



Prevalence and Clinicopathologic characteristics according to cell of origin based biologic subtypes among patients with peripheral T cell lymphoma

¹Phartsakorn Charoensaksawan, ²Narittee Sukswai, ¹Kitsada Wudhikarn

¹Division of Hematology and Center of Excellence in Translational Hematology, Department of Medicine, Faculty of Medicine, Chulalongkorn University

²Department of Pathology, Faculty of Medicine, Chulalongkorn University

Introduction

Peripheral T-cell lymphoma (PTCL) encompasses diverse histological subtypes with varying prognoses. Cellular origin classification, including PTCL-GATA3, PTCL-TBX21, and PTCL-unclassifiable, using an immunohistochemistry (IHC) algorithm, has been associated with outcomes following CHOP-like chemotherapy. However, data on cellular origins in Thai PTCL patients remain limited. This study evaluates the prevalence of these subtypes and their relationship with clinicopathological features and outcomes.

Results

- Seventy PTCL patients (16 PTCL-NOS, 24 AITL, 28 ALCL and 2 MEITL) were included, with a median age of 55.58 years.
- Advanced-stage disease was noted in 73.0 % of cases, and 42.6% presented with high-intermediate to high-risk disease according to the Prognostic Index for T cell lymphoma.
- IHC positivity was observed for GATA3 (10%), CCR4 (25.7%), TBX21 (22.9%), and CXCR3 (42.9%), with 28.5% negative for all markers.
- Based on the algorithm, 11.4%, 58.6% and 30% were classified as PTCL-GATA3, PTCL-TBX21, and PTCL-unclassifiable, respectively.
- Of 70 patients, 47 (50%) received intensive multiagent chemotherapy regimens, most commonly CHOP (24/47, 51.1%) and CHOEP/E-POCH (12/47, 25.5%).
- At a median follow-up of 13.4 months, 37 patients (52.86%) had died.
- The median overall survival (OS) was 39.4 months, 7.5 months and 46.2 months for all patients, PTCL-GATA3, and PTCL-TBX21, respectively.
- PTCL-GATA3 was associated with significantly worse OS compared with PTCL-TBX21.

Figure 1 Cellular Origin Subtypes using a hierarchical algorithm

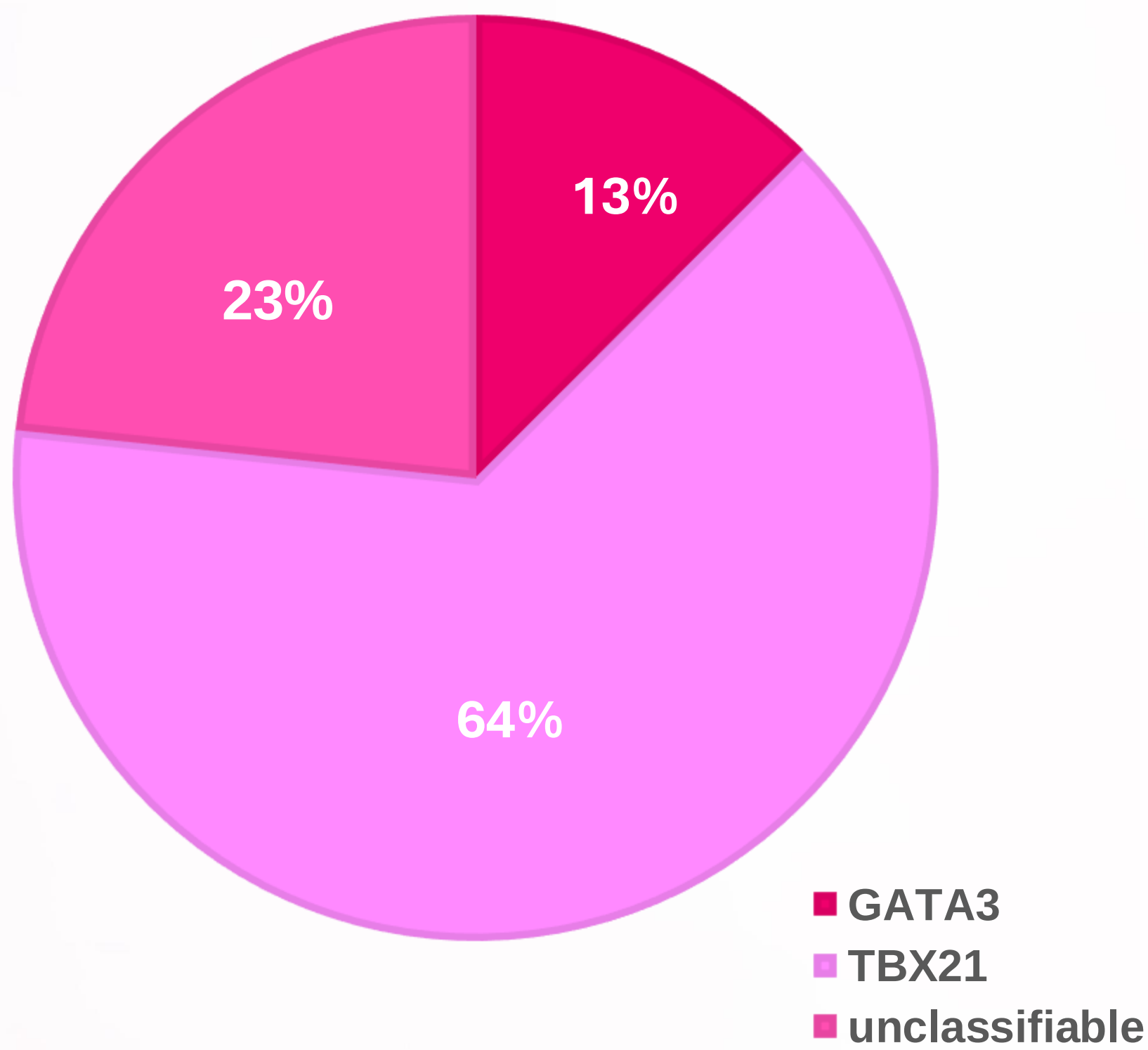


Figure 2 Treatment response by cellular origin subtypes in patients who received intensive multiagent systemic therapy

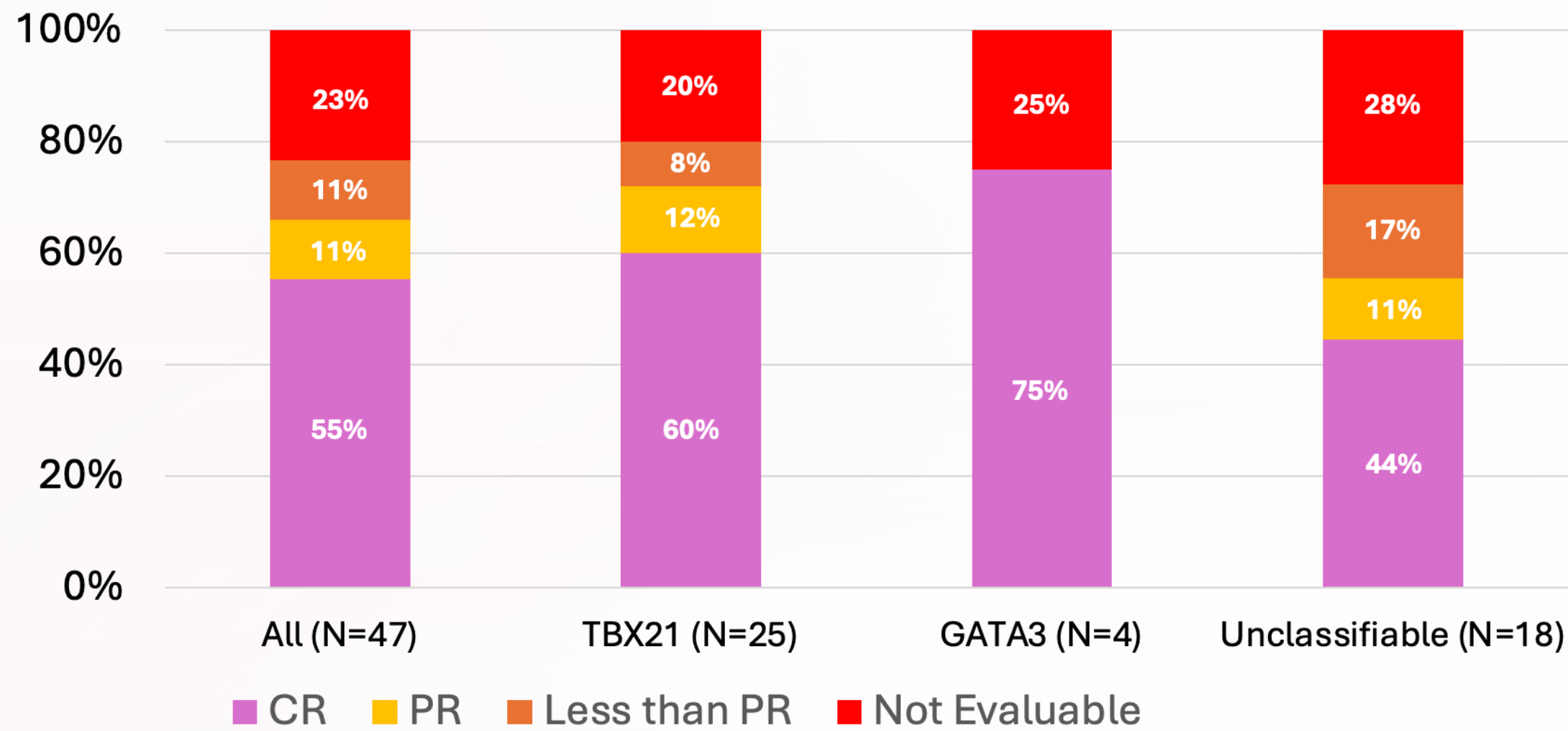


Table 2 Multivariable logistic regression of factors associate with overall survival

Factors	Hazard Ratio (95%CI)	P-value
Age at diagnosis (≥60 vs <60)	2.79 (1.41-5.52)	0.003
Stage (III-IV vs I-II)	3.99 (1.39-11.44)	0.01
Baseline LDH (High vs Normal)	0.82 (0.31-2.19)	0.70
ECOG PS(3-4 vs 0-2)	2.72 (1.28-5.78)	0.009
Bulky lesion (Yes vs No)	1.37 (0.52-3.57)	0.52
B symptoms (Present vs Absent)	4.11 (1.67 vs 10.09)	0.002
IPI (High int/High vs Low int/Low)	4.03 (1.92-8.44)	<0.0001
Cell of origin (GATA3 vs Others)	4.066 (1.68-9.80)	0.002

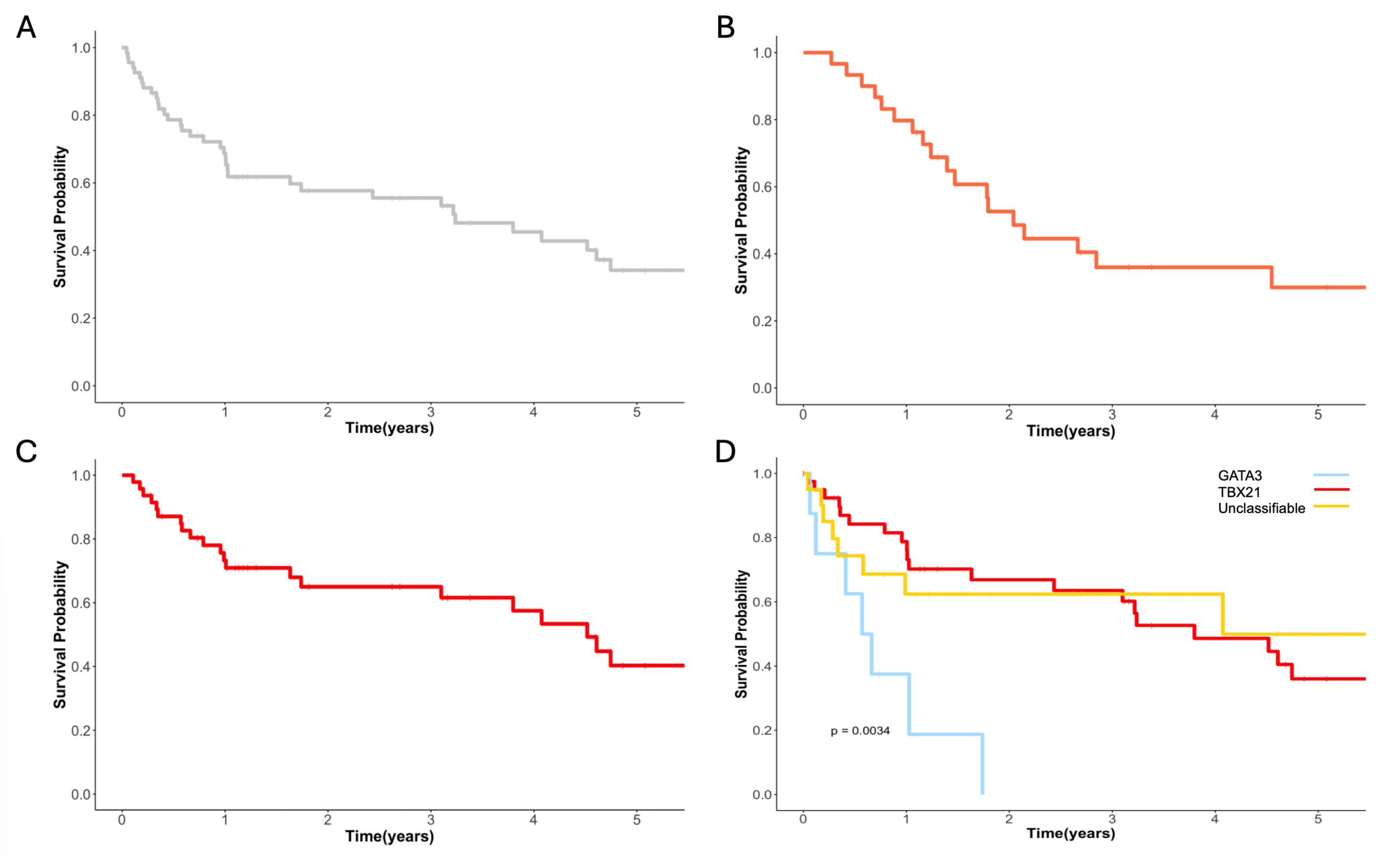
Methods

This bidirectional cohort study included PTCL patients diagnosed at King Chulalongkorn Memorial Hospital from 2014 to 2024. Baseline characteristics, details of chemotherapy, and outcomes were collected. Tissue samples underwent IHC staining with GATA3, CCR4, TBX21, and CXCR3 antibodies and were classified into PTCL-GATA3, PTCL-TBX21, or PTCL-unclassifiable cellular origin subtypes using a previously published algorithm. Correlations between cellular origin and outcomes were analyzed.

Table 1 Baseline characteristics of patients in this study cohort

	Total N=70 (%)	GATA3 ¹ N=8 (%)	TBX21 ² N=41 (%)	Unclassified N=21 (%)	P-Value 1 vs 2
Male gender	33 (47.1)	4 (50.0)	19 (46.3)	10 (47.6)	0.85
Median age in year at diagnosis (IQR)	55.6 (31.0-71.3)	69.7 (62.6-81.4)	56.7 (34.9-72.1)	39.4 (21.3-59.5)	0.03
Age > 60	30 (44.1)	7 (87.5)	18 (45.0)	5 (23.8)	0.03
Advanced stage	46 (73.0)	7 (100.0)	26 (70.3)	13 (61.9)	0.10
Extranodal Involvement	38 (54.3)	1 (14.3)	24 (58.5)	13 (61.9)	0.03
Elevated baseline LDH	42 (80.8)	5 (71.4)	26 (81.2)	11 (52.4)	0.56
IPI score					0.54
▪ Low	14 (20)	0 (0)	7 (19.1)	7 (33.3)	
▪ Low-intermediate	20 (28.5)	2(25.0)	12 (29.3)	6 (28.6)	
▪ High-intermediate	18 (25.7)	3(37.5)	11 (26.8)	4 (19.0)	
▪ High	9 (12.8)	2 (25.0)	6(14.6)	1 (4.8)	
▪ Missing data	9 (12.8)	1 (12.5)	5 (12.2)	3 (14.3)	
PIT score					0.60
▪ Low	6 (8.5)	0 (0)	2 (4.9)	4 (19.0)	
▪ Low-intermediate	29 (41.4)	2 (25.0)	17 (41.5)	10 (47.6)	
▪ High-intermediate	13 (18.6)	3 (37.5)	8 (19.5)	2 (9.5)	
▪ High	13 (18.6)	2 (25.0)	9 (21.9)	2 (9.5)	
▪ Missing data	9 (12.8)	1 (12.5)	5 (12.2)	3 (14.3)	
NCCN IPI score					0.20
▪ Low	6 (8.5)	0 (0)	2 (4.9)	4 (19.0)	
▪ Low-intermediate	27 (38.6)	1 (12.5)	19 (46.3)	7 (33.3)	
▪ High-intermediate	19 (27.1)	4 (50.0)	10 (24.4)	5 (23.8)	
▪ High	9 (12.8)	2 (25.0)	5 (12.2)	2 (9.5)	
▪ Missing data	9 (12.8)	1 (12.5)	5 (12.2)	3 (14.3)	
WHO Diagnosis					0.11
▪ PTCL, NOS	16 (22.9)	2 (25.0)	10 (24.4)	4 (19.0)	
▪ AITL	24 (34.3)	6 (75.0)	14 (34.1)	4 (19.0)	
▪ ALK-neg ALCL	9 (12.9)	0 (0)	6 (14.6)	3 (14.3)	
▪ ALK-pos ALCL	19 (27.1)	0 (0)	11 (26.8)	8 (38.1)	
▪ MEITL	2 (2.8)	0 (0)	0 (0)	2 (9.5)	

Figure 3 Survival outcomes among patients who received systemic treatment A) OS of the whole patient cohort B) PFS of patients treated with intensive systemic therapy (n=47) c) OS of patients treated with intensive systemic therapy (n=47) D) OS as stratified by cell of origin subtypes (n=70)



Conclusion

This study highlights the distribution of PTCL subtypes based on cellular origin in Thai patients, with a predominance of the PTCL-TBX21 subtype. PTCL-GATA3 was associated with poor outcomes. IHC-based classification of cellular origin may aid in risk stratification. Validation in larger cohorts is needed to refine its role in risk assessment and management.

Contact information

Phartsakorn Charoensaksawan, MD.
Division of Hematology and Center of Excellence in Translational Hematology, Department of Medicine, Faculty of Medicine, Chulalongkorn University.
Email : Phartsakorn.c.01@gmail.com