the right, maintaining contact with the right lateral and anterior chest wall up to the skin; nodular lesions in the bilateral thyroid parenchyma; lesions compatible with lymphoproliferative disease. Abdominal tomography showed a solid mass in the body of the pancreas (5.8 × 5.2 cm), a solid mass in the topography of the left adrenal gland (10.4 × 6.2 cm), solid nodular lesions in the cortex of the bilateral kidneys (up to 3.2cm on the left); all lesions compatible with metastases. Performed on the lymph node conglomerate that diagnosed Burkitt's lymphoma, the patient concluded the stage without bone marrow involvement but with involvement in the cerebrospinal fluid, defining it as stage IV. Chemotherapy treatment was started with good clinical response and images. **Conclusion:** Based on this case and a review of the literature, secondary involvement of the adrenal, pancreas and thyroid does not affect the patient's prognosis like involvement of the cerebrospinal fluid or bone marrow. However, this case characterizes an unusual presentation of Burkitt's lymphoma with involvement of three endocrinological organs simultaneously.

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RESPONSE BY FLOW CYTOMETRY IN PATIENTS WITH BURKITT'S LYMPHOMA AND SECONDARY INVOLVEMENT IN THE CSF

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Introduction: Central nervous system (CNS) involvement is a poor prognostic factor of non-Hodgkin's lymphoma (NHL) in children. Therefore, early diagnosis and treatment of CNS disease is important to improve long-term disease-free survival rates in children. With the continuous progress of science and technology, the methods and technologies used for the diagnosis of CNS disease are constantly improving, from imaging and cerebrospinal fluid (CSF) morphology studies to cerebrospinal fluid CSF flow pattern and genetics studies, and so on. With the continuous progress of diagnosis technology, the clinical staging of patients, which has a vital role in follow-up treatments, has also become more accurate. Most patients with early CNS invasion have no obvious clinical manifestations. Therefore, to improve the diagnostic rate of CNS invasion, flow cytometry (FC) and conventional cytomorphology (CC) of CSF were performed in newly diagnosed NHL patients for the first time of intrathecal chemotherapy. We report the examination findings and flow cytometry (FC) and conventional cytomorphology (CC) of two patients diagnosed with a Burkitt lymphoma and treatment response. **Case Report:** : Case 1: Adolescent, male, 16 years old, with stage IV Burkitt lymphoma. In first evaluation cerebrospinal fluid, absence of atypical cells in cytological examination, immunophenotyping, presence of 38 cells/mL with immunophenotype: CD10+, CD19+, CD20+, CD38+, CD45+, Kappa+, CD34-, Lambda-. In the second CSF, absence of atypical cells and in the immunophenotyping, absence of monoclonal B lymphoid cells. Currently, the patient is 7 months out of treatment in remission. Case 2: Adolescent, male, 17 years old, with stage IV Burkitt lymphoma; in the first evaluation of the CSF with absence of atypical cells on cytology, on immunophenotyping, presence of 40% of anomalous B cells with immunophenotype: CD10+, CD19+, strong CD20, CD34 weak, CD38 strong. In a second CSF evaluation, the patient presented absence of atypical cells on cytological examination and absence of monoclonal B lymphoid cells. Currently, the patient is undergoing treatment with no evidence of CSF involvement. **Conclusion:** Central invasion is more common to be found in pediatric NHL patients with bulky disease and/or BM involvement and/or involvement of more than 4 organs. It was also common in the EBV with Burkitt Lymphoma. CSF detection by FC has important clinical significance in the diagnosis of CNS invasion in children with NHL, as it can significantly improve the detection rate of CNS involvement and evaluation during the treatment.

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COPY NUMBER ALTERATIONS ASSOCIATED WITH HYPERDIPLOIDY IN CHILDHOOD WITH B-CELL ACUTE LYMPHOBLASTIC LEUKEMIA

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Introduction: : The presence of genetic alterations is widely used to stratify B-cell precursor Acute Lymphoblastic Leukemia (BCP-ALL) treatment. The most common cytogenetic abnormality in BCP-ALL is hyperdiploidy (good prognosis) which can be classified as low or near-hyperdiploidy (47-49 chromosomes) and high hyperdiploidy (HeH, more than 50 chromosomes). However, the presence of secondary abnormalities, such as copy number alterations (CNA), associated with a hyperdiploid karyotype may alter the prognosis. **Objective:** : The aim of this study was to analyze the frequency of hyperdiploidy associated with CNA in a cohort of BCP-ALL patients. **Material and methods:** : Forty-nine bone marrow samples of BCP-ALL patients were tested with conventional karyotype, and the DNA undergone to the MLPA SALSA Probemix P036 to detect aneuploidies and to MLPA SALSA Probemix P335 to identify specific gene deletions and amplifications. **Results:** Most patients were aged less than 6 years-old (31/49). The molecular cytogenetic showed that 35/49 (71,4%) cases had low hyperdiploidy and the minority had high hyperdiploidy (28,6%). The presence of somatic trissomies of chromosome 21 was frequent. However, amplifications were observed in *CDKN2A/B* (5/49), *EBF1* (11/49), *IKZF1* (3/49), *PAX5* (11/49), *JAK2* (1/49), *ETV6* (7/49), *BTG1* (4/49), *RB1* (1/49), *CRLF2* (10/49) and PAR1 region (31/49). Deletions were observed in *CDKN2A/B* (7/49), *EBF1* (1/49), *IKZF1* (4/49), *PAX5* (7/49), *JAK2* (1/49), *ETV6* (2/49) and *RB1* (2/49). **Discussion:** : According to the