VALIDATION OF BASELINE TOTAL METABOLIC TUMOR VOLUME (TMTV) AND TOTAL LESION GLYCOLYSIS (TLG) AS PREDICTORS OF EARLY PROGRESSION (POD24) IN FOLLICULAR LYMPHOMA: A RETROSPECTIVE STUDY OF 100 PATIENTS IN BRAZIL

P.M. RESENDE[1], A.C. MEIRELES[1], L.L. TEIXEIRA[1,2], C. FERES[1,2], R. STANZIONE[1], C. PEREIRA[1], F. SANTOS[1], A.A. FEITOSA[1], N. HAMERSCHLAK[1], G. CAMPOS[1], G.F. PERINI[1,2]

1. Einstein Hospital Israelita, São Paulo, SP, Brazil
2. Hospital Municipal Dr. Gilson de Cássia Marques de Carvalho, São Paulo, SP, Brazil

BACKGROUND

Progression of disease within 24 months (POD24) is strongly associated with histologic transformation and markedly reduced overall survival in follicular lymphoma (FL).

Established clinical risk scores such as FLIPI cannot reliably identify patients at risk for early progression.

PET/CT-derived metrics of tumor burden — TMTV and TLG — integrate volumetric and metabolic information that may better reflect disease biology.

AIM

To assess whether baseline TLG and TMTV predict POD24 and progression-free survival (PFS) in patients with FL.

METHODS

Retrospective analysis of 100 patients with FL treated at two reference centers in Brazil between 2015 and 2025.

Metabolic tumor volume was delineated on baseline PET/CT using the 41% SUVmax threshold.

POD24 associations were assessed by chi-square tests and logistic regression; discriminatory performance by ROC analysis.

PFS was estimated by Kaplan–Meier and compared by log-rank test.

CONCLUSIONS

Baseline TLG was the strongest independent predictor of POD24 and PFS, outperforming TMTV, SUVmax, and FLIPI.

These findings support prospective TLG-based risk stratification in first-line FL.

Validation in Latin American cohorts underscores the need for diverse populations in lymphoma research.

RESULTS

100
patients with FL at two Brazilian reference centers; median age 58 years

20%
developed POD24

7.43
adjusted OR for POD24 with high TLG (95% CI 1.26–43.90)

83.7% vs 50.1%
2-year PFS, low vs high TLG (log-rank p = 0.003)

Association Between Baseline Variables and POD24

Variable	χ^2	p-value
Age > 60 years	0.00	1.00
Advanced stage	0.58	0.45
Extranodal involvement	0.72	0.40
B symptoms	0.76	0.38
Bone marrow involvement	0.76	0.38
Elevated LDH	1.33	0.25
High β_2-microglobulin	0.27	0.60
Low albumin	0.70	0.40
SUVmax ≥ 20	1.54	0.21
High TMTV (≥ 400 cm³)	**4.78**	**0.029**
High TLG (≥ 2,500)	**8.29**	**0.0039**

Multivariable Logistic Regression Analysis for POD24

Variable	Odds ratio	95% CI	p-value
TMTV ≥ 400 cm³	2.18	0.66 – 7.19	0.208
FLIPI2 ≥ 3	0.24	0.01 – 2.05	0.201
SUVmax ≥ 20	1.58	0.43 – 5.85	0.482
TLG ≥ 2,500	**7.43**	**1.26 – 43.90**	**0.027**

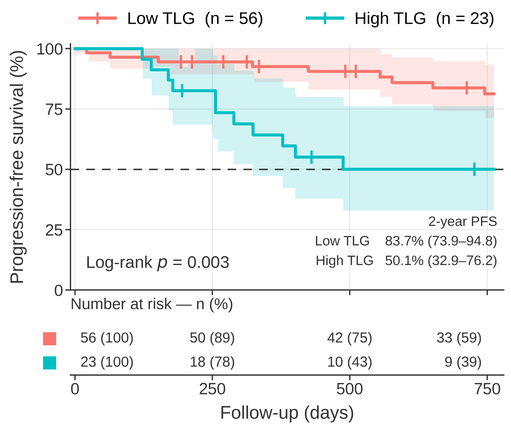

Figure 1. Progression-free survival according to baseline total lesion glycolysis (TLG) status.

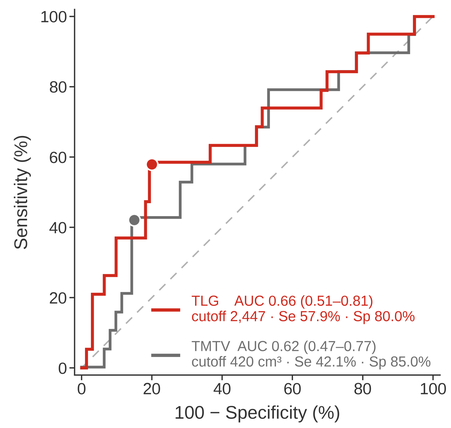

Figure 2. Receiver operating characteristic curves for baseline TLG and TMTV as predictors of POD24.

Additional findings. Histologic transformation occurred in 5 patients, 4 of whom experienced POD24. TMTV showed only a trend toward inferior PFS (p = 0.061); SUVmax was not prognostic (p = 0.28).

LIMITATIONS

- Retrospective design, with imaging and outcome data derived from routine clinical practice;
- Segmentation used a single 41% SUVmax threshold, which may not be interchangeable with other methods;
- Only 20 POD24 events, yielding wide confidence intervals for the adjusted OR;
- Single-country cohort; external validation is required.

CONTACT INFORMATION

E-mail: andre.meireles@einstein.br
Phone: +55 (71) 988166528

REFERENCES

1. Casulo C, Byrtek M, Dawson KL, Zhou X, Farber CM, Flowers CR, et al. Early relapse of follicular lymphoma after rituximab plus cyclophosphamide, doxorubicin, vincristine, and prednisone defines patients at high risk for death: an analysis from the National LymphoCare Study. J Clin Oncol. 2015;33(23):2516–2522. doi:10.1200/JCO.2014.59.7534
2. Meignan M, Cottereau AS, Versari A, Chartier L, Dupuis J, Boussetta S, et al. Baseline metabolic tumor volume predicts outcome in high–tumor-burden follicular lymphoma: a pooled analysis of three multicenter studies. J Clin Oncol. 2016;34(30):3618–3626. doi:10.1200/JCO.2016.66.9440