CASE REPORT

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Pathohistological Diagnosis of Burkitt's Lymphoma After Cervical Biopsy–Case Report with Literature Review

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ABSTRACT

Background: Burkitt's lymphoma (BL)belongs to the group of lymphomas with an aggressive clinical course. It is a rare form of lymphoma in adults with an incidence of 1200 patients per year in the USA. **Objective**: The aim of this article was to present for the first time the case of a patient in whom Burkitt's lymphoma was proven by biopsy and curettage of the uterus, and at the same time in the biopsy of palatine tonsil and bone. **Case report**: A 64-year-old female patient who comes because of difficulty in swallowing, enlarged neck lymph nodes and vaginal bleeding. Under diagnosis Lymphoma non Hodgkin Burkitt CS IV B, ECOG 3, IPI 5 (high risk), R-IPI:5 (poor prognostic index) introduction of IHT R-CHOP 4 cycles with therapeutic response. **Conclusion**: A multidisciplinary approach is needed in the case of suspicion and diagnosis of BL, which is most often in an advanced form.

Keywords: Burkitt lymphoma, lymph nodes, cervix, polychemotherapy.

1. BACKGROUND

Epidemiology: BL as an endemic form in Equatorial Africa and New Guinea in children infected with malaria and EBV infection (1). Etiology and pathogenesis: The genetic basis is the activation of the MYC gene through its translocation for the immunoglobulin heavy chain (2, 3). In endemic BL, EBV infection plays an initial role by inducing proliferation via Epstein Barr nuclear antigen (EBNA)-2, and also by inhibiting apoptosis via EBNA 3A and EBNA3C, which inhibit the proapoptotic protein BIM, a key regulator of MYC-induced tumorigenesis (4-6). Clinical characteristics: In the non-endemic form, it most often occurs in the form of an abdominal tumor mass. In the endemic form of BL, at presentation, the tumor mass is usually in the area of the jaw or facial bone. Laboratory characteristics: elevated LDH. Histopathology: high proliferative index with positivity for the proliferative marker Ki -67 above 95% (7). The cells have a high N/C ratio, in the pathohistological preparation, due to the high apoptotic index, they give the appearance of a "starry sky pattern". Immunophenotype: BL cells are mature B cells positive for CD 19, CD20, CD22, CD 79alpha, surface IgM, and negative for CD5 and CD23. 98% of patients are EBV positive in endemic, while positivity is described in about 20% of sporadic BL and 30-40% of BL associated with HIV(8). Cytogenetics: BL is characterized by the presence of a specific translocation t (8; 14). Differential diagnosis: The characteristics of BL are the expression of MYC, and the lack of gene expression of the NF kappa-B proapoptotic pathway (9). **Treatment**: Application of intensive chemotherapy. Five-year survival is 40%.

2. OBJECTIVE

The aim of this article was to present the case of a patient in whom Burkitt's lymphoma was proven by PVU biopsy and curettage of the uterine cavum, and at the same time in the palatine tonsil and bone biopsy. Emphasize the need for a multidisciplinary approach and clinical studies with the aim of testing the value of new drugs and antibodies and defining the best protocols.

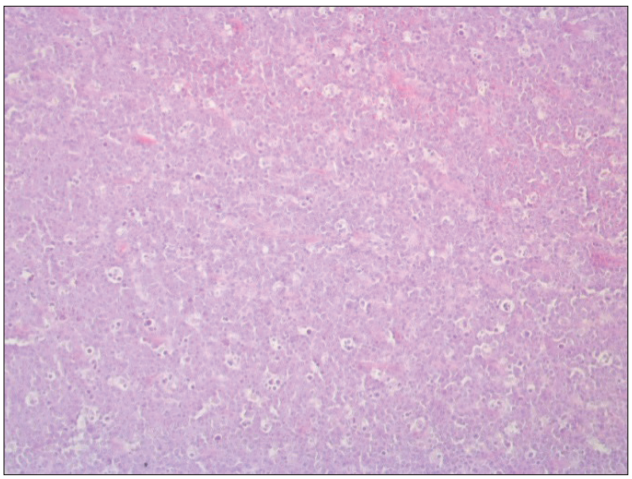

Figure 1. BL, tonsil HE x10, starry sky view

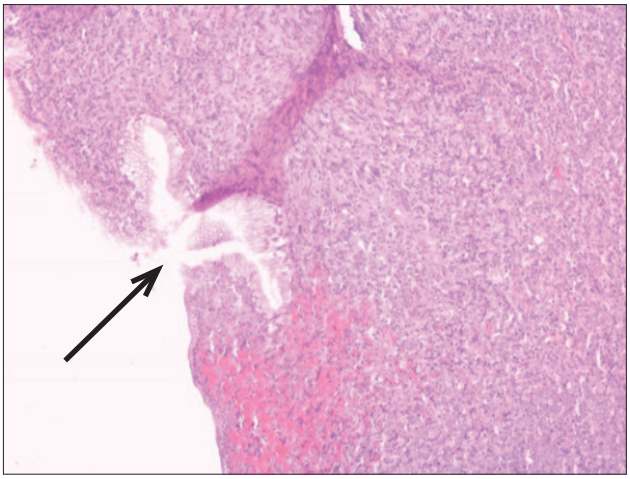

Figure 2. BL, tonsil HE x10

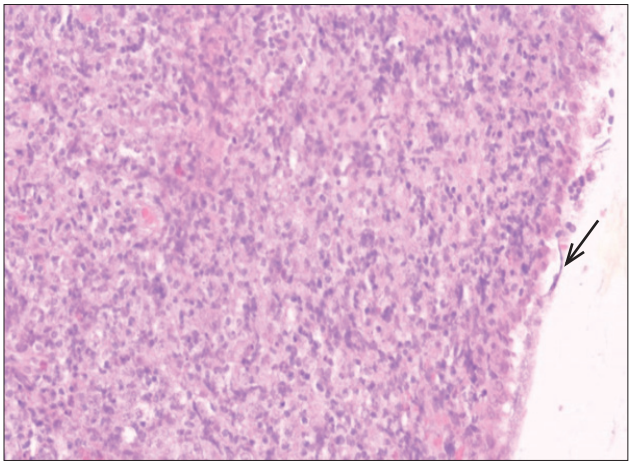

Figure 3. BL, tonsil, antibody Ki 67x10, nuclear positivity expressed in almost all tumor cells

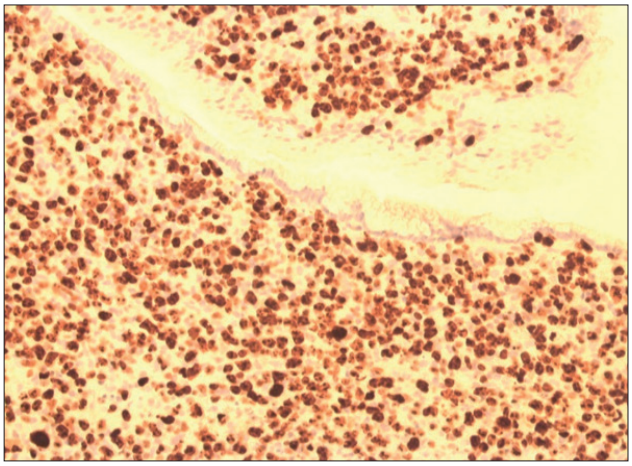

Figure 4. BL, cervix, HE x10, monotonous intermediate tumor cells with starry sky appearance, arrow preserved parts of endocervix

3. CASE PRESENTATION

The case of a 64-year-old female patient who came to the doctor due to difficulty swallowing and enlarged neck lymph nodes, and then vaginal bleeding, is presented. In order to clarify the etiology of cervical lymphadenopathy, hypertrophy of the right tonsil, metrorrhagia, a clinical, laboratory and radiological evaluation is performed, followed by a PH verification.

Clinical: Right on the neck, next to the right m. scm palpable conglomeration of lymph nodes with a diameter of 3 cm, hard consistency, fixed. Suprapubic palpable resistance measuring 3x3 cm, not painfully sensitive to palpation. In laboratory analyses: anemia, elevated values: LDH (3819 U/l), uric acid, AST, beta 2 microglobulin and CRP.

Examined by an ENT specialist. A tonsillectomy is suggested in order to verify PH. The right palatal tonsil with the tumor was removed. Based on the histomorphological and immunohistochemical profile (CD 20+, PAX5-, BCL6+, BCL 2+, CD10-, IgM+, CD0-, CD 79 alpha+), malignant tissue of non-Hodgkin lymphoma Burkitt type, high proliferative activity (Ki 67 shows proliferative activity in 98% of tumor cells) (Figure1).

Under dg. Metrorrhagia in postmenopause, a biopsy and curettage of the cavum of the uterus should be performed. Based on the histomorphological and immunohistochemical profile (LCA+, CD20+, CK7-, p40-CK5/6-), malignant tumor tissue of non-Hodgkin's lymphoma Burkitt type with high malignant potential (Ki 67 90%) was found. Lymphoma cells are medium in size, with a particularly high mitotic and apoptotic index, with a characteristic starry sky pattern (Figure 2, 3, 4).

The diagnosis of non-Hodgkin's lymphoma of the Burkitt type was also confirmed by bone marrow biopsy. An immunohistochemical analysis was performed on the bone tissue sample with the following results: CD20+++, CD 79 alpha ++, bcl-2 +, bcl-6+, CD10+/- (Figure 5).

By identification and analysis of chromosomes from bone marrow cells, using the GTG strip technique, a complex karyotype with several different pathological clones was observed.

In order to assess the spread of the disease, USG of the neck and NMR of the abdomen and pelvis are performed. In the area of the neck, IIA and III groups on the right side, a conglomeration of enlarged lymph nodes, individual diameter up to 24 mm, without clear differentiation of the hilus. On examination of the NMR of the abdomen and small pelvis: A large tm change in the small pelvis in block with the uterus, urinary bladder, anterior rectal wall and ileum coils. The change of the

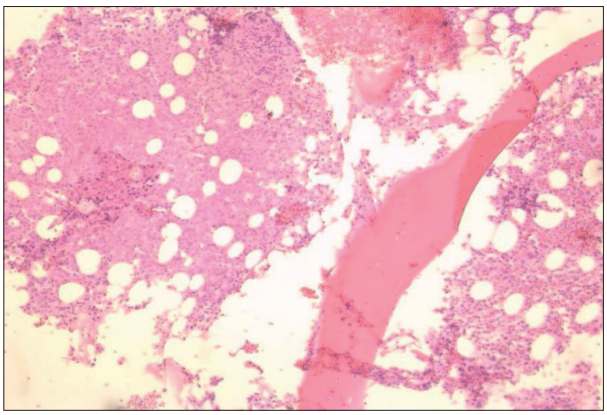

Figure 5. BL, HE x20, cervix, right preserved parts of the endocervical cylindrical epithelium

same morphological characteristics also differentiates laterally from m. psoas on the right side, caudally infiltrates m. iliacus, like a muff surrounds the large wing of the right iliac bone and infiltrates m. gluteus minimus and medius.

PET/CT indicates generalized metabolically active lymphadenopathy. EF: 55% and serology for hepatitis markers and anti-HIV negative.

The patient was presented to the Council for Hematological Malignancies under dg. Lymphoma non Hodgkin Burkitt CS IV B, ECOG 3, IPI 5 (high risk), R-IPI:5 (poor prognostic index), the introduction of IHT according to the R-CHOP protocol of 4 cycles is indicated, followed by assessment of the therapeutic response.

After the first cycle of R-CHOP therapy, the tumor mass in significant regression with the correction of biochemical parameters. Neutropenia on the 6th day from the start of therapy, corrected by the use of granulocyte growth factor (GFR). Continue with the same R-CHOP protocol for four cycles.

Treatment complicated by hematuria. An exploratory urethrocystoscopy is performed, where a tumoral change is identified on the left and back wall that penetrates the lumen of the bladder from the outside. Abdominal CT: Both kidneys with preserved parenchyma without nephrolithiasis and focal lesions of dilated PK system and ureters up to 9 mm wide–ureterohydropherosis gr I/II. A heterogeneous, centrally necrotic, infiltrative tm change is differentiated in the block with the uterus, unchanged in size compared to the comparative NMR examination, the described tm change pushes the urinary bladder anteriorly, compresses both ureters, is in a close relationship with the rectum without signs of infiltration. In conditions of LA, a percutaneous nephrostomy (PCN) was placed. In biochemical analyses, the re-increase of liver enzymes, LDH and uric acid.

Treatment continues according to the R-ESHAP protocol. Autologous TMJH is considered. She received the 1st cycle of IHT according to the specified protocol. The post-therapeutic course was complicated by deep aplasia of the bone marrow, with severe neutropenia and an increase in inflammatory parameters, which required the use of GFR with parenteral antibiotic therapy. Anemia corrected with deplasmatized erythrocytes, and because of severe thrombocytopenia with consequent cutaneous hemorrhagic syndrome, she received platelet concentrates. The patient's severe general condition is maintained despite all the applied treatment measures, under the picture of sepsis, it ends with a fatal outcome.

4. DISCUSSION

In the literature, there is no case of a patient in whom Burkitt's lymphoma was proven by PVU biopsy and curettage of the uterine cavum, and at the same time in the palatine tonsil and bone biopsy. Rajae 2024 reports a case of unilateral location of Burkitt's lymphoma of the maxilla and mandible without other symptoms. The isolated oral form in adults is shown as extremely rare (10). **Čubranić** in 2019 shows two cases of Burkitt lymphoma location in the colon and stomach of immunocompromised patients, EB negative, emphasizing that abdominal localization is rare, except for the ileocecal region (11).

5. CONCLUSION

Our presentation points to the need for a multidisciplinary approach in the case of suspicion and diagnosis, which is most often in an advanced form. Burkitt's lymphoma is very aggressive, but a good therapeutic response is achieved with the use of polychemotherapy. Due to the numerous complications of high-dose polychemotherapy, in the elderly and patients with comorbidities, options with a lower toxicity profile are used (12). The lack of agreement among experts in the field of lymphoma when it comes to the optimal treatment of either newly diagnosed or relapsed Burkitt lymphoma imposes the need for clinical studies with the aim of examining the value new drugs and antibodies and defining the best protocols.

- **Author's contribution**: The all authors were involved in preparation this article. All authors read and approved the final manuscript.
- **Conflict of interest**: The autors declare that they have no competing interests.
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REFERENCES

1. Burkitt D et al. A sarcoma involving the jaws in African children. Br J Surg. 1958; 46: 218-223.
2. Sweerdlow SH, Campo E, Harris NL et al. The 2016 revision of the World Health Organisation Classification of Lymphoid neoplasms. Blood. 2016; 127(20): 2375-2390.
3. Cheson BD. Adult Burkitt lymphoma: Too soon to declare victory. Oncology (Williston Park). 2008; 22: 1518-1519.
4. Sehn LH et al. Management of Burkitt lymphoma: A continuing challange. Oncology (Williston Park). 2008; 22: 1522-1523.
5. Geser A, Brubaker G, Draper CC. Effeect of a malaria suppression program on the incidence of African Burkitts lymphoma. Am J Epidemiol. 1989; 129: 740-752.
6. Thorley-Lawson DA, Allday MJ. The curious case of the tumour virus:50 years of Burkitt s lymphoma. Nat Rev Microbiol. 2008; 6: 913-924.
7. Biggar RJ, Chaturvedi AK, Goedert JJ, Engels EA. AIDS-re-

lated cancer and severity of immunosuppression in persons with AIDS. J Natl Cancer Inst. 2007; 99: 962-972.
8. Grady G, MacArthur GJ, Farrell PJ. Epstein-Barr virus and Burkitt lymphoma. J Clin Pathol. 2007; 60: 1397-1402.
9. Rodig SJ, Vergilio JA, Shahsafaei A, Dorfman DM. Characteristic expression patterns of TCL 1, CD 38 and CD4 identify agressive lymphomas harboring a MYC translocation. Am J Surg Pathol. 2008; 32: 113-122.
10. Rajae G et al. Atipical presentation of oral Burkitt lymphoma in an adult:a case report. J Med Case Rep. 2024.
11. Čubranić A, Golčić M, Čupić D, Brozović B, Gajski D, Brumini I. Burkitt lymphoma in gastrointestinal tract: a report of two cases. Acta Clin Croat. 2019. Jun.
12. Kelly JL, Toothaker SR, Ciminello L. Outcomes of patients with Burkiz lymphoma older than age 40 treated with intensive chemotherapeutic regimens. Clin Lymphoma Myeloma 2009; 9: 307-310.