

CASE REPORT

Nasal-type T-cell lymphoma referred as fungal rhinosinusitis: Case report

Aaasha Almazrouei^{1,2}  | Alain Michel Sabri^{1,2}

¹Department of Otorhinolaryngology, Sheikh Shakhbout Medical City Affiliated with Mayo Clinic, Abu Dhabi, UAE

²SSMC Hospital, Abu Dhabi, UAE

Correspondence

Aaasha Almazrouei, Department of Otorhinolaryngology, Sheikh Shakhbout Medical City Affiliated with Mayo Clinic, Abu Dhabi, UAE.
Email: aaalmazrouei@seha.ae

Funding information

None

Abstract

NKTCL is a rare and destructive midline tumor that can be easily misdiagnosed as other more common inflammatory processes. The differential diagnosis of NKTCL should always be kept in mind for any lesion of the paranasal sinuses with atypical presentation and nonresponsive to conventional treatments.

KEYWORDS

fungal sinusitis, midline lethal granuloma, NKTCL lymphoma, periorbital cellulitis

1 | INTRODUCTION

We present a case of nasal type extranodal natural killer/T-cell lymphoma (nasal NKTCL) with an unusual clinical course in a 23-year-old male patient. NKTCL accounts for 7–10% of non-Hodgkin lymphomas; it may present with a severe clinical picture invading the tissues of the nose, paranasal sinuses, face, and orbit. This clinical entity may share similar symptoms and findings as those seen with fungal rhinosinusitis. It is usually diagnosed at a late stage because it often presents a diagnostic dilemma, which may lead to delay in treatment. We report a case of a 23-year-old male patient who presented late with nasal obstruction and periorbital cellulitis, which were treated initially as fungal sinusitis; biopsy later confirmed NKTCL. We review the literature and discuss the clinical manifestations of the disease, the prognostic factors, and treatment options. This case report alerts the otolaryngologist that NKTCL can present with nonspecific symptoms and signs such as rhinosinusitis, which can delay the diagnosis of this invasive tumor that if detected early; the

patient may have a better prognosis. NKTCL is a tumor that presents with destructive clinical course and presents a poor prognosis. It should be included in the differential diagnosis of paranasal sinus lesions to ensure accurate diagnosis, improving the prognosis and providing early treatment.

NKTCL, previously known as lethal midline granuloma, is a rare form of non-Hodgkin lymphoma. They commonly present with epistaxis, obstruction, nasal discharge, destructive mass in the nose, paranasal sinuses, and palate. These symptoms can mimic invasive fungal infections and other sinonasal disorders.^{1,2}

We present a case of pathologically diagnosed NKTCL, which was referred to our tertiary center with presumed diagnosis of fungal rhinosinusitis, emphasizing the importance of differential diagnosis of primary rhinonasal lymphoma in patients without risk factors. This case was also analyzed to improve the clinical diagnosis and prognosis of this destructive tumor in future. It is rare for NKTCL to present with periorbital cellulitis and very few similar cases are reported in the literature.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2021 The Authors. *Clinical Case Reports* published by John Wiley & Sons Ltd.

2 | CASE REPORT

A 23-year-old male patient, previously healthy, presented to the emergency department with severely progressive left-sided facial swelling with periorbital cellulitis for one week. It was associated with a left nasal blockage, nasal discharge, and left proptosis. He was seen in primary care with a provisional diagnosis of fungal sinusitis and treated accordingly. On examination, his temperature was 38°C, pulse 98/min, respiratory rate 18 bpm, and blood pressure 114/75 mmHg. He had facial swelling extending to the left orbital region. The left lower eyelid was edematous with intact visual acuity and normal extraocular muscle movement. Nasal examination revealed a necrotic polypoid mass filling the left nasal cavity arising from the lateral wall. Throat examination was normal. No cervical lymphadenopathy was noted, and the remainder of the head and neck examination was unremarkable. Laboratory investigations showed a normal white blood count but a high CRP of 23.98 (0.5–10 mg/L); kidney and liver function tests were normal. No HIV test was done. CT scan of nose and paranasal sinuses revealed an enhancing soft tissue mass measuring 1.4 × 3 × 4 cm (Figure 1) occupying the inferomedial aspect of the orbit and occluding the left nasal cavity with complete opacification of the left maxillary sinus with mucosal enhancement. The patient was urgently admitted for nasal cavity examination and biopsy under general anesthesia. He was started on both IV cefepime 1 g and amphotericin B 98 mg once daily. Endoscopic examination of the left nasal cavity revealed a necrotic fungating mass arising from the lateral nasal wall and reaching the whole length of the nasal cavity floor to postnasal space (Figure 2). Multiple biopsies were taken and sent for histopathology, but no bacterial or fungal cultures were taken. Histopathology revealed atypical lymphocytes, and no fungal organisms were identified. The immunohistochemical features came consistent with NKTCL nasal type with a high Ki-67 proliferation fraction and positive for the following markers: CD45, CD56, CD2, CD4, EBV-EBER. It was negative for the markers CD5, CD8, cCD30, CD 57

(Figure 3). Clonal T-cell receptor gene rearrangement test was not used at the specimen at time. Subsequently, he underwent further imaging for staging of lymphoma, revealing no other involvement. The patient was discussed in the multidisciplinary Head and Neck meeting, and the recommendation was to start chemotherapy. Initially, the patient responded well after three cycles of SMILE chemotherapy protocol (dexamethasone 40 mg day 2 to day 3, methotrexate 2 g/m² day, ifosfamide 1.5 g/m² from day 2 to day 4, along with mesna and etoposide 10 mg/m² from day 2 to day 4) and localized radiotherapy 50 Gy in 25 fractions. Later part of chemotherapy was discontinued as he developed a fever and needed frequent admissions. Subsequent CT sinus in three months showed significant resolution of the mass with mild mucosal changes on the left maxillary, anterior ethmoid, and frontal regions. Unfortunately, his condition deteriorated later in few months as he developed sepsis with multi-organ failure and died seven months after the initial diagnosis.

3 | DISCUSSION

Lymphomas of the nasal cavity are uncommon and are pathologically and clinically heterogeneous. It represents 7–10% of non-Hodgkin lymphomas; it has a progressive clinical picture destroying the nose, sinuses, and palate.^{1,3}

It is commonly observed in Eastern Asia and Latin America but relatively rare in the United States and Europe. The progressive necrotic lesion, mainly in the nasal cavity, is one of the main clinical features of this disease, often characterized by a poor prognosis because of rapid local progression and distant metastases.²

Superinfection can occur over these necrotic tissues, which can be misdiagnosed as an infectious process. Very few cases with periorbital cellulitis as the initial presentation of NKTCL have been reported in the literature, as we report in our case. Termote et al. described 3 similar cases, all treated by chemoradiotherapy, but they died within 5–35 months of diagnosis.⁶

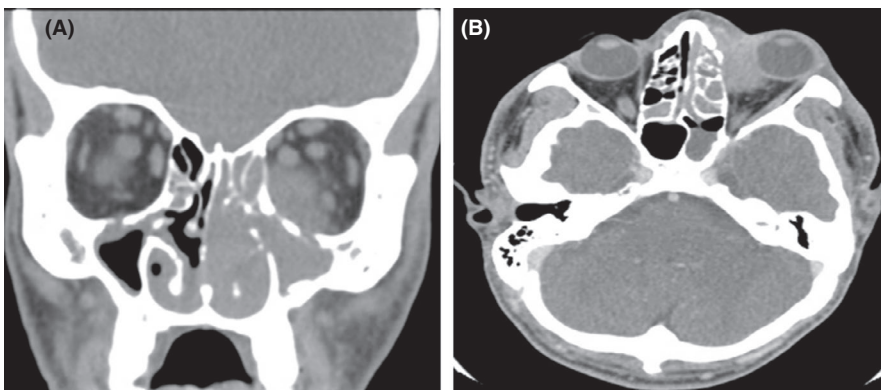


FIGURE 1 Computed tomography showing enhancing soft tissue mass occluding the left nasal cavity and occupying the inferomedial aspect of the orbit. (A) Coronal plane. (B) Axial plane



FIGURE 2 Intraoperative endoscopic examination of the left nasal cavity showing white fungating mass

Histologically, it shows an angiocentric pattern of growth with vascular destruction and necrosis with lymphocytic infiltration with irregular nuclei on the surface of the epithelium and subepithelium, which is called polymorphic reticulosis. The immunophenotypes of these tumors are CD2+, CD56+, and cytoplasmic CD3e+. Cytotoxic molecules (granzyme B, TIA-1, and perforin) are positive and often show negative expression of T-cell antigen (e.g., CD4, CD5, and surface CD3).⁷ The expression of EBV ribonucleic acid (RNA) by in situ hybridization is necessary for diagnosis, which the patient indeed had. The detection of EBV genome in practically all studied nasal NK/T-cell lymphomas suggests that EBV infection plays a role in this tumor's pathogenesis; high titer indicates extensive disease, poor response to therapy, and poor survival. There is a high risk for tumor progression

and possible evolution into an aggressive type and could be therapeutic targets.⁴

It may cause diffuse mucosal thickening along the nasal turbinates or can present as a destructive mid-line mass. To distinguish it from other neoplasms and benign processes, deep biopsies must be obtained from suspicious areas under general anesthesia.⁵ In the case reported above, the patient was suspected of having fungal sinusitis from the clinical picture and CT imaging. Imaging can be useful in these tumors, and CT and MRI can demonstrate the extent of the disease; however, fluorine-18 fluorodeoxyglucose positron emission tomography computerized tomography (18-FDG PET-CT) has better sensitivity.⁸

The current recommended treatment is the SMILE chemotherapy protocol, which is more specific against cell neoplasms and is unaffected by the multidrug-resistant phenotype.¹ For localized disease, local radiotherapy of at least 45 Gy is recommended. A combination of radiotherapy and chemotherapy is the best modality of treatment, especially for the early stages,¹⁰ because of the high recurrence rate when radiotherapy alone is used¹¹; radiation alone has a 77–100% reponse rate for localized early-stage nasal NKTCL, with 25–40% systemic relapse rates. Regimens like SMILE (dexamethasone, methotrexate with leucovorin, ifosfamide, L-asparaginase, and etoposide) can be used instead, as it is based on non-P glycoprotein efflux chemotherapy agents like L-asparaginase, ifosfamide, and methotrexate¹²; it has an 86% RR. Our patient was placed on three SMILE therapy cycles, followed by localized radiation.

The median survival was reported to be 12 months; even in patients showing a localized disease, our patient died seven months from the initial diagnosis.⁵ The prognosis of the disease is variable; it is generally poor, with a 30% 5-year survival rate, but it recently increased to 71% due to utilizing intensive therapy like up-front radiotherapy.⁹

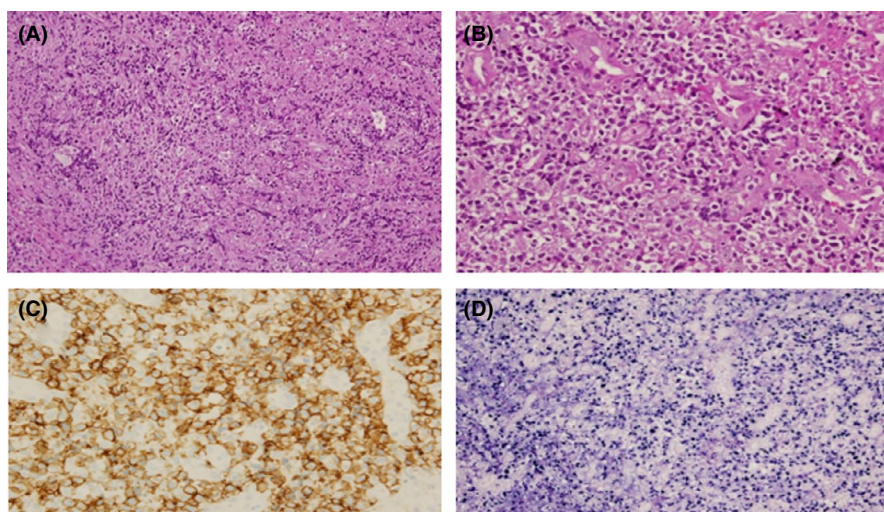


FIGURE 3 (A) Lymphoma cells and large areas of coagulative necrosis. (B) Angiodestruction by lymphoma cells. (C) Immunohistochemical stain for CD56. (D) EBV by Epstein-Barr virus-encoded small RNAs in situ hybridization; cells are diffusely positive. EBV: Epstein-Barr virus; RNA: ribonucleic acid

4 | CONCLUSION

In summary, we describe a case of an aggressive, frequently lethal lymphoma, rarely seen in the Middle East, to aid the prompt diagnosis and raise awareness. NKTCL presents with nonspecific signs and symptoms that can lead to misdiagnosis and delaying the treatment. Physicians must include this tumor in their differential for suspected fungal sinusitis. If diagnosed early, this locally destructive neoplasm can be treated successfully.

ACKNOWLEDGEMENTS

Histology slides and descriptions were provided by Jain, A., Department of Pathology, Sheikh Khalifa Medical City, Abu Dhabi, UAE. Published with written consent of the patient.

CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

Aaasha Almazrouei mainly contributed to the conception, data collection, and writing the initial draft. Alain Michel Sabri revised and re-wrote the main draft for its important intellectual content.

ETHICAL APPROVAL

Patient written consent was taken. The Sheikh Shakhbout Medical City hospital review board committee confirmed that this case report does not need an ethical approval as it is anonymous and does not involve any research intervention.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Aaasha Almazrouei  <https://orcid.org/0000-0003-0580-2128>

REFERENCES

1. Althoff A, Bibliowicz M. Extranodal natural Killer/T-cell lymphoma: an incidental finding. *Cureus*. 2017. <https://doi.org/10.7759/cureus.1260>
2. Schwarz ER, Oikonomou KG, Reynolds M, Kim J, Balmiki RL, Sterling SA. Extranodal NK/T-Cell Lymphoma, Nasal Type, Presenting as Refractory Pseudomonas aeruginosa Facial Cellulitis. *J Investig Med High Impact Case Rep*. 2017;5(3):2324709617716471.
3. Nikitakis N, Polyzois G, Katoumas K, et al. Extranodal nasal-type NK/T-cell lymphoma of the palate and paranasal sinuses. *Am J Case Rep*. 2012;13:79-85.
4. Harabuchi Y, Takahara M, Kishibe K, Nagato T, Kumai T. Extranodal Natural Killer/T-Cell Lymphoma, Nasal Type: Basic Science and Clinical Progress. *Front Pediatr*. 2019;16(7):141.
5. Vasan S, Rajalakshmi P, Thulkar S. Imaging case: NK/T-cell lymphoma, nasal type. *Iran J Otorhinolaryngol*. 2015;27(83):481.
6. Termote K, Dierickx D, Verhoef G, et al. Series of extranodal natural killer/T-cell lymphoma, nasal type, with periorbital involvement. *Orbit*. 2014;33(4):245-251.
7. Paik YS, Liess BD, Scheidt TD, et al. Extranodal nasal-type natural killer/T-cell lymphoma masquerading as recalcitrant sinusitis. *Head Neck*. 2010;32(2):268-273.
8. Radochova V, Radocha J, Nova M, et al. NK/T-cell lymphoma nasal type with an unusual clinical course. *Indian J Dermatol Venereol Leprol*. 2014;80(6):564-566.
9. Wood PB, Parikh SR, Krause JR. Extranodal NK/T-cell lymphoma, nasal type. *Proc (Bayl Univ Med Cent)*. 2011;24(3):251-254.
10. Kwong YL. The diagnosis and management of extranodal NK/T-cell lymphoma, nasal-type and aggressive NK-cell leukemia. *J Clin Exp Hematop*. 2011;51(1):21-28.
11. Gill H, Liang RH, Tse E. Extranodal natural-killer/t-cell lymphoma, nasal type. *Adv Hematol*. 2010;2010:627401.
12. Lee J, Suh C, Park YH, et al. Extranodal natural killer T-cell lymphoma, nasal-type: A prognostic model from a retrospective multicenter study. *J Clin Oncol*. 2006;24(4):612-618.

How to cite this article: Almazrouei A, Sabri AM. Nasal-type T-cell lymphoma referred as fungal rhinosinusitis: Case report. *Clin Case Rep*. 2021;9:e04669. <https://doi.org/10.1002/ccr3.4669>