviated nasal septum or inferior turbinates hypertrophy by a less experienced clinician,<sup>6,18</sup> diagnosis can be confirmed with needle aspiration.<sup>2</sup> Therefore, a diligent history taking and meticulous clinical evaluation are utmost important in aiding the 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 the reaccumulation of the collection.<sup>16</sup> Though culture of septal hematoma content is often sterile, etiological organism like staphylococcus aureus and fungal element has been reported mainly in the immunocompromised population.<sup>6,16</sup> Serological testing like

cytoplasmic and perinuclear anti-neutrophil cytoplasmic antibodies were not done in our case as the clinical presentation demonstrated smooth boggy over bilateral nasal septum with 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.<sup>12</sup>

Nasal septal hematoma and abscess can often lead to a variety of catastrophic sequelae which 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 nasal septum, direct invasion or congenital dehiscence, can be life threatening and fatal particularly in the immunocompromised population.<sup>1</sup>

In conclusion, spontaneous nasal septal hematoma and abscess are rare clinical entities, particularly in the immunocompromised population with hematological malignancy, should never be overlooked. Though exceedingly uncommon, nasal septal abscess or hematoma is a rhinological emergency which 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 and hence early surgical treatment can be implemented to avert possible disastrous outcome.

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