REVISTA CIÊNCIAS e ODONTOLOGIA

BURKITT'S LYMPHOMA: CASE REPORT WITH 3-YEAR FOLLOW-UP

LINFOMA DE BURKITT: RELATO DE CASO COM ACOMPANHAMENTO DE 3 ANOS

Iuri Dornelas Prates Freitas[1], Paulo Henrique Alvares Torres[1]
[1]Professor of Dentistry. Sete Lagoas College – FACSETE. Sete Lagoas, Minas Gerais. Brazil

Resumo

Introdução: O linfoma de Burkitt é uma neoplasia originada em linfócitos B maduras. Afeta predominantemente os ossos da face, sendo mais comum em indivíduos do sexo masculino e em crianças. **Métodos:** Este trabalho tem como objetivo relatar o caso de um paciente do sexo masculino, de 12 anos, que procurou a clínica odontológica da FACSETE com queixas de dor difusa em várias regiões dos arcos dentários e aumento de volume na região do vestíbulo mandibular esquerdo. Os dentes da região afetada apresentavam leve mobilidade. Exames de imagem revelaram alterações nas trabéculas ósseas, perda da lâmina dura em alguns dentes e afinamento com perfuração da cortical óssea na mandíbula esquerda. Foi realizada biópsia incisional, e os achados histológicos sugeriram uma lesão linfoproliferativa. **Resultados:** A imuno-histoquímica confirmou proliferação linfoide difusa de células de tamanho médio com aspecto de "céu estrelado", e índice de marcação por Ki-67 estimado em 100%, compatível com linfoma de Burkitt. O paciente foi encaminhado ao Hospital São Lucas para avaliação diagnóstica complementar e quimioterapia. Aproximadamente 60 dias depois, houve regressão da lesão, com neoformação óssea na área, sendo iniciado o tratamento ortodôntico.
Conclusão: O paciente encontra-se atualmente estável, sem alterações ósseas ou de tecidos moles.

Palavras-chave: Neoplasias bucais; Linfoma não-Hodgkin; Quimioterapia.

Abstract

Introduction: Burkitt's lymphoma is a neoplasm that originates from mature B lymphocytes. It predominantly affects jaw bones, mostly in males and children. **Methods:** This work aims to report a case of a 12-year-old male patient who presented at FACSETE's dental clinic with complaints of diffuse pain in several regions of the dental arches and swelling in the left mandibular vestibular fold. The teeth in the affected region showed slight mobility. Imaging exams revealed changes in the bone trabeculae, loss of the lamina dura in some teeth, and thinning and perforation of the cortical bone in the left mandible. An incisional biopsy was performed, and histological findings suggested a lymphoproliferative lesion. **Results:** Immunohistochemistry confirmed diffuse lymphoid proliferation of medium-sized cells with a "starry sky" appearance, and Ki-67 labeling index estimated at 100%, consistent with Burkitt's lymphoma. The patient was referred to São Lucas Hospital for further diagnostic evaluation and chemotherapy. Approximately 60 days later, the lesion regressed, with bone neoformation in the area, and orthodontic treatment was initiated. **Conclusion**: The patient is currently stable without any alterations in bone or soft tissues.

Keywords: Oral neoplasms; Non-Hodgkin lymphoma; Chemotherapy.

ENVIADO EM: 17/10/2024; ACEITO: 05/04/2024; REVISADO: 09/04/2025

Contato: dornelasiuri20@gmail.com

Introduction

Burkitt's lymphoma is a highly aggressive non-Hodgkin B-cell lymphoma frequently associated with Epstein-Barr virus (EBV) infection. It predominantly affects male patients and has a particular predilection for the jaw bones[1]. The World Health Organization (WHO) classifies Burkitt's lymphoma into three clinical variants: endemic, sporadic, and immunodeficiency-associated forms[2]. This lymphoma commonly involves the jaw and facial bones, as well as other extranodal sites including the kidneys, gastrointestinal tract, ovaries, breasts, and others[2].

Clinically, when Burkitt's lymphoma involves the facial bones, it typically presents as a rapidly expanding swelling, leading to facial asymmetry and tooth mobility. In some cases, pain may also be reported. Radiographically, extensive bone destruction is observed in the affected area, often with ill-defined margins, loss of the lamina dura of the involved teeth, and increased tooth mobility[3].

Diagnosis is confirmed through histopathological and immunohistochemical examination. Histologically, the lesion shows a monomorphic proliferation of medium-sized B-cells, characterized by round nuclei, multiple prominent nucleoli, and

scant basophilic cytoplasm. These cells are interspersed with macrophages undergoing phagocytosis, forming the characteristic "starry-sky" pattern of Burkitt's lymphoma. Immunohistochemically, the tumor cells exhibit strong positivity for CD10 and CD20 markers. Furthermore, the Ki-67 proliferation index approaches 100%, indicating a high mitotic rate[4–5].

Burkitt's lymphoma is usually treated with intensive chemotherapy, and the five-year survival rate ranges from 75% to 95%, depending on the disease stage at the time of diagnosis[6]. This article presents a case of Burkitt's lymphoma initially mimicking irreversible pulpitis, with a three-year clinical and radiographic follow-up

Methods

A 12-year-old male patient presented to the dental clinic at FACSETE complaining of diffuse pain and swelling on the left side of the mouth. There was no history of systemic conditions (negative for HPV and HIV) or parafunctional habits. Extraoral examination revealed no facial asymmetry or disproportion between the facial thirds. The patient reported diffuse and intense pain affecting several teeth. Intraoral clinical examination showed mild tooth mobility and slight buccal cortical expansion in the posterior region of the left mandible, resulting in reduced vestibular sulcus depth. All involved teeth responded positively to the pulp sensitivity test (Figure 1).

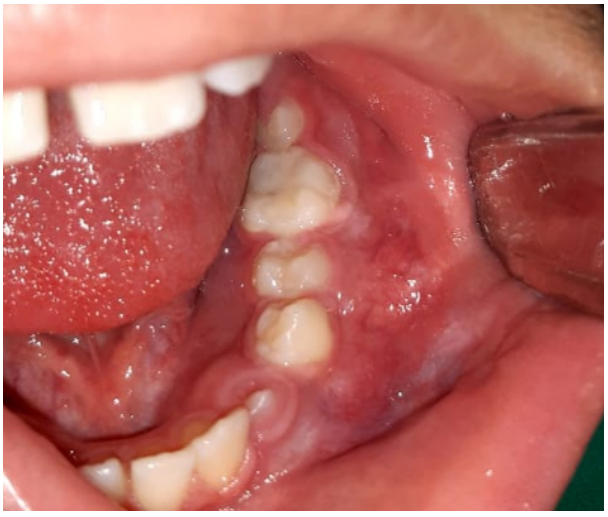

Figure 1: *Intraoral clinical image at initial presentation, showing localized swelling in the premolar region*

Through panoramic radiography, alteration of the bone trabeculae in the posterior region of the left mandible and loss of the lamina dura in some dental elements were noted (Figure 2). In the cone-beam computed tomography (CBCT), a hypodense lesion with an irregular shape and imprecise limits was observed in the region from teeth 34 to 36, with destruction of the vestibular cortical bone (Figure 3). Based on the clinical and imaging characteristics, the following differential diagnoses were suggested: carcinoma, lymphoproliferative lesion, osteolytic.

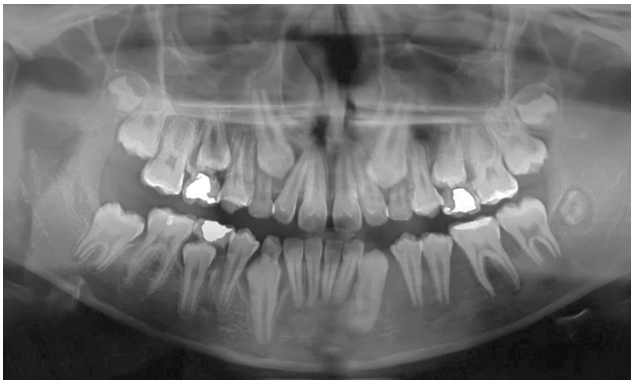

Figure 2*: Initial panoramic radiograph. Initial panoramic radiograph showing alterations in the premolar region*

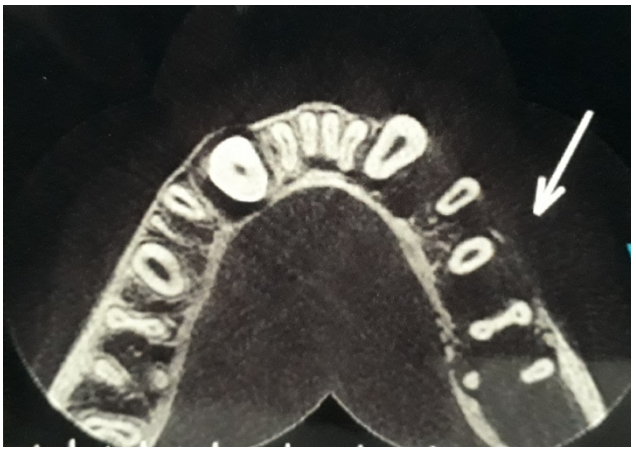

Figure 3*: Tomographic image showing loss of trabeculae and rupture of the vestibular cortical bone.*

An incisional biopsy was then performed, and the obtained fragments were fixed in 10% formalin solution and sent for histopathological examination. The histopathological report revealed connective tissue with diffuse and massive infiltration of small cells with slightly irregular hyperchromatic nuclei and some mitotic figures, suggestive of a lymphoproliferative lesion. Immunohistochemistry was requested, which was positive for CD79a, CD20, and CD10 antigens, and 100% for Ki-67, with

a starry-sky pattern and lymphoid proliferation, confirming the diagnosis of Burkitt's lymphoma (table 1). In addition, an in situ hybridization test was requested to verify the presence of the Epstein-Barr virus and was negative.

Antigen	Antibody (clone)	Result
CD2	MRQ-11	Negative
CD79a	SP18	Positive
TdT	Polyclonal	Negative
CD20	L26	Positive
CD10	SP67	Positive
CD3	2GV6	Negative
BCL2	124	Negative
Ki-67	30-9	Positive (100%)

***Table 1**: Details of lab investigations (immunohistochemical panel)*

The patient was referred to the oncology department at São Lucas Hospital in Belo Horizonte, MG. MRI revealed an expansive neoplastic lesion in the mandible, invading adjacent soft tissues. Chest and abdominal X-rays, bone marrow biopsy, and cerebrospinal fluid cytology showed no secondary lesions. The oncological PET-CT revealed no abnormal radiopharmaceutical uptake indicative of metabolically active lesions.

The patient underwent seven sessions of chemotherapy over four months, leading to lesion regression. A new intraoral clinical examination performed one month after the end of chemotherapy showed the involution of the expansive lesion in the left mandible, with the vestibular fold depth increasing (Figure 4). The follow-up panoramic radiograph showed an increase in bone trabeculae in the affected region (Figure 5).

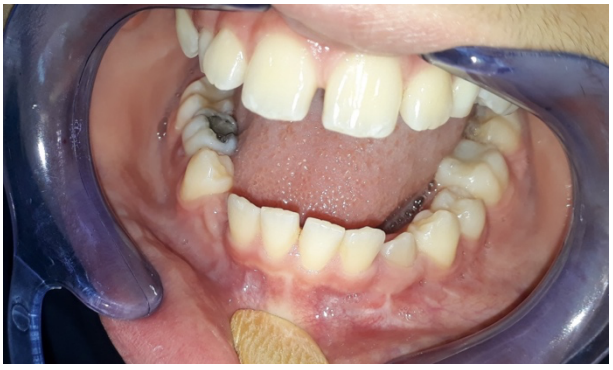

***Figure 4**: Intraoral clinical appearance one month after completing chemotherapy.*

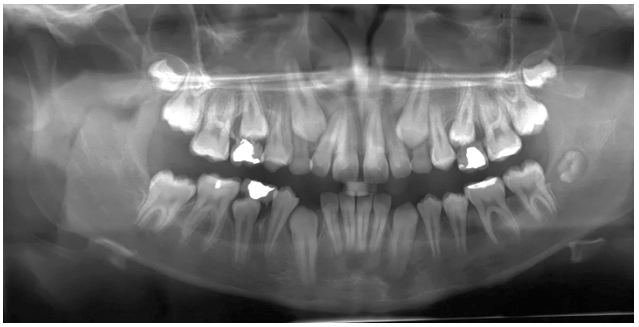

***Figure 5**: Panoramic radiograph one month after completing chemotherapy.*

The patient continued with oncology and dental follow-up every six months, with no recurrence of the lesion in the oral cavity or systemic involvement. In the clinical examination, no alterations were found in the soft tissues (Figure 6), and the panoramic radiograph showed the return of normal bone trabeculae and the presence of lamina dura around the dental sockets (Figure 7).

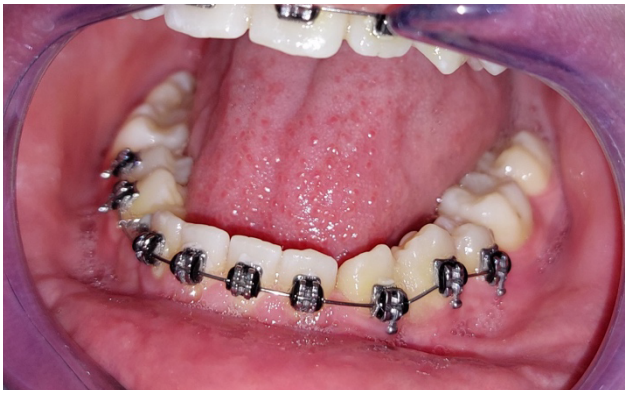

***Figure 6**: Intraoral clinical image three years after treatment*

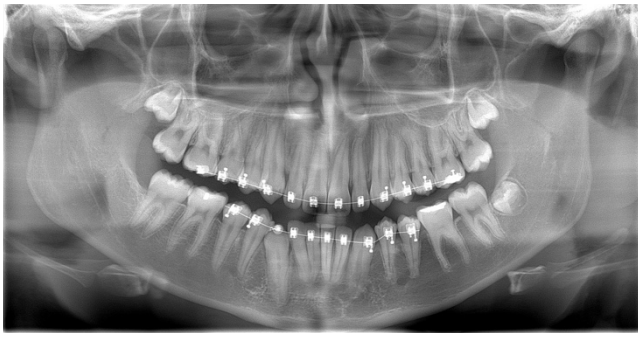

***Figure 7**: Panoramic radiograph three years after treatment.*

DISCUSSION

Burkitt's lymphoma is a malignant neoplasm classified as a non-Hodgkin B-cell lymphoma, characterized by rapid growth, marked aggressiveness, and extensive tumor dissemination[7]. Ardekian et al. analyzed the clinical characteristics of 13 cases of Burkitt's lymphoma and found that most patients (eight in total) were male. The mean age was 15.3 years, and the maxilla was the most commonly affected site[8]. In the present case, however, the mandible was involved in a 12-year-old male patient.

Among the clinical features, facial asymmetry is frequently associated with Burkitt's lymphoma, resulting from tumor-induced swelling of the surrounding tissues, as reported in multiple cases. Additional symptoms may include tooth mobility, impaired oral function, pain, proptosis, swelling, diplopia, regional lymphadenopathy, and skin ulceration[9].

In this case, the patient presented with localized expansion in the premolar region, mild tooth mobility, and intense diffuse pain—symptoms resembling irreversible pulpitis. The clinical signs observed were consistent with those described in the literature, except for the initial presentation mimicking a pulpal condition. Parker et al. reported a similar case in which Burkitt's lymphoma was initially misdiagnosed as irreversible pulpitis[10].

Given the rarity of this condition and the nonspecific nature of its clinical presentation, both diagnosis and treatment may be delayed, potentially resulting in poorer prognosis and reduced survival rates. The clinical and radiographic features of Burkitt's lymphoma—such as tooth hypermobility, mandibular pain, and the presence of "floating teeth" due to adjacent alveolar bone resorption—can resemble other, more common pathologies, including dental abscesses, cellulitis, odontogenic tumors, and Langerhans cell histiocytosis[11].

Although Burkitt's lymphoma presents with aggressive clinical behavior, it is considered potentially curable. Various chemotherapeutic regimens—typically involving cyclophosphamide, prednisone, and vincristine, with or without methotrexate and cytarabine—remain the mainstay of treatment for pediatric lynfoma burkkits as supported by the favorable response observed in this case[12]. When access to appropriate therapy is ensured, overall survival ranges from 70% to 90%, though outcomes are generally poorer in adults compared to pediatric patients[12].

Pannone et al. conducted an immunohistochemical analysis of the markers CD20, CD79a, CD10, CD3, CD5, BCL-6, BCL-2, Ki-67, and LMP-1 in a cohort of 48 patients diagnosed with Burkitt's lymphoma, including 41 pediatric cases. All cases showed positive expression for CD20. Regarding Ki-67, 10 patients exhibited 100% expression, while 34 demonstrated greater than 95% positivity, reflecting the high proliferative index characteristic of this malignancy. In addition, BCL-6 and BCL-2 were detected in 32 patients each, and LMP-1 was identified in 17 cases[13]. Histologically, Burkitt's lymphoma is characterized by a monomorphic proliferation of medium-sized B lymphoid cells, exhibiting round nuclei, prominent nucleoli, and scant basophilic cytoplasm. Numerous interspersed macrophages create the classic "starry sky" appearance typical of this neoplasm[7,8]. Immunohistochemical analysis commonly reveals positive expression for CD10 and CD20, along with a very high proliferative index, with Ki-67 labeling approaching 100%[3]. In the present case, immunohistochemical analysis demonstrated positive expression for CD79a, CD10, CD20, and a Ki-67 proliferation index of 100%, which is consistent with the highly proliferative nature of Burkitt's lymphoma. The immunophenotypic profile, along with the absence of T-cell and immaturity markers, supports the definitive diagnosis.

Positron emission tomography combined with computed tomography (PET-CT) plays a fundamental role in the staging, treatment planning, and post-treatment evaluation of Burkitt's lymphoma. Thus, more accurate staging can be achieved through the use of PET/CT[14].

Current chemotherapy protocols have shown satisfactory outcomes, with complete tumor remission reported in a substantial number of patients. In the present case, the patient responded exceptionally well to chemotherapy, achieving complete lesion regression within 60 days. After a three-year follow-up, no signs of recurrence have been observed.

CONCLUSION

Burkitt's lymphoma, though rare, is of extreme clinical relevance due to its rapid cellular proliferation and often nonspecific presentation. Health professionals face a significant challenge in

making an early diagnosis, as the lymphoma can be easily mistaken for other conditions.

REFERENCES

1. Burkitt D. A sarcoma involving the jaws in African children. Br J Surg1958;46: 218–223.
2. E. Diebold. Burkitt's lymphoma. In E Japheth, No Harris, O Stone, et al., eds. Pathology and Genetics of Tumors of Hematopoietic and Lymphoid Tissues, Washington, DC: IARC Press, 2001, 181–184.
3. Rebelo-Pontes, Hélder A., et al. "Burkitt's lymphoma of the jaws in the Amazon region of Brazil." Medicina oral, patologia oral y cirugia bucal. 2014;19(1): e32.
4. Pereira, Cláudio M., et al. "Burkitt's lymphoma in a young Brazilian boy."Malays J Pathol. 2010;32: 59-64.
5. Neville BW, Damm DD, Allen CM, et al. PatologiaÓssea. In: Neville BW, Damm DD, Allen CM, Bouquot JE. eds. Patologia Oral Maxilofacial. Rio de Janeiro: Guanabara Koogan,2009; 602-604.
6. Bregani ER, Balzarini L, Cabibbe M. African Burkitt Lymphoma successfully treated with CEOP polychemotherapy. Acta Trop 2004;92:91-4.
7. Patik K, Mahma VG, Jayanth B, Ambika L. Burkitt's lymphoma in an Indian girl: a case report. *J Indian Soc Pedod Prev Dent.* 2007;25(4):194–9.
8. Ardekian L, Rachmiel A, Rosen D, Abu-El-Naaj I, Peled M, Laufer D. Burkitt's lymphoma of the oral cavity in Israel. *J Cranio-maxillofac Surg.* 1999;27:294–297
9. Oliveira et al. Aspectos clínicos e tomográficos do linfoma de Burkitt em paciente pediátrico - relato de caso. Rev. cir. traumatol. buco-maxilo-fac. vol.15 no.2 Camaragibe Abr./Jun. 2015
10. Parker WD, Jones K. Burkitt's lymphoma: an unexpected cause of dental pain. J Surg Case Rep. 2021 Feb 15;2021(2):rjaa557. doi: 10.1093/jscr/rjaa557. PMID: 33613961; PMCID: PMC7884023.
11. Frota et al. Burkitt's Lymphoma as a differential diagnosis of dental infection. Rev. Cir. Traumatol. Buco-Maxilo-Fac., Camaragibe v.22, n.2, p. 53-58, abr./jun. 2022 Brazilian Journal of Oral and Maxillofacial Surgery – BrJOMSS
12. Rodrigues-Fernandes, Carla Isabelly et al. “Clinicopathological analysis of oral Burkitt's lymphoma in pediatric patients: A systematic review.” International journal of pediatric otorhinolaryngology vol. 134 (2020): 110033. doi:10.1016/j.ijporl.2020.110033
13. Pannone, Giuseppe et al. “The role of EBV in the pathogenesis of Burkitt's Lymphoma: an Italian hospital based survey.” *Infectious agents and cancer* vol. 9,1 34. 15 Oct. 2014, doi:10.1186/1750-9378-9-34
14. Carrillo-Cruz, Estrella et al. “Role of 18F-FDG-PET/CT in the management of Burkitt lymphoma.” European journal of haematology vol. 94,1 (2015): 23-30. doi:10.1111/ejh.12284