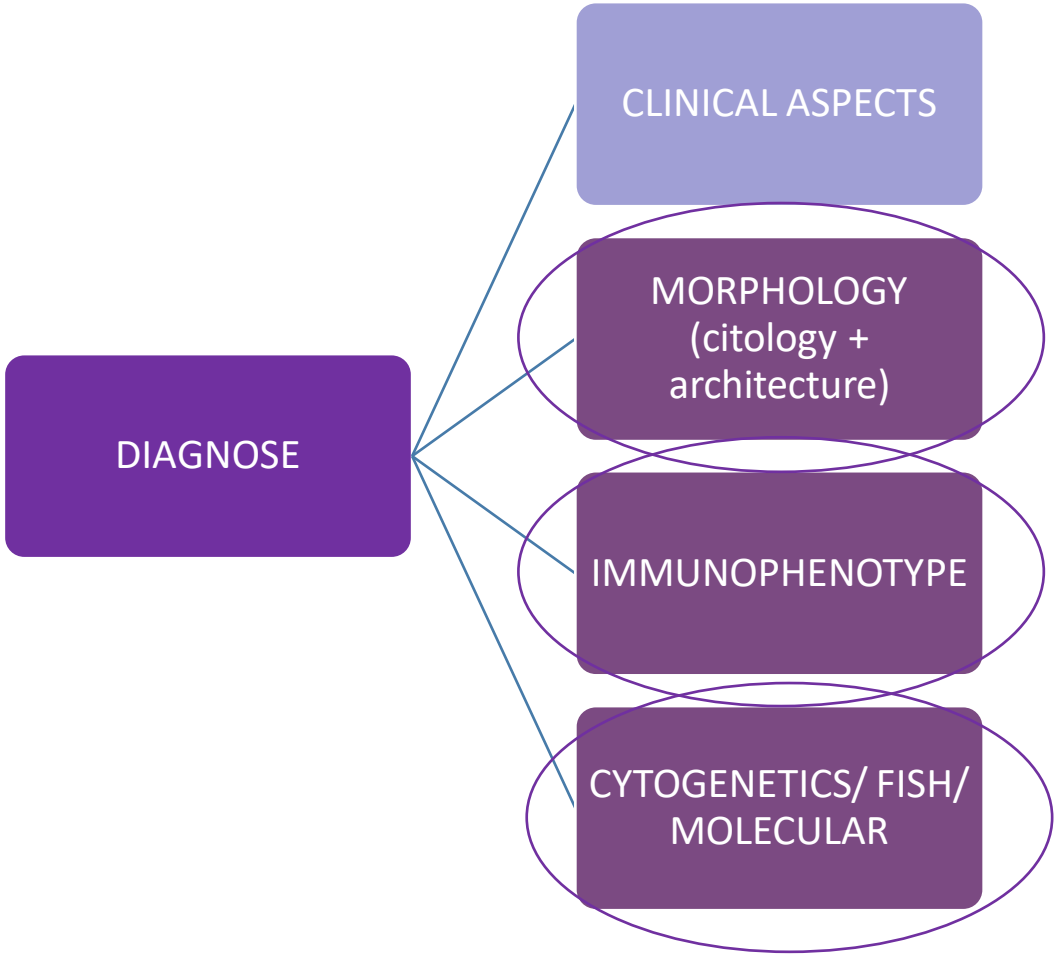
CORE NEEDLE BIOPSIES IN HEMATOPATHOLOGY

MARIANNE DE CASTRO GONÇALVES, MD, PHD

PHILOSOPHY OF THE MODERN LYMPHOID CLASSIFICATIONS



Laboratory Workup of Lymphoma in Adults

Guideline From the American Society for Clinical Pathology and the College of American Pathologists

Kroft et al / Laboratory Workup of Lymphoma in Adults

Am J Clin Pathol January 2021;155:12-37

FNA ✗

Lymph node excisions provide more precise lymphoma diagnoses than core biopsies: a French Lymphopath network survey

Charlotte Syrykh,[1] Charlotte Chaouat,[2] Elsa Poullot,[3,4] Nadia Amara,[1] Virginie Fataccioli,[3,4] Marie Parrens,[5,6] Alexandra Traverse-Glehen,[7] Thierry-Jo Molina,[8] Luc Xerri,[9] Laurent Martin,[10] Romain Dubois,[11] Vanessa Lacheretz-Szablewski,[12] Marie-Christine Copin,[11,13] Anne Moreau,[14,15] Marie-Pierre Chenard,[16] Bastien Cabarrou,[17] Amélie Lusque,[17] Philippe Gaulard,[3,4] Pierre Brousset,[1,18] and Camille Laurent[1,18]

blood® 15 DECEMBER 2022 | VOLUME 140, NUMBER 24

32285 cases registered in the French Lymphopath network – systematic expert review of all lymphoma diagnoses in France

Percentage of biopsies accurately diagnosed according to WHO – CNB (92,3%); SEB (98,1%)

Discordance rates between referral and expert diagnoses higher on CNB (23,1%) than on SEB (21,2%)

Systematic expert review highly contributed to a precise lymphoma diagnoses – CNB (81,4% x 92,3%); SEB (93,3% x 98,1%)

CNB accurately diagnoses lymphoma in most instances, but increases the risk of erroneous or nondefinitive conclusions

EXCISIONAL LYMPH NODE BIOPSIES PROVIDE GREATER DIAGNOSTIC SECURITY AND SHOULD BE ENCOURAGED WHENEVER POSSIBLE...

ON THE OTHER HAND...

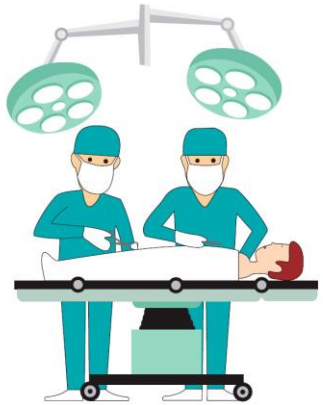
LESS INVASIVE PERCUTANEOUS TECHNIQUES HAVE GAINED SPACE AS A VIABLE ALTERNATIVE

WE HAVE TO KNOW HOW TO DEAL WITH THESE SPECIMENS!!

DIAGNOSTIC ROUTINE IN HEMATOPATHOLOGY AT SÍRIO-LIBANÊS HOSPITAL

3º CONGRESO LATINOAMERICANO DE HEMATOPATOLOGÍA SÃO PAULO | 2023

Surgical biopsy



Core needle biopsy

Frozen-section/
On-site examination

Suspected lymphoma

One tissue fragment (fresh) sent in RPMI to clinical laboratory – Flow cytometry

Remaining material sent in buffered formalin to the Pathology laboratory

WHY FLOW??

Confirms the neoplastic nature of lymphoproliferations in limited samples

Allows simultaneous analysis of distinct antigens in the same cell

Helps to identify smaller neoplastic subpopulations / more than one neoplastic population

Helps in the diagnosis of neoplasms with variations in the expected clinical presentation/ morphology/ immunophenotype – makes pathologists more confident

Core Needle Biopsy in Lymphoma Diagnosis

The Diagnostic Performance and the Role of the Multidisciplinary Approach in the Optimization of Results

Marianne de C. Gonçalves, MD, PhD, Claudia Regina G.C.M. de Oliveira, MD, PhD,**
Alex F. Sandes, MD, PhD,† Celso A. Rodrigues, MD, PhD,‡ Yana Novis, MD,§
Públio C.C. Viana, MD,‖ Márcia M.P. Serra, PhD,¶ and Maria Claudia N. Zerbini, MD, PhD#

(*Am J Surg Pathol* 2023;47:111–123)

Samples (N=476) from 2013 to 2018 were divided into groups of CNB (N=218) and SEB (N=258)

The diagnostic accuracy of SEB was 97.3% and of CNB 91.3% for adequate lymphoma subclassification

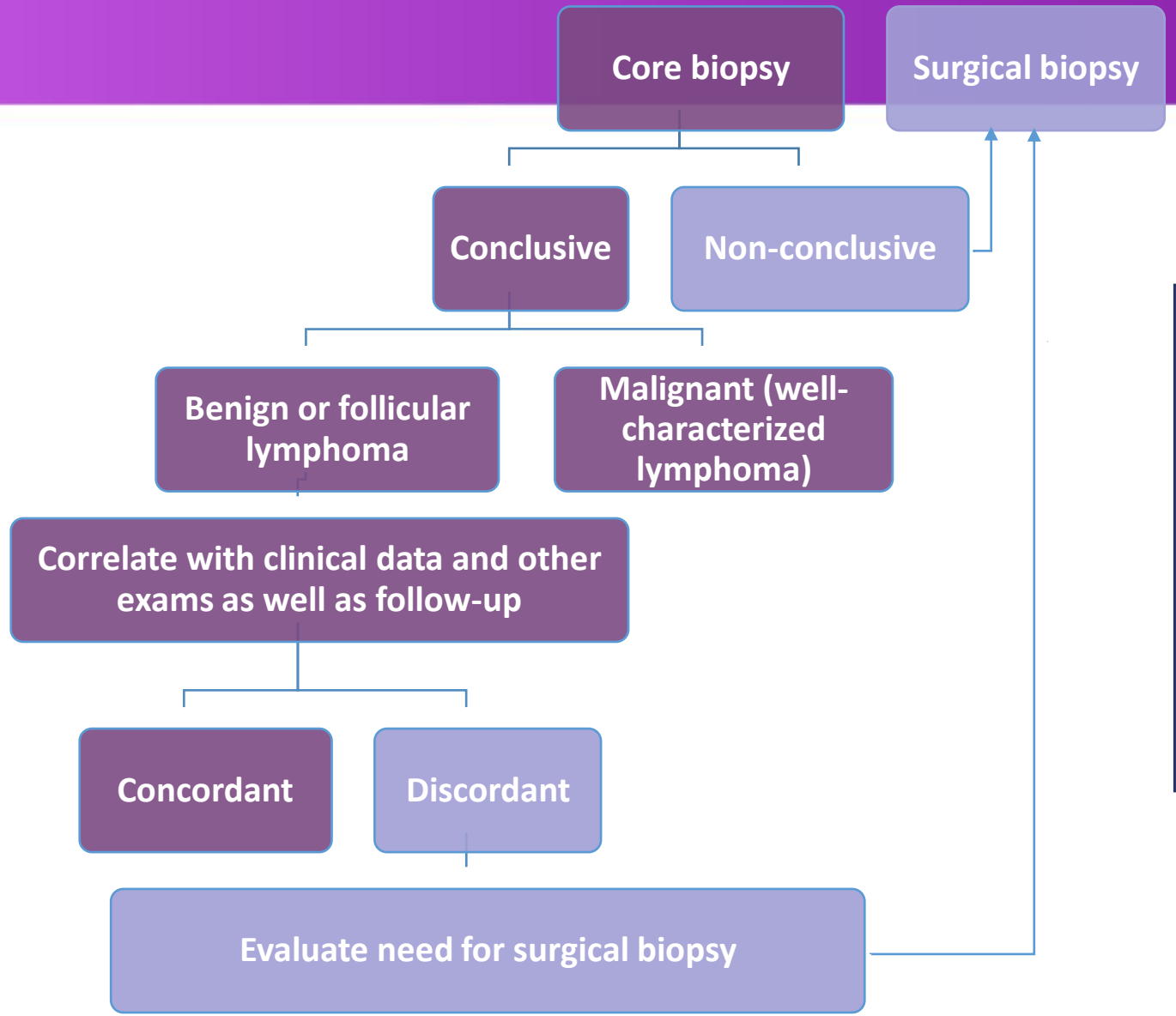
Additional factors analysed were the importance of clinical information, flow cytometry result and other complementary tests for the diagnosis in each case

Flow cytometry was considered essential for establishing the final diagnosis in 12% CNB and other ancillary tests (EBER, molecular, FISH) in 8.2%

More CNB were subjected to additional tests and were dependent on the result of these tests and clinical data for the final diagnosis when compared to SEB

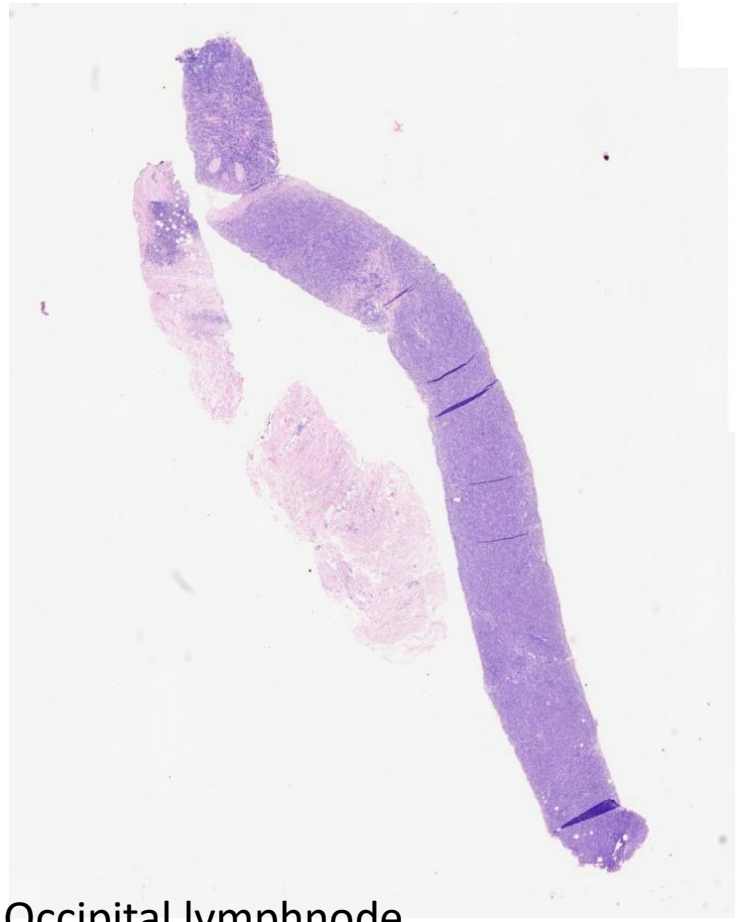
The main limitation of CNB was the evaluation of morphologically heterogenous diseases – non-diagnostic CNB - T-cell lymphomas (30%), followed by classic Hodgkin's lymphoma (10.6%)

* Obtain a minimum of 3 to 5 fragments
* Use larger gauge needles
* Send material to FC
* Separate the sample in more than one paraffin block
* Perfom other ancillary studies whenever necessary
* Have the specimens analyzed by hematopathologists



If Hodgkin's lymphoma or T-cell lymphoma is suspected, consider surgical biopsy as the initial approach

CASE 1



Occipital lymphnode

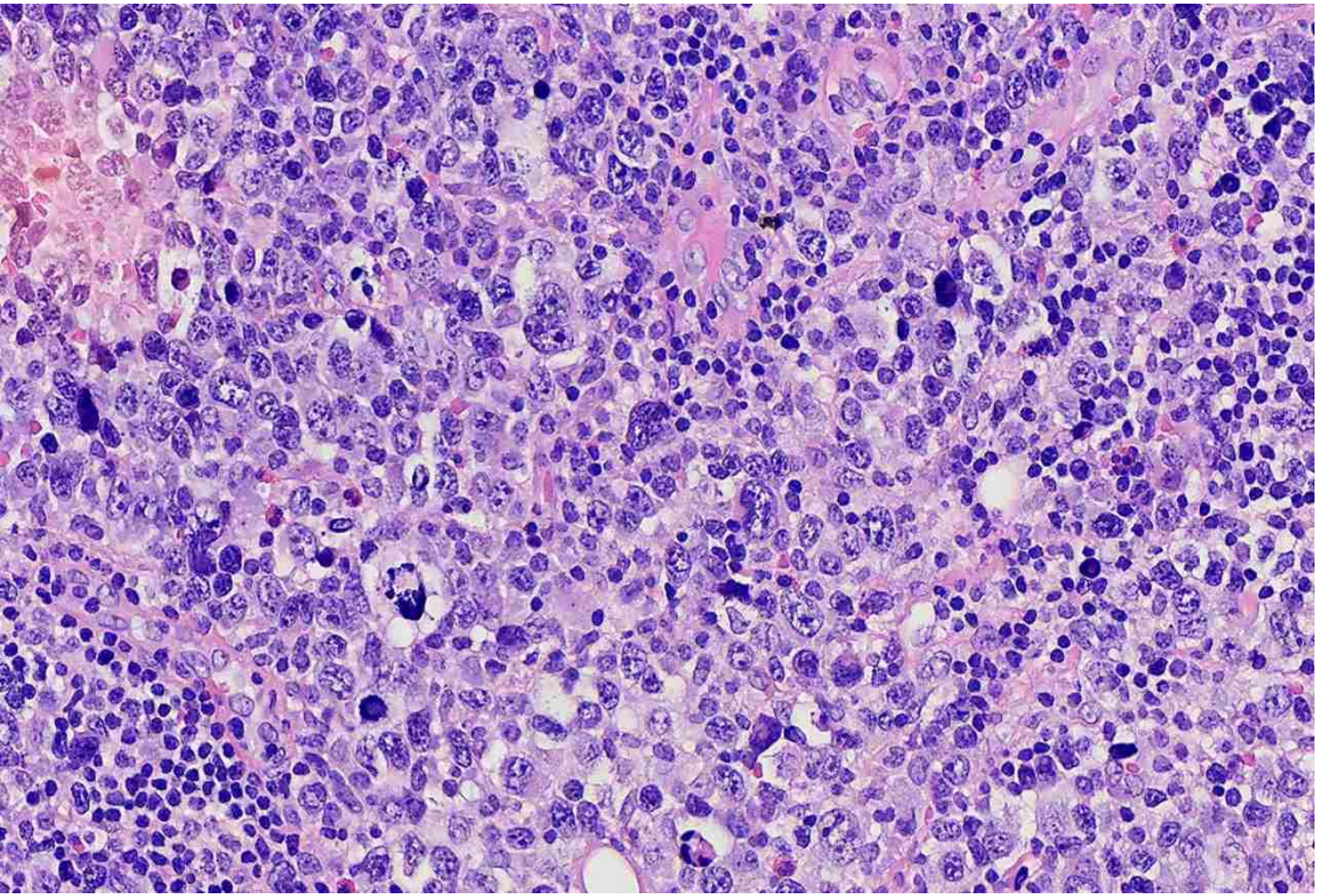
Male, 74 years

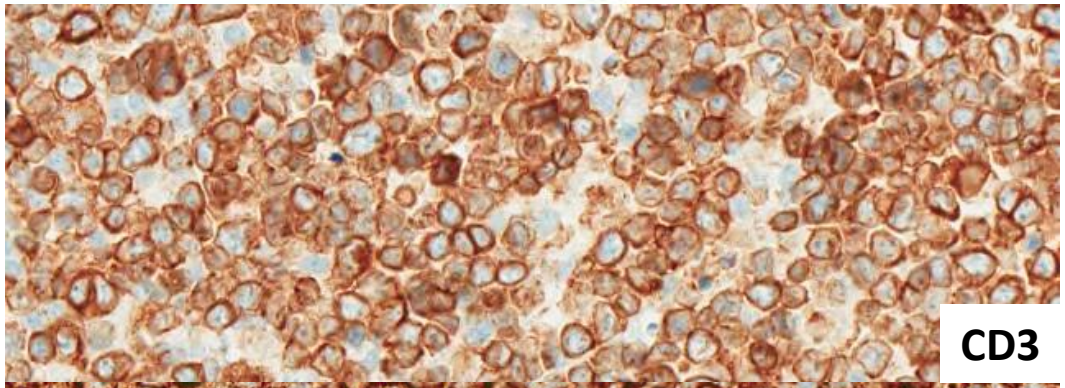
Inguinal (5,5 cm) and occipital (3,4 cm) lymphnode enlargement in 30 days.

Fever

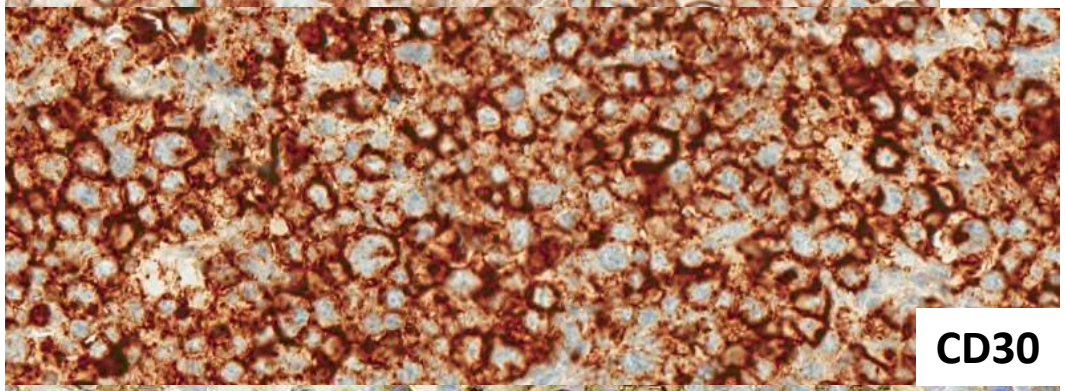
Peripheral blood – discrete anemia

Image exams (CT, PET CT) showed the two above mentioned lesions with increased glucose uptake (SUV 19) + numerous abdominal and toracic enlarged lymphnodes with no increased uptake.

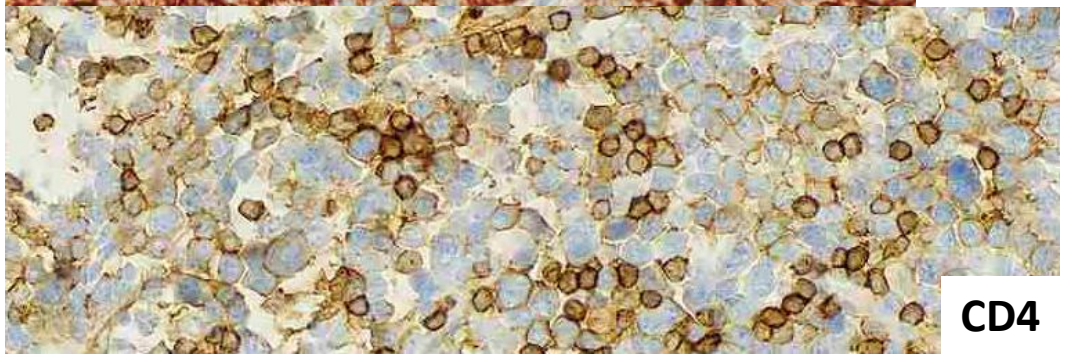




CD3



CD30



CD4

FLOW CYTOMETRY REPORT

POSITIVE : **CD3 (citop.), CD5, CD4 partial, CD30, CD2, CD45, CD25, CD279, CD71 partial, CD95, CD81.**

NEGATIVE : CAM 5.2, CD56, CD8, kappa, lambda, CD3 (surf.), CD19, CD38, FMC-7, CD10, CD79b, CD20, CD200, CD23, PERFORIN, CD57, CD7, CD26, TCL1, CD33, CD64, CD40, CD15, CD117, CD99, TdT (nuclear), CD16, CD94, HLA-DR.

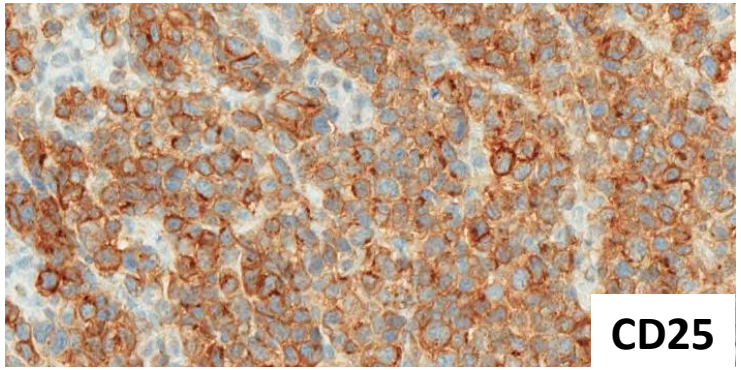
INTERPRETATION: 33% of T-cells that present large cell size and express the intracytoplasmic CD3, CD4 and CD2 antigens, in association with CD30 and CD25 antigens. **The presence of cells that express the CD30 and CD45 antigens, in association with the expression of at least one T-lineage marker (CD2, CD4 and CD3) characterizes a condition most commonly observed in anaplastic large cell lymphoma, the most likely hypothesis in the present case. (Am J Clin Pathol 2003; 119: 205).**

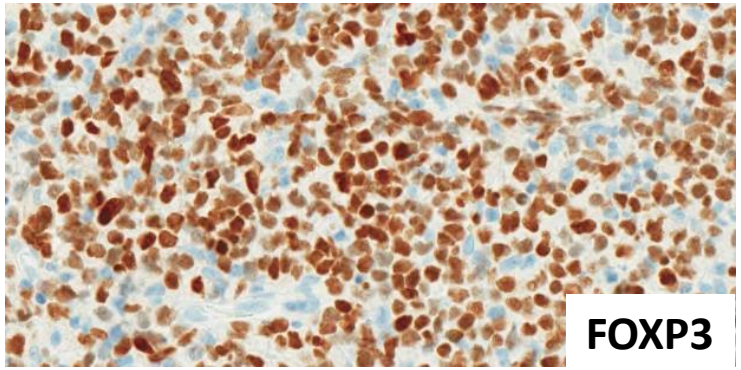
CONCLUSION: **Compatible with anaplastic large cell lymphoma.**

NOTE :

1) The definitive diagnosis is dependent on the correlation with clinical findings and other complementary exams.
2) **It was also observed the presence of 9% of mature, clonal lineage B cells, which coexpress CD19 and CD5 antigens, in association with CD23, CD20 low intensity antigens and low intensity kappa light chain immunoglobulin. Clonal lymphocytes do not express FMC-7 and CD79b antigens, characterizing the profile typically found in chronic lymphocytic leukemia / small cell lymphocytic lymphoma.**

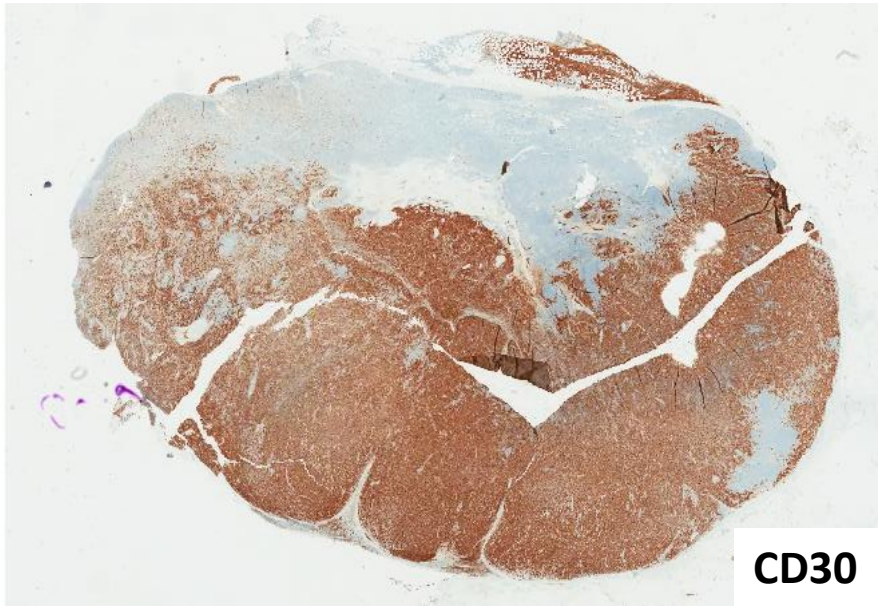
HTLV serology – POSITIVE!!



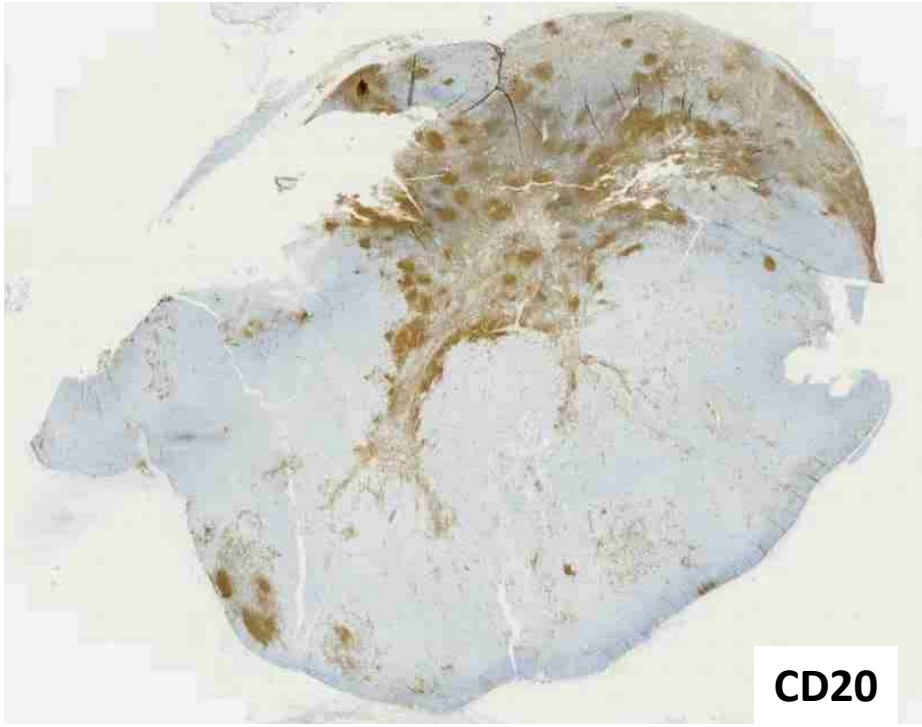


Adult T-cell leukemia/ lymphoma (lymphomatous) mimicking anaplastic large cell lymphoma
+ SLL ?

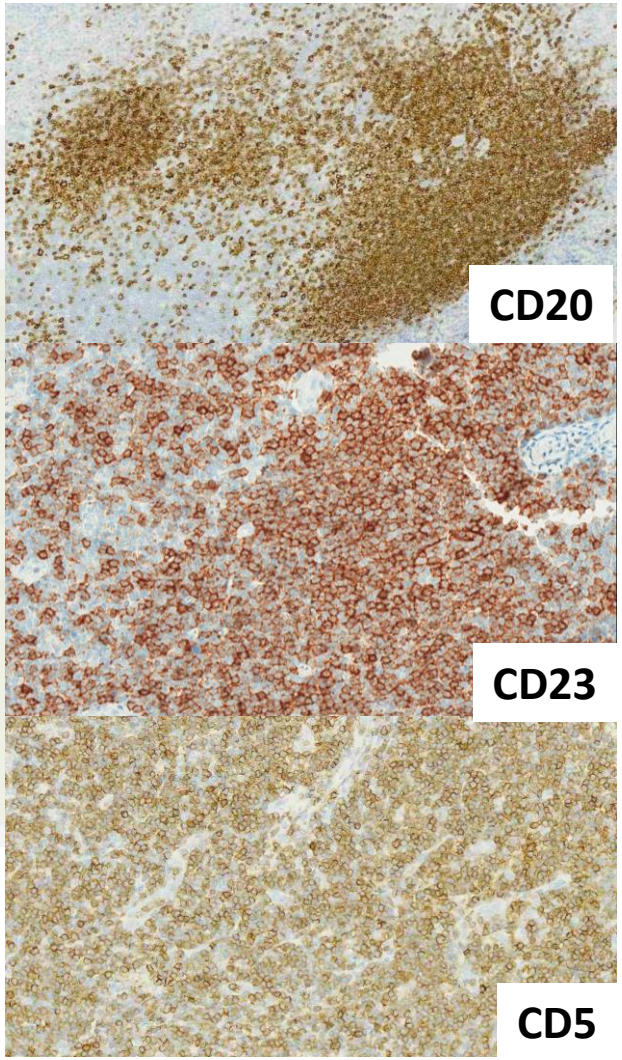
Remember the enlarged toracic and abdominal lymphnodes without increased glucose uptake...



CD30



CD20



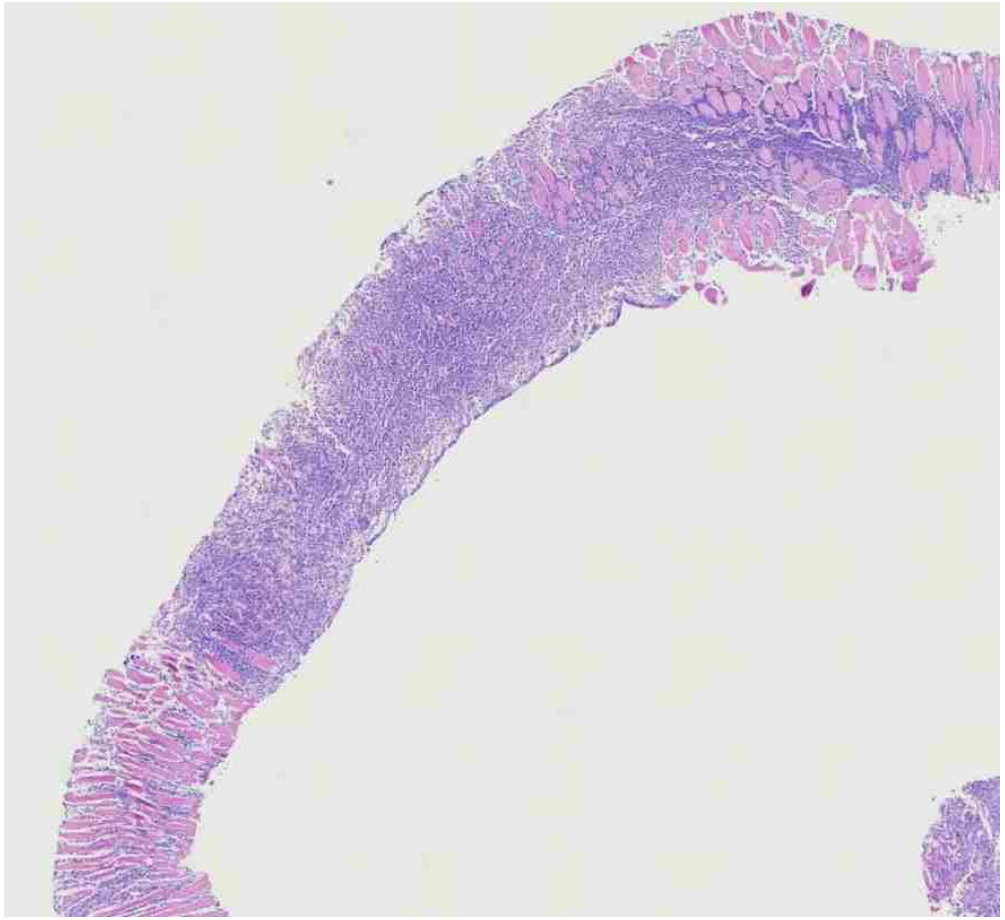
CD20

CD23

CD5

Inguinal lymphnode

CASE 2



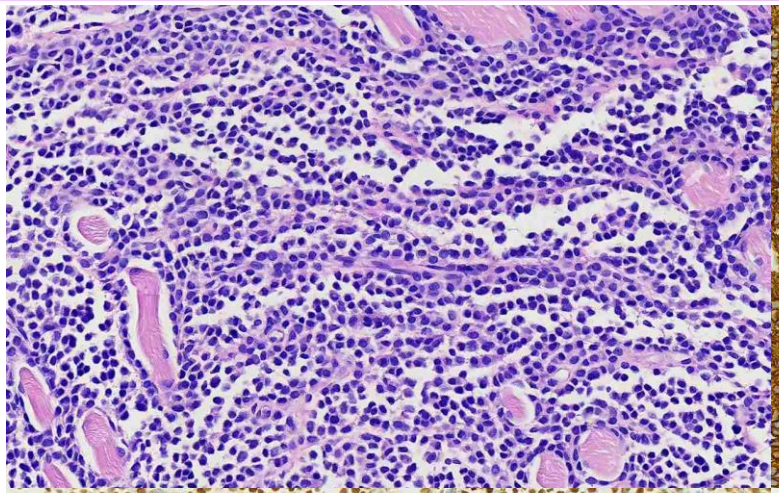
Male, 44 years

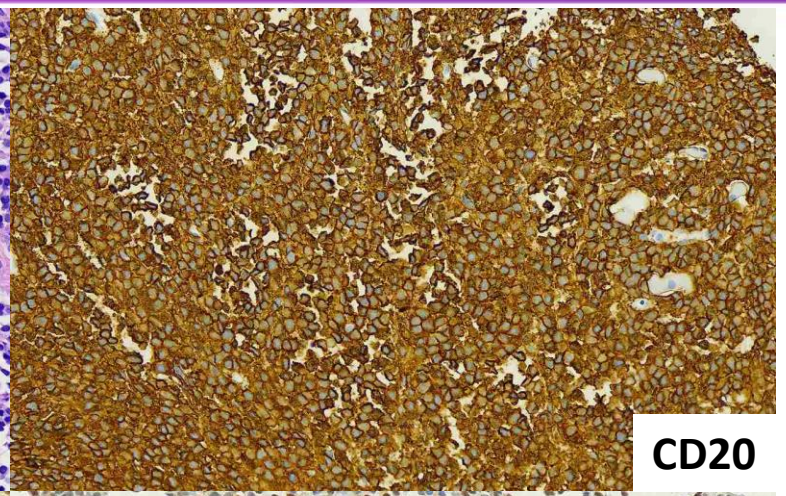
Intracranial infiltrative lesion, which extends into the orbit (determining proptosis), and infiltrates local muscles

Multiple bone lesions, located in the humerus, costal arches, T11 spinous process, iliac bilateral, bilateral femurs

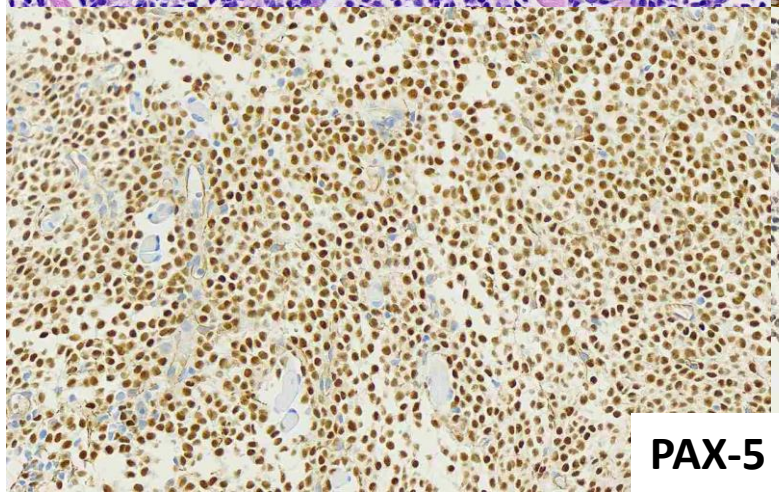
No B symptoms

No alterations on peripheral blood

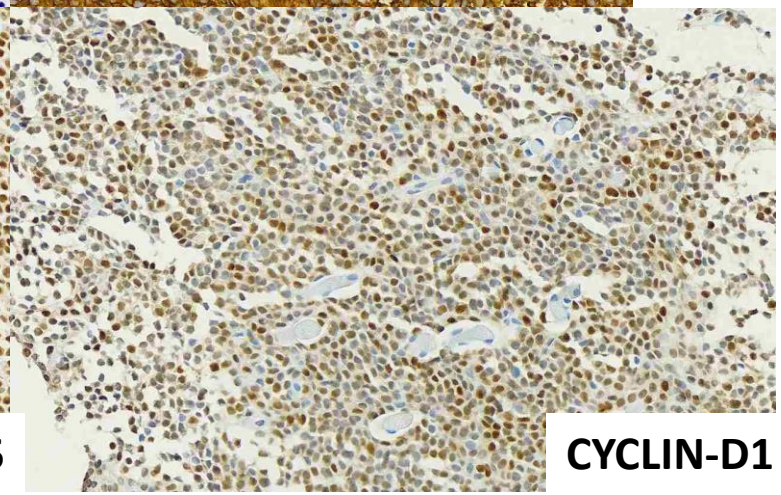




CD20



PAX-5



CYCLIN-D1

Other markers also tested:

CD5 – Negative.

SOX-11 – Negative.

CD138 – Negative.

CD10 – Positive.

BCL6 – Negative.

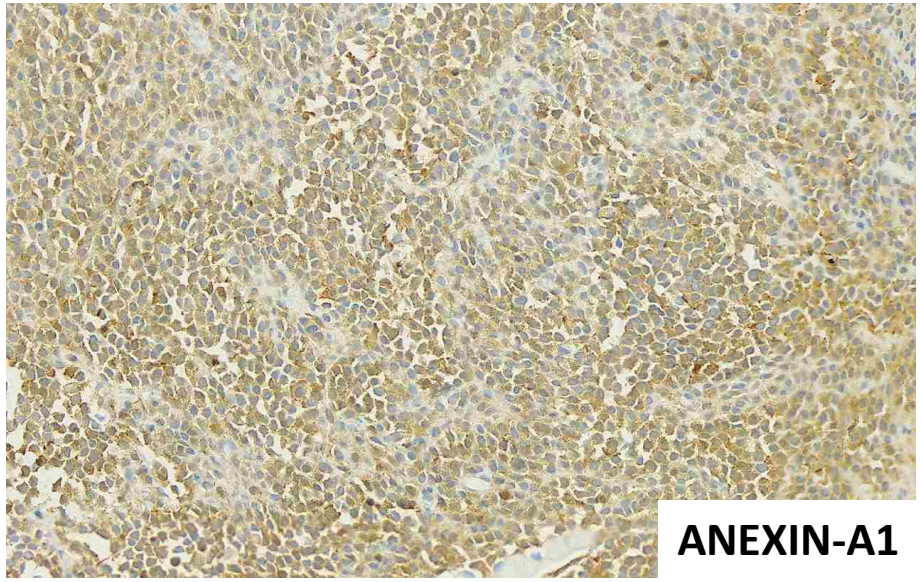
CD23 – Negative.

FLOW CYTOMETRY REPORT

POSITIVE: lambda light chain, CD19, CD20***, CD10, CD103, CD123, CD11c***, CD25, CD22***, FMC-7, CD200, CD45, CD79b, IgG.**

NEGATIVE: kappa light chain, CD3, CD4, CD8, CD56, CD38, CD5, CD23, IgM, IgD, IgA.

INTERPRETATION:
The immunophenotypic profile showed the presence of clonal B cells, which express the antigens CD19, CD20, FMC-7, CD11c, CD25, lambda light chain and IgG heavy chain.
The expression of CD11c antigens of high intensity, CD25, CD103 and CD123 are typical findings of hairy cell leukemia.



ANEXIN-A1

HAIRY CELL LEUKEMIA – extensive skeletal involvement at presentation (no bone marrow or peripheral blood involvement)

GENE	REGION	RESULT
BRAF	CODON 600	PRESENCE OF MUTATION

Biocartis Idylla – BRAF mutation test kit - real time PCR

Unusual clinical presentation of a relatively rare neoplasm – diagnostic safety and specificity were supported by an integrated approach

IN CONCLUSION: OBTAINING HIGH RATES OF SPECIFIC DIAGNOSES...

Uniformly well-trained and experienced multi-disciplinary team

Interventional radiology team highly engaged with pathology to provide good cores

Possibility to perform ancillary studies when indicated

Laboratory routines focused on optimizing specimen quality and availability

Careful clinicopathologic correlation in all cases

Pathologists should not hesitate to use all available tools and/ or ask for more material if they are not completely sure about the diagnosis

Biopsy interpretation performed by Hematopathologists

HOSPITAL SÍRIO-LIBANÊS

MEDICINA
USP

HOSPITAL DAS CLÍNICAS
DA FACULDADE DE MEDICINA
DA UNIVERSIDADE DE SÃO PAULO

Claudia Regina GCM Oliveira

Maria Claudia N Zerbini

Sheila AC Siqueira

Vera L Aldred

3° CONGRESO
LATINOAMERICANO DE
HEMATOPATOLOGÍA
SÃO PAULO | 2023

REALIZACIÓN

SOLAHP Sociedad Latinoamericana de Hematopatología

Sociedade Brasileira de PATOLOGIA

EA4HP European Association for Haematopathology

APOYO

RECORDATI RARE DISEASES GROUP

AstraZeneca

NOVARTIS

Janssen PHARMACEUTICAL COMPANIES OF Johnson & Johnson

A.C.Camargo Cancer Center Especializado em Vida

Agilent Dako