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Simultaneous Diagnosis of Anaplastic Large Cell Lymphoma ALK-Negative and Chronic Lymphocytic Leukemia: A Case Report

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INTRODUCTION

Chronic lymphocytic leukemia (CLL) is a chronic lymphoproliferative disorder typically seen in the fifth decade of life, characterized by an indolent course and prolonged survival. Occasionally, CLL may coexist with other lymphomas, such as anaplastic large cell lymphoma (ALCL), albeit rarely. Some studies have proposed theories suggesting a common clonal origin and similar evolutionary course between CLL and ALCL; however, there is currently no established treatment guideline or optimal therapeutic approach.

CASE

-Female, 81-year-old
-She consulted her doctor due to the presence of a breast mass
-The examination reports the appearance of a mass in the breast as well as evidence of adenopathy. A biopsy is performed at both sites.
-She did not report B symptoms

DIAGNOSTIC TEST

Concurrent cervical tumor. (Figure 1)
-Core biopsies show diffuse proliferation of lymphoid cells (**A).**
-At higher magnification, lymphocytes are small, with minimal atypia, with some scattered medium-sized cells, with prominent nucleoli (paraimmunoblasts) **(B).**
-All neoplastic cells are positive for CD20 (**C).F**aintly positive for CD5 (**D)** and CD23 (**E).** Cyclin D1 (F) is negative in small cells, *only positive in proliferation centers.*

Right mammary gland tumor (Figure 2)
-(A) By routine staining, the neoplastic lymphoid cells are large, epithelioid, and pleomorphic, with some hallmark cells. CD30 expression **(B)** is strong and diffuse on atypical cells, which are negative for PAX5 **(C).**
-The tumor is negative for ALK (D) and positive for EMA (E) and LEF-1 (F). The neoplastic cells were also negative for **TIA-1 (not shown).**

NGS
CLL (Figure 3) mutations in the SF3B1 and NOTCH1 genes were detected by NGS analysis. These mutations are present in less than 10% of CLL cases,.
ACLCL figure 4) This case was characterized as an ALCL negative for ALK, DUSP22, TP63 rearrangements, and TP63 mutations. The JAK-STAT pathway alteration was determined by detection of the STAT3 mutation using NGS analysis. It is noteworthy that mutations in the STAT3 gene are present in 60% of triple-negative ALCL cases.

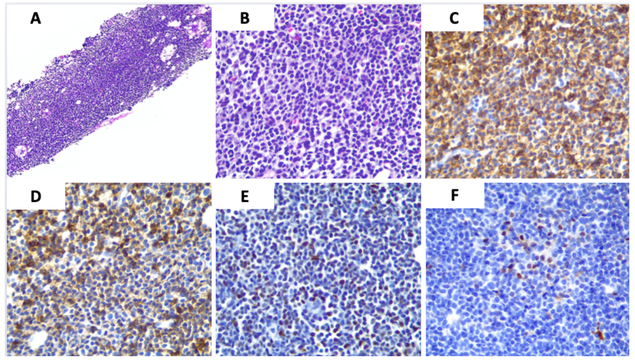


Figure 1: *Cervical tumor biopsy,* Based on morphological and immunophenotypic characteristics, a diagnosis of chronic lymphocytic leukemia/small lymphocytic lymphoma

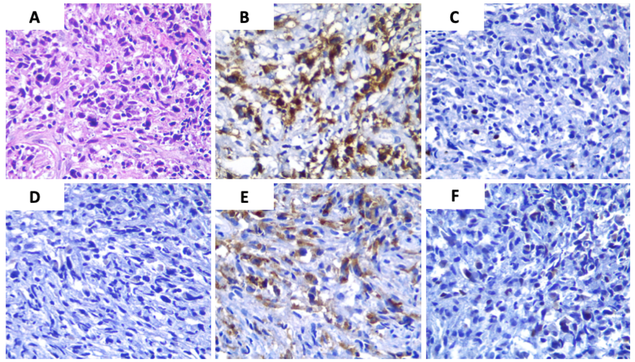


Figure 2: *Breast gland biopsy.* Based on morphological and immunophenotypic characteristics, a diagnosis of ALK negative anaplastic cell lymphoma

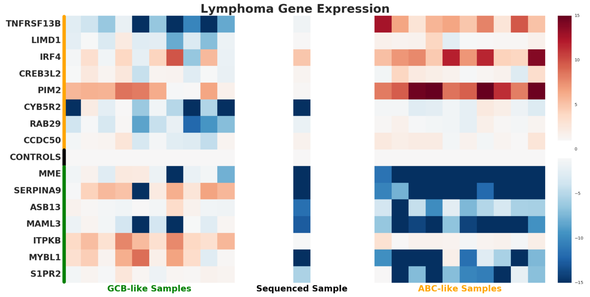


Figure 3: *NGS* of chronic lymphocytic leukemia/small lymphocytic lymphoma

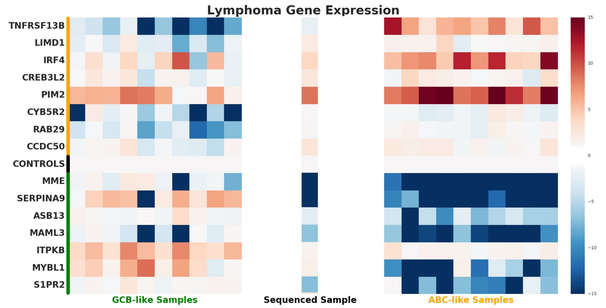


Figure 4: *NGS of ALK negative anaplastic cell lymphoma*

CONCLUSIONS

-First case reported in Latin America, similar experiences have been documented mainly in Asian and Oceanian populations, with only two reported cases of simultaneous diagnosis.
-Based on NGS, a different clonal origin is identified for each neoplasia, defining two synchronous hematologic conditions, which is quite uncommon.
-Currently no recognized standard treatment approach
-Further studies are warranted to define the optimal treatment regimen.
-The correlation between these mutations in CLL (*NOTCH1* - *SF3B1*) is associated with shorter survival.

REFERENCES

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