CASE REPORT

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Delayed Diagnosis of Nasal NK/T-Cell Lymphoma Following Rhinoplasty: A Cautionary Case Report

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Abstract

Background: Extranodal NK/T-cell lymphoma, nasal type (ENKTCL-NT) often presents with non-specific symptoms that mimic benign sinonasal conditions, leading to diagnostic delays. This challenge is amplified in post-operative patients, where symptoms can be attributed to surgical sequelae.

Case Presentation: A 43-year-old male presented with persistent nasal obstruction and discharge three months after undergoing rhinoplasty. Initial evaluation suggested post-operative inflammation. However, subsequent imaging revealed a destructive soft tissue mass with extensive bone erosion. Endoscopic biopsy and immunohistochemical analysis (positive for CD3, CD56, CD30) confirmed a diagnosis of high-grade ENKTCL-NT.

Conclusion: The patient achieved complete remission after definitive chemoradiotherapy. This case underscores that ENKTCL-NT can masquerade as routine post-surgical inflammation. Clinicians must maintain a high index of suspicion for malignancy in patients with refractory or progressive sinonasal symptoms following surgery to ensure timely diagnosis and treatment.

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Introduction

Extranodal natural killer/T-cell lymphoma, nasal type (ENKTCL-NT), is a rare and aggressive non-Hodgkin lymphoma universally associated with Epstein–Barr virus (EBV) infection. Characterized by angiocentric and angiodestructive growth patterns, this malignancy predominantly affects the upper aerodigestive tract, leading to extensive necrosis and midline facial destruction(1). While the disease is more prevalent in East Asia and Latin America, its diagnosis remains a challenge globally due to its nonspecific clinical presentation. Early symptoms such as nasal obstruction, rhinorrhea, and epistaxis mimic common benign conditions such as chronic rhinosinusitis or Wegener's granulomatosis, often resulting in significant diagnostic delays and poor prognostic outcomes (2,3). Clinically, patients typically present with persistent rhinorrhea and nasal obstruction preceding mucosal ulceration and bone destruction by several months, leading to delayed diagnosis and reduced survival (2).

The diagnostic complexity is further exacerbated when clinical presentation coincides with recent surgical interventions. In the post-operative setting, persistent sinonasal symptoms are frequently attributed to expected

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sequelae, such as inflammation, mucosal edema, or structural healing processes (4). Consequently, an underlying malignancy may be overlooked during the opportunity for effective treatment.

In this report, we present a case of angiocentric T-cell lymphoma in a 43-year-old male whose initial symptoms of nasal fullness and discharge were masked by a history of recent rhinoplasty. This case highlights the importance of maintaining a high index of suspicion for malignancy in patients presenting with persistent, refractory nasal symptoms following sinonasal surgery, even in the absence of classic B-symptoms. We discuss the diagnostic pitfalls, the role of early histopathologic evaluation, and the implications for clinical management in the presence of surgical confounders.

Patient Information

The patient was a 43-year-old man known case of diabetes mellitus (DM) and hypertension (HTN) referred with a chief complaint of a two-month history of nasal fullness and watery discharge.

He had undergone rhinoplasty with intraoperative septal perforation repair five months earlier. Patient did not have symptoms of headache, blurred vision, or epistaxis, but reported persistent discharge, hyposmia, and mild facial pressure, with no known allergies or hereditary disease, and a Smoking history. He did not report recent weight loss, fever, or sweating symptoms. Patient was awake and alert with stable hemodynamics and normal temperature. On examination, He had hyponasal speech, Nasal discharge, and post-nasal discharge(PND). No blurred vision or diplopia was seen. The 5th and 7th nerve examination and eye movement were normal and symmetric. On rhinoscopy, bilateral septal swelling and watery discharge were seen.

Patient underwent a facial and paranasal sinus CT scan for further workup. Spiral CT scan of the paranasal sinuses demonstrated erosion and bone destruction along the medial walls of both maxillary sinuses, accompanied by a suspicious bony defect. There was diffuse mucosal thickening of both sinuses, and a cavity-like lucency was observed within the nasal passages. The osteomeatal complexes (OMCs) appeared obliterated bilaterally, and both maxillary sinuses were markedly opacified, compatible with sinonasal obstruction and inflammatory infiltration.

Differential diagnosis of Septal hematoma/abscess, Autoimmune reaction, Granulomatous diseases, and Foreign body reaction was considered for the patient. Blood test carried out. Low levels of Hemoglobin and red blood cell count were observed. Autoimmune panel required all of them were in normal range (Tables 1 and 2).

Table 1. Laboratory results

Parameter	Range / Result
WBC	5.2–5.9 ×10⁹/L
Hb	5.9–9.4 g/dL
MCV	78 fL
RBC	3.6 ×10¹²/L
Plt	166 ×10⁹/L
ESR	15 mm/hr
CRP	23 mg/L
Cr	0.9 mg/dL

Table 2. Autoimmune panel

Test	Value
C-ANCA PR3	0.6
P-ANCA MPO	0.2
Anti Beta2 Glycoprotein IgG	4.7
Anti Beta2 Glycoprotein IgM	40.8
Anti-cardiolipin IgG	1.2
Anti-cardiolipin IgM	21.0
C3	136.3
C4	38.3
CH50	124
Anti CCP	<0.5
Immunoglobulin G	1356
ANA	0.46
Anti dsDNA	7.7
Anti SSB - LA	0.1
Anti CCP	<0.5

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Abdominal sonography revealed Grade I hepatic steatosis and splenomegaly (151 mm), alongside incidental gallbladder sludge, as the primary abnormalities. Doppler evaluation confirmed normal hepatoportal venous flow and caliber.

Upper gastrointestinal endoscopy, performed for evaluation of anemia, revealed linear erythematous mucosa with a few erosive foci in the pre-pyloric region and a healed linear ulcer with a central fibrotic atrophic scar near the pylorus. A 15 mm clean-based duodenal ulcer was identified at the D1–D2 junction, while the second part of the duodenum appeared normal; the esophagus was unremarkable. Endoscopic gastric antrum biopsy revealed mild chronic active gastritis with intact surface epithelium, no intestinal metaplasia or dysplasia, and was negative for H. pylori organism, excluding secondary infectious or systemic inflammatory enteropathy. To precisely delineate tumor extent and complete systemic staging, further cross-sectional imaging was obtained. Brain MRI revealed a 28×16 mm soft tissue mass involving the left nasal ala and nasolabial fold, with extension to the hard palate and left maxillary alveolar ridge. left mastoiditis and T2 and FLAIR high signal foci with nonspecific appearance in both centrum semiovale. Neck CT confirmed the soft tissue mass (measuring 22×33 mm) and noted reactive-appearing jugular lymph nodes (max SAD: 10 mm). The chest CT was clear for pulmonary or mediastinal metastases. Abdominal CT confirmed splenomegaly (span: 159 mm) and noted a small amount of free pelvic fluid. Finally, a bone marrow aspiration and biopsy (BMA/BMB) was performed. Histopathologic evaluation demonstrated a normocellular marrow (55% cellularity) with trilineage hematopoiesis (M/E ratio 2.5:1).

There was no evidence of metastasis, fibrosis, or granuloma. IHC staining of the bone marrow was negative for CD30 and large atypical cells (Figures 1 and 2).

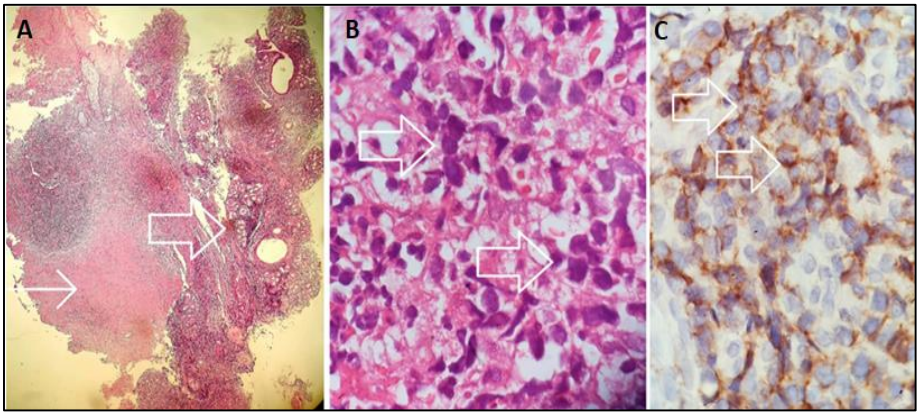

Figure 1. Histopathological and immunohistochemical features suggestive of nasal-type NK/T-cell lymphoma. (A) High-power view showing atypical lymphoid cells with irregular, hyperchromatic nuclei (arrow), H&E stain, ×100. (B) Low-power view of respiratory mucosa demonstrating seromucinous glands (large arrow) and areas of necrosis (small arrow), H&E stain, ×100. (C) Immunohistochemical stain highlighting CD56-positive atypical lymphoid cells (brown membrane staining), ×100.

In sinus endoscopy, Crusts and ulcers in the nasal cavity, extensive perforation in the septum, and destruction of the cartilaginous septum were observed. Inferior Turbinate resected, and a Biopsy from the turbinates and perforation performed. Histopathologic examination revealed ulcerated and necrotic respiratory mucosa of the nasal cavity with dense infiltration of atypical lymphocytes with large, irregular, and hyperchromatic nuclei, which are positive for CD45, CD3, CD56, and CD30 and negative for CD20 and CD4.

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Immunohistochemical staining confirmed high-grade NK T-Cell lymphoma.

The overall pattern was consistent with high-grade anaplastic T-cell lymphoma of the nasal septum (M9714/3). The diagnosis of Extranodal Natural Killer/T-Cell lymphoma (nasal type) was confirmed by histopathology results. The patient received six sessions of chemotherapy after 27 sessions of radiation. After this treatment, sinus endoscopy and MRI of the sinuses were clear without pathology.

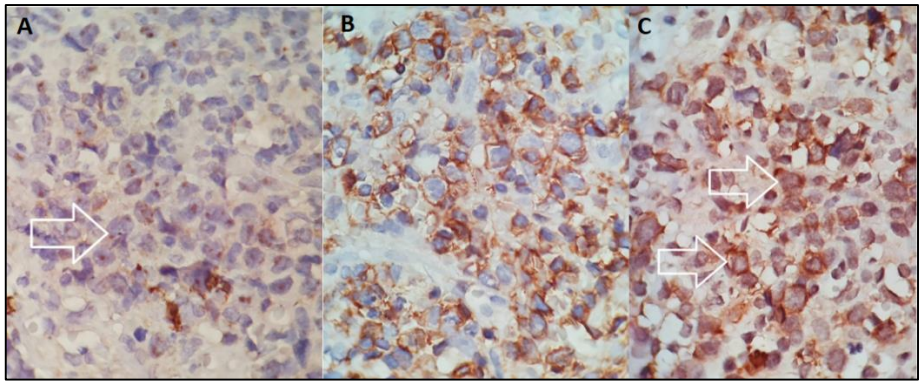

Figure 2. (A) CD20-negative atypical cells. Immunohistochemical stain, ×100. (B) CD45-positive atypical cells. Immunohistochemical stain, ×100. (C) Atypical cells demonstrating positive staining for CD30. Immunohistochemical stain, ×100.

Discussion

The prognosis for extranodal nasal-type NK/T-cell lymphoma (ENKTCL) is unpredictable, and the disease is aggressive. Although rare worldwide, it is comparatively more prevalent in South America and East Asia (5). Survival outcomes in ENKTCL demonstrate a pronounced prognostic stratification. While 5-year overall survival (OS) is favorable (55-90%) for low- and intermediate-risk, early-stage disease, it declines precipitously to less than 40% in advanced or very high–risk cases. A marked improvement in OS has been observed over the last ten years, a trend largely credited to the strategic implementation of contemporary radiotherapy techniques and the shift towards non-anthracycline-containing chemotherapy protocols in the initial treatment phase (6–8).

Extranodal NK/T-cell lymphoma, nasal type (ENKTCL), is a rare non-Hodgkin lymphoma entity defined by its universal association with Epstein-Barr virus (EBV) and a propensity for clinically destructive manifestations(9,10). Current evidence indicates that the interplay between genetic abnormalities, latent Epstein-Barr virus infection, and components of the tumor microenvironment is critical to the development of extranodal NK/T-cell lymphoma (11). Epstein-Barr virus is implicated in the pathogenesis of extranodal NK/T-cell lymphoma, although its precise mechanistic role remains elusive. A known characteristic of the virus is its capacity to integrate its genomic material into various human repetitive elements, including SINE, LINE, and satellite sequences (12) In vitro studies indicate that a diverse array of cytokines, chemokines, and microRNAs, potentially upregulated by EBV-encoded oncoproteins, are critical mediators of tumor progression in NNKTL and represent promising therapeutic targets (13).

This lymphoma presents primarily with progressive, ulcerated, and necrotic granulomatous lesions localized to the nasopharynx, nasal cavity, and palate (14). The neoplasm exhibits a pattern of local invasion into adjacent structures, including the facial skin, paranasal sinuses, and orbits, often resulting in extensive midline tissue destruction. The most common presenting

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symptoms are nasal obstruction and bloody rhinorrhea (15). The disease may also involve distant extranodal sites, including the liver, lungs, gastrointestinal tract, and bone marrow (14). The interval from symptom onset to diagnosis ranges from two months to one year, with a mean of 4.8 months (16).

The pathological hallmark of NNKTL is a diffuse, angiocentric infiltrate of pleomorphic, mitotically active lymphoma cells within a necrotic background containing a mixed inflammatory infiltrate (granulocytes, macrophages, plasma cells). This characteristic angioinvasion led to its former designations as polymorphic reticulosis and angiocentric lymphoma (17). The immunophenotypic profile of NNKTL is characterized by expression of T-cell-associated antigens (CD2, cytoplasmic CD3ε, CD45) along with CD56. The lymphoma cells also demonstrate positivity for effector molecules, including perforin and Fas ligand, and express ICAM-1(18). Definitive diagnosis of ENKTL relies on endoscopic visualization and histopathological confirmation via biopsy. The diagnostic process is often challenged by the tumor's typical morphology, which includes prominent angioinvasion and necrosis (19).

In the staging of nasal ENKTCL-NT, CT and MRI are standard modalities used to delineate the anatomical extent of local tumor invasion (20).

The early diagnosis of ENKTCL-NT is often challenging, particularly in nonendemic regions. This difficulty can result in misdiagnosis, frequently as chronic sinusitis, rhinitis, or an invasive fungal infection, leading to inappropriate treatment with antibiotics or antifungals and a consequential delay in definitive therapy. The differential diagnosis is broad and includes two main categories: (1) common infectious and inflammatory conditions such as rhinoscleroma, facial cellulitis, and deep mycoses; and (2) other diseases characterized by midline tissue destruction and palatal involvement, including granulomatosis with polyangiitis (Wegener's), lymphomatoid granulomatosis, leishmaniasis, tertiary syphilis, and sequelae of cocaine abuse (21) Accurate staging requires additional investigations, including bone marrow (BM) aspiration/biopsy and positron emission tomography/computed tomography (PET/CT). Given that morphologic evidence of BM involvement is often subtle, in situ hybridization for Epstein-Barr virus-encoded RNA (EBER-ISH) is recommended on BM specimens to detect occult infiltration, thereby confirming disseminated disease (22). The quantification of serum EBV-DNA and EBV-microRNA levels serves as a valuable biomarker for diagnosis, monitoring disease progression, and predicting prognosis (13).

Therefore, a combined modality approach of chemotherapy and radiotherapy, administered either concurrently or sequentially, is the current standard of care for limited-stage disease(19). Multiple studies have demonstrated the superiority of radiotherapy (RT) over CHOP chemotherapy (cyclophosphamide, doxorubicin, vincristine, and prednisone) as a front-line treatment, and have further established the critical role of radiation dosage in achieving optimal outcomes (23).

For advanced ENKTL, treatment protocols incorporating L-asparaginase represent the most established and widely adopted standard of care (19).

Overlap between neoplastic symptoms and expected post-operative inflammation can obscure the underlying malignancy, leading to critical delays in management. Clinicians must maintain a high index of suspicion for malignancy in patients presenting with refractory nasal obstruction, persistent discharge, or atypical mucosal changes following rhinoplasty, even in the absence of systemic B-symptoms. A low threshold for early endoscopic evaluation and deep biopsy is essential to distinguish this aggressive entity from benign surgical sequelae. In order to

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achieve a favorable long-term remission, prompt diagnosis and combined chemoradiotherapy are essential.

Conclusion

The patient achieved complete remission after definitive chemoradiotherapy. This case underscores that ENKTCL-NT can masquerade as routine post-surgical inflammation. Clinicians must maintain a high index of suspicion for malignancy in patients with refractory or progressive sinonasal symptoms following surgery to ensure timely diagnosis and treatment**.**

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None to declare.

Conflicts of Interest

The authors declare no conflicts of interest.

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Patient's Perspective

Written consent was obtained from the patient. The whole examination process and the article's purpose were thoroughly explained.

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