

Primary Burkitt's Lymphoma in the Nasal Cavity and Paranasal Sinuses

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Burkitt's lymphoma is a highly aggressive small B-cell lymphoma. The treatment of choice is complex chemotherapy. As a rare tumor in the head and neck area, Burkitt's lymphoma usually involves cervical lymph nodes, and only fewer than 25% of cases involves extranodal regions. Involvement of the paranasal sinuses has been reported in only 14 cases in the past century. We describe here two patients with rare, sporadic, American type Burkitt's lymphoma involving the nasal cavity and paranasal sinuses manifesting nasal obstruction. We also review clinical and histological features of Burkitt's lymphoma.

Keywords. *Lymphoma, Burkitt lymphoma, Nasal cavity, Paranasal sinus*

INTRODUCTION

Burkitt's lymphoma was first described as a mandibular malignancy of children in 1958 [1]. This high-grade lymphoma can be subdivided into endemic, sporadic and immunodeficiency-associated forms with incidence of 50-100/million, 2-3/million and 6/1,000 acquired immune deficiency syndrome cases in order [2]. The sporadic form usually involves the abdomen or bone marrow and seldom (<25%) involves the head and neck [3]. Burkitt's lymphoma in the head and neck usually presents as lymphadenopathy, whereas primary involvement of the nasal cavity and paranasal sinuses is uncommon. In paranasal Burkitt's lymphoma, maxillary sinus is most commonly involved and sphenoid-ethmoidal sinuses are less commonly involved [2]. We describe here two cases of Burkitt's lymphoma in the nasal cavity and paranasal sinuses.

CASE REPORTS

Case 1

A 25-year-old man presented with a 2-month history of nasal obstruction and right facial pain. The patient also had rhinorrhea, anosmia and headache. The patient had no specific past history. A physical examination revealed a pinkish, irregularly shaped mass in both nasal cavities (Fig. 1). A computed tomography (CT) showed an enhanced mass filling both ethmoid sinuses, the right nasal cavity and nasopharynx, with secondary destruction of the ethmoidal roof, both medial orbital walls and the anterior wall of the sphenoid sinuses. An endoscopic biopsy was taken. Pathologic evaluation showed "starry-sky" pattern of tightly packed, medium sized uniform lymphoid cells interspersed with large pale histiocytes. In immunohistochemical staining, cells were positive for CD10, CD20, and Bcl-6, and negative for CD3, CD5, and Bcl-2. Ninety percent of the cells were positive for Ki-67 antigen. The serum was negative for Epstein-Barr virus (EBV) and human immunodeficiency virus (HIV). Chest and abdominopelvic CT and bone scan showed no evidence of metastasis. Positron-emission tomography (PET) showed lymphoid invasion of the sphenoid, mandible, both humeri and the right proximal femur. Examination of cerebrospinal fluid (CSF) and bone marrow (BM) showed normal pathological and chromosomal findings. He was initiated on chemotherapy, consisting of cyclophos-

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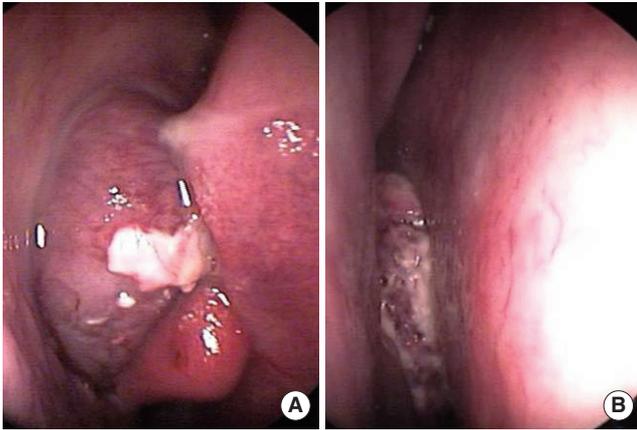


Fig. 1. Endoscopic findings, showing (A) a pinkish round mass originating from the middle meatus of the right nasal cavity, and (B) an irregularly contoured mass between the septum and inferior turbinate of the left nasal cavity.

phamide, vincristine, methotrexate, ifosfamide, etoposide, and cytarabine. After three cycles, he was in complete remission on follow-up CT and PET. Five months after the end of chemotherapy, there was no evidence of recurrence on PET.

Case 2

A 44-year-old man presented with a 2-month history of right nasal obstruction. The patient had undergone functional endoscopic sinus surgery, after failure of 2 month medical therapy at other institution. Since frozen sections during the sinus surgery revealed malignant cells, he was referred to our hospital. The patient had no specific past history. A physical examination revealed postoperative synechia in the right nasal cavity. Magnetic resonance imaging (MRI) showed a large mass infiltrating the posterior aspect of the right maxillary sinus with extension into the posterior portion of the bilateral nasal cavity, nasopharynx, and right parapharyngeal, masticator and buccal spaces (Fig. 2). Biopsy slides from the first hospital revealed a typical "starry-sky" pattern. In immunohistochemical staining, cells were positive for CD10 and CD20 and negative for CD3. All cells were positive for Ki-67 antigen. Chest X-rays, abdominopelvic CT and bone scan showed no evidence of metastasis. A PET, CSF, and BM examination revealed no specific findings. The patient was seronegative for HIV. He was initiated on chemotherapy, consisting of cyclophosphamide, vincristine, doxorubicin, methotrexate, ifosfamide, etoposide, and cytarabine. He received a total of four cycles of chemotherapy. Nine months after chemotherapy, follow-up MRI showed no evidence of remnant tumor (Fig. 2). After 5 years, there was no recurrence on MRI and chest X-ray.

DISCUSSION

The most common symptom of sinonasal lymphomas is nasal

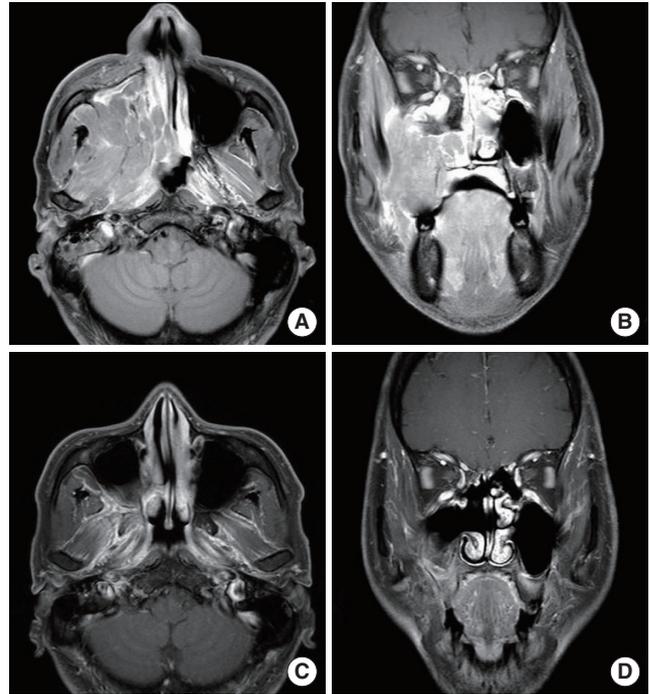


Fig. 2. Axial and coronal view of sinus magnetic resonance imaging (T1WI), showing (A, B) opacification, mainly involving the right maxillary sinus and parapharyngeal and buccal spaces, before chemotherapy; (C, D) disappearance of previously observed mass lesions after chemotherapy, with only postoperative changes remaining.

obstruction; others are headache, rhinorrhea and facial pain, mostly consistent with chronic rhinosinusitis [4]. Endoscopically, sinonasal lymphoma can present as a polypoid mass-like lesion. Thus, it can be easily confused with paranasal sinusitis, polypoid disease or other tumorous conditions. Therefore, in the early stages, Burkitt's lymphomas in this region may be misdiagnosed as other diseases.

Our second patient was misdiagnosed with rhinosinusitis and underwent medical treatment for 2 months followed by endoscopic sinus surgery. The initiation of chemotherapy was delayed due to misdiagnosis.

Early diagnosis and prompt chemotherapy is important in Burkitt's lymphoma because it is one of the fastest growing tumors, with a cell doubling time of only 24 to 48 hours [1]. If treatment is delayed, Burkitt's lymphoma can spread to other parts of the body, leading to poor prognosis. If Burkitt's lymphoma involves the paranasal sinuses, it can cause facial deformity. In patient 2, the lesion in the right maxillary sinus extended to the right parapharyngeal and masticator space during the period of misdiagnosis.

In diagnostic workup, not only endoscopic biopsies but also BM/CSF analysis and complete laboratory testing are necessary. CT and MRI can help determine the extent of the primary disease. The BM is involved in 30%-38% and the central nervous system (CNS) in 13%-17% of adults with Burkitt's lymphoma

[5]. Abdomen and chest CT to evaluate distant spread are recommended.

Generally, Ann Arbor staging system has been used in both Hodgkin's and non-Hodgkin lymphoma, and Burkitt's lymphoma could be classified by same staging system [5]. But, there is separate staging system for Burkitt' lymphoma and Patton et al. developed staging system particularly for sporadic type [1]. According to the staging system by Patton et al., first patient could be classified as stage III and second patient could be classified as stage II.

Histologically, "starry-sky" pattern is a microscopic hallmark. Immunophenotypically, Burkitt's lymphoma expresses B-cell lineage markers, including CD19, CD20, CD22, CD74, and CD79a, and coexpressing CD10, Bcl-6, CD43, and p53, but not CD5, CD23, Bcl-2, CD138 or TdT. Almost all cells are positive for Ki-67. EBV titers are usually negative in patients with the sporadic type [5]. Our two patients were seronegative for EBV.

As one of the fastest growing tumors with a high mitotic index, Burkitt's lymphoma is highly sensitive to cytotoxic agents. Thus, the primary therapeutic modality is complex chemotherapy, including cyclophosphamide, vincristine, methotrexate and prednisone [2]. The currently used regimens for Burkitt's lymphoma limited to the head and neck region have yielded long-term survival rates of 90% [2,5]. Patients with old age, advanced staged disease, bulky mass, high lactate dehydrogenase level, and CNS or marrow involvement, are known to have poor prognosis. Both of our patients showed very good responses to chemotherapy, with no evidence of recurrence. Generally, regional radiotherapy or surgical treatment increases morbidity

without affecting survival, although surgical debulking and radiotherapy to diminish tumor volume have been reported [2].

In conclusion, Burkitt's lymphoma in the nasal cavity and paranasal sinuses is rare but needs prompt diagnosis. So, consideration for endoscopic biopsy is required in suspected tumor lesions.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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