Introduction: Breast lymphoma is a rare variety of this class of tumor in extra-nodal sites, accounting for less than 0.5% of malignant breast neoplasms and less than 3% of extra-nodal lymphomas. The most prevalent type of breast lymphoma is non-Hodgkin lymphoma (NHL) of large B cells. Burkitt lymphoma (BL) occurs in less than 6% of cases and is considered an even rarer subtype of the disease. According to the World Health Organization (WHO), BL can be classified into three clinical forms: endemic (associated with the Epstein-Barr virus), sporadic, and immunodeficiency-related. The clinical presentation of breast lymphoma is similar to that of carcinoma, and imaging tests cannot differentiate them. **Objective:** This case report aims at providing better knowledge about BL of the breast and conducting a literature review. **Case report:** A 52-year-old woman with a history of left breast carcinoma (2009) was surgically treated with quadrantectomy, sentinel lymph node biopsy in the left axilla, and adjuvant radiotherapy and hormone therapy. In 2019, she was diagnosed with Human Immunodeficiency Virus (HIV) infection and started antiretroviral therapy (ART). Four months later, she noted nodules in her left breast and underwent imaging and histopathological investigation of the lesions. Immunohistochemical results revealed NHL, with characteristics suggestive of BL of the breast. Positron emission tomography-computed tomography (PET-CT) for disease staging indicated lymphoma in stage IV-A (Ann Arbor Classification, 1988). The patient was admitted by the hematology team of the Hospital de Câncer de Barretos to start chemotherapy. **Discussion:** BL of the breast affects mainly young women, and its association with the pregnancy/lactation period is not unusual, which suggests a hormonal influence on its development. Secondary breast disease is more common, and differentiating primary and secondary lymphoma can be difficult. When associated with immunodeficiency, it is more frequent in patients infected by HIV, and less in individuals with other immunodeficiency causes. The breast lesion can be characterized by a painless nodule and possible systemic symptoms (sweating, fever, or weight loss). The main management of these cases consists of polychemotherapy, and the benefit of radiotherapy is unclear. Surgical treatments, such as mastectomy, are not indicated and are associated with worse survival. **Conclusion:** BL of the breast associated with immunodeficiency, concomitant with HIV infection, is an uncommon neoplasm that can progress to a poor prognosis. The appropriate and prompt diagnosis allows starting the best form of treatment and avoids unnecessary surgical procedures.