

Immunodeficiency-Associated Burkitt's lymphoma in pediatric patients: a clinical case report.

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Abstract: Burkitt's lymphoma, a form of non-Hodgkin lymphoma, is a neoplastic monoclonal proliferation of lymphoid cells in areas of the immune system. It can occur in HIV-positive patients, as AIDS is related to the development of non-Hodgkin lymphoma. Burkitt's lymphoma is a rare subtype, highly prevalent in patients with AIDS. Incisional biopsy, *in situ* hybridization and computerized axial tomography are the appropriate tests to determine the character of the lesions. The case of a 4-year-old HIV-positive patient, who developed Burkitt's lymphoma of the oral cavity, is reported in this paper. The aim of this case report is to describe the course of the pathology, taking into account its clinical imaging characteristics and treatment.

Keywords: HIV; Non-Hodgkin's Lymphoma; Burkitt's Lymphoma; oral cavity.

INTRODUCTION.

Burkitt's lymphoma (BL) is described as a malignant neoplasm of mature, low frequency B cells. It is a subtype of non-Hodgkin's lymphoma, accounting for 1 to 3% of cases, and is characterized by aggressive biological behavior.¹ Its etiology is due to chromosomal translocation t(8;14) (q24;q32) and deregulation of the c-Myc oncogene, however there are other associated cofactors such as *Epstein-Barr virus* infection and malaria. Three variants have been identified: endemic, sporadic and immunodeficiency-associated.²

Epidemiologically, it predominantly affects males, mainly children and young adults, accounting for 3% of cases. Clinically, at the oral cavity level, the BL tumor is surrounded by an erythematous zone, painful to palpation, accompanied by dental displacement and mobility, intense swelling that can affect the maxillary sinus and/or the nasal pit, sanguineous-purulent nasal discharge, and cervical adenopathies.³⁻⁵

Computed tomography (CT) is the best medical examination to localize this type of lesions. Incisional biopsy and *in situ* hybridization are other complementary tests to obtain the correct diagnosis. On the other hand, immunohistochemistry is a suitable technique to identify specific tumors or cells, such as anti-CD20 positive and anti-CD3 negative immunostaining tests that are initially used to corroborate the B lymphocyte origin of the tumor, and to rule out the tumor origin as T lymphocytes.⁶

The prognosis of patients treated with highly active antiretroviral drugs and chemotherapy is described as satisfactory in the literature.

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The use of zidovudine, lamivudine, atazanavir and ritonavir was reported in different cases, in conjunction with trimethoprim/sulfamethoxazole as prophylaxis for opportunistic infections. On the other hand, biopsy and complete surgical removal of the lesion are part of the treatment, which together with the aforementioned options have been reported to be feasible and satisfactory.⁷

Burkitt's lymphoma (BL) is an aggressive tumor and is considered a serious health problem, hence the role of dentists in timely diagnosis in order to allow the prompt and appropriate management of the disease.

The aim of this study was to describe the course of LB in relation to its clinical imaging characteristics and treatment in the case of a pediatric patient.

CASE.

A 4-year-old male patient seeking treatment at the oral and maxillofacial surgery unit at the Hospital Infantil Napoleón Franco Pareja in Cartagena, Colombia, for a tumor in the oral cavity. The patient had a significant family medical history of HIV-positive parents. In the interview, the mother reported that her son had been diagnosed as HIV-positive about 3 months before. The patient's medical history included hepatosplenomegaly of about 2cm, without signs of peritoneal irritation, but with generalized pallor. Extraoral clinical examination showed facial asymmetry on the left side, without the presence of lymphadenopathy. (Figure 1)

On intra-oral examination, tumefaction of semi-soft consistency on palpation was observed in the superior left hemiarch, with a sessile base, red-violaceous color, approximately 4 by 3cm in size, painful on palpation, with gum involvement, including the left posterior upper teeth, limitation of the oral opening and dysphagia. (Figure 2)

The CT scan of orbit and paranasal sinuses, with axial and coronal sections, showed destruction of the posterolateral wall of the left maxillary sinus, with posterior upper teeth displaced toward the palate, the tumor partially invaded the orbital floor. Taking into account the anamnesis, clinical and imaging features, a clinical impression of Non-Hodgkin Lymphoma was made. (Figure 3)

An incisional biopsy was performed following the signature of informed consent by the parents. Three samples were sent for histopathological study. The results

of the histopathological examination of sections A and B showed the oral mucosa lined by ulcerated squamous epithelium hyperplasia with reactive changes, resting on a fibrous stroma, with proliferation of small cells of lymphoid appearance arranged in diffuse form, with areas of necrosis, and small blood vessels. Section C showed cortical bone marrow with hematopoiesis, small and hypolobulated megakaryocytes; morphologically no malignancy was observed, compatible with non-Hodgkin lymphoma, with characteristics of Burkitt's lymphoma (BL). The immunohistochemical staining was positive for CD20 and CD10, negative for CD3; Tumor cell proliferation was calculated as 99% using the Ki67 index.

Subsequently, the surgical procedure was carried out, under general anesthesia, through a posterior-superior left vestibular approach. Including safety margins, the surgical removal of a lesion approximately 8x5x5cm was executed.

Eight days later, post-surgical examination was performed. Signs of inflammation were observed in the gingival tissue in the surgical area, which presented as erythematous and swollen. Application of Fitostimoline® in the area and oral hygiene were prescribed. At the postoperative checkup at 2 weeks, good healing was observed, no signs of inflammation were present, and the patient referred no symptoms. (Figure 4)

Figure 1. Facial asymmetry on the left side.



Figure 2. Tumor lesion in superior left hemiarch.



Figure 3. Computed tomography scan showing destruction of the posterolateral wall of the left maxillary sinus and involvement of the orbital floor.



Figure 4. Clinical control at 14 days post-operative, satisfactory healing can be observed.



Histopathological and immunohistochemical testing results led to the diagnosis of immunodeficiency-related Burkitt's lymphoma (BL). At the hematology and oncology unit of the hospital, treatment consisting of six cycles of chemotherapy based on prednisone, cyclophosphamide, allopurinol, methotrexate, cytarabine and dexamethasone, was prescribed. Additionally, highly active antiretroviral therapy (HAART) was started, with lopinavir, ritonavir, zidovudine and lamivudine, a common protocol for both adults and children. It was reported that the patient was recovering satisfactorily.

DISCUSSION.

HIV-related Burkitt's lymphoma is aggressive. In children it usually has a different clinical course than in adults, and is frequently detected only in an advanced stage, with a reserved prognosis.⁴

Astolfo *et al.*,⁸ reported a case of a child diagnosed with HIV/AIDS, who developed a BL tumor in the maxilla that involved the upper left gingival region, lined by erythematous mucosa, which was hard, elastic, non-fluctuating and painless, measuring around 5x7cm, which caused a substantial facial deformity. Their findings agree with the clinical characteristics of the tumor found in the oral cavity of the case of this 4-year-old child with BL who had developed a tumor in the superior left hemiarch, characterized by firm consistency, bleeding on palpation, mild symptoms and associated with a history of HIV-related immunosuppression.

Lotero *et al.*,⁸ carried out a surgical procedure consisting of inferior and medial orbitotomy under general anesthesia, during which resection and biopsy, and bone marrow aspirate were performed. Their histopathological results revealed fibromuscular and adipose tissue of lymphoid origin. Immunohistochemistry studies were suggested, in which the Ki67 cell proliferation index was 100%. Following the protocols for obtaining a diagnosis, in the present case an incisional biopsy was performed, with surgical resection of the tumor lesion, histopathological study, an initial diagnosis of non-Hodgkin's lymphoma, Ki67 cell proliferation index of 99%, and posterior immunohistochemistry studies which confirmed BL.

Corti *et al.*,³ Astolfo *et al.*,⁸ Komatsu *et al.*,¹⁰ reported that chemotherapy with vincristine, dexamethasone,

etoposide and cytarabine gives good results.

If the pathology is related to HIV/AIDS, antiviral treatment is crucial. All these reports are in agreement with the present case report, in which, after the diagnosis, chemotherapy and antiretroviral drugs treatment were provided.

CONCLUSION.

Burkitt's lymphoma, because of its clinical and immunological symptoms, has a reserved prognosis, so it is necessary

to make a timely and accurate diagnosis in order to begin timely treatment. This is why in the present case, facing an uncommon clinical manifestation, where BL was observed both at the level of the stomatognathic system and at abdominal level, and in which the variant of HIV-related immunosuppression

BL is a neoplasm of aggressive behavior (which can occur in childhood), the treatment must include surgery, chemotherapy and highly active antiretroviral therapy, since following these procedures increases the survival rate and improves prognosis.

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