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Association of PD-1 and PD-L1 expression with clinicopathological variables in Papillary Thyroid Cancer

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Introduction

- 10-30% of patients with Papillary thyroid cancer (PTC) → recurrence post total thyroidectomy (TT) → eventually become de-differentiated[1]
- Programmed cell death protein (PD-1) and its ligand (PD-L1) interaction → important oncological role
- Aim of the study: Identify the association of PD-1 & PD-L1 with clinicopathological variables in PTC

Methodology

- 29 patients who underwent TT for PTC between April 2016 to March 2017
- PD-1 and PD-L1 immunohistochemistry on surgical specimens
- Expression on Tumor cells and Tumor Infiltrating Lymphocytes (TILs): analysed and correlated with clinico-pathological behaviour

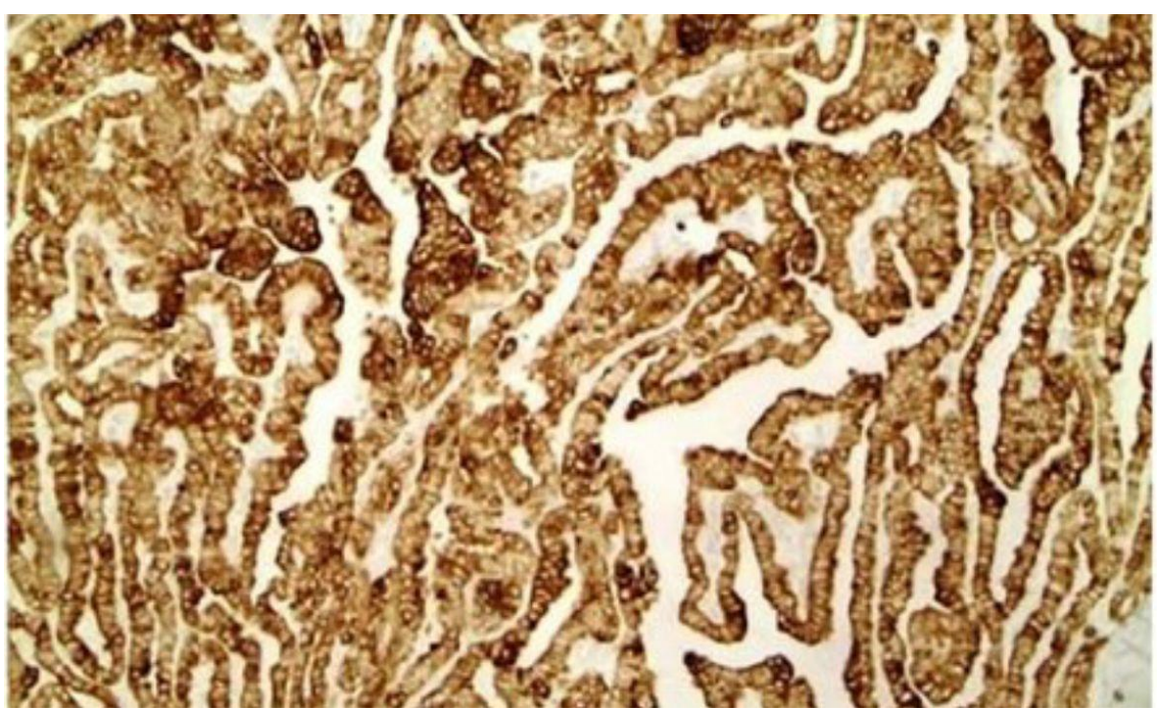

Fig 1. PD-L1 diffuse positive in tumor cells

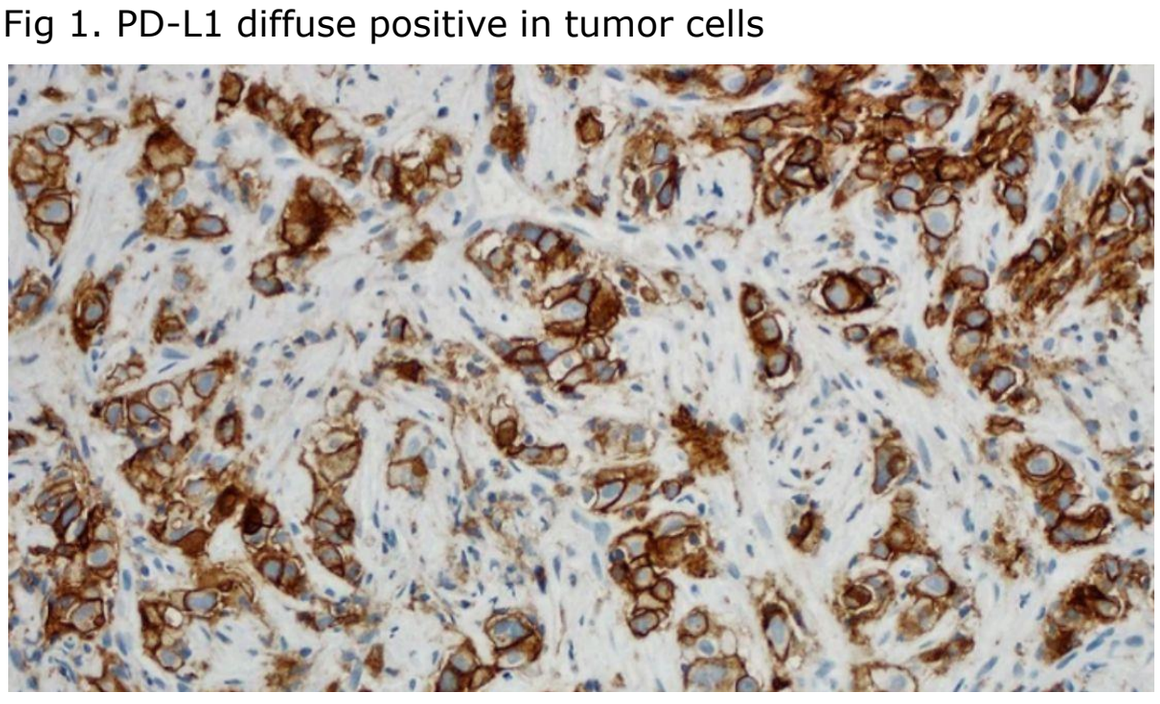

Fig 2. Positive PD-L1 in diffuse sclerosis variant

Results

- Mean age: 36.45±11.46 years
- Age and sex distribution of the study population is depicted in Figure 1

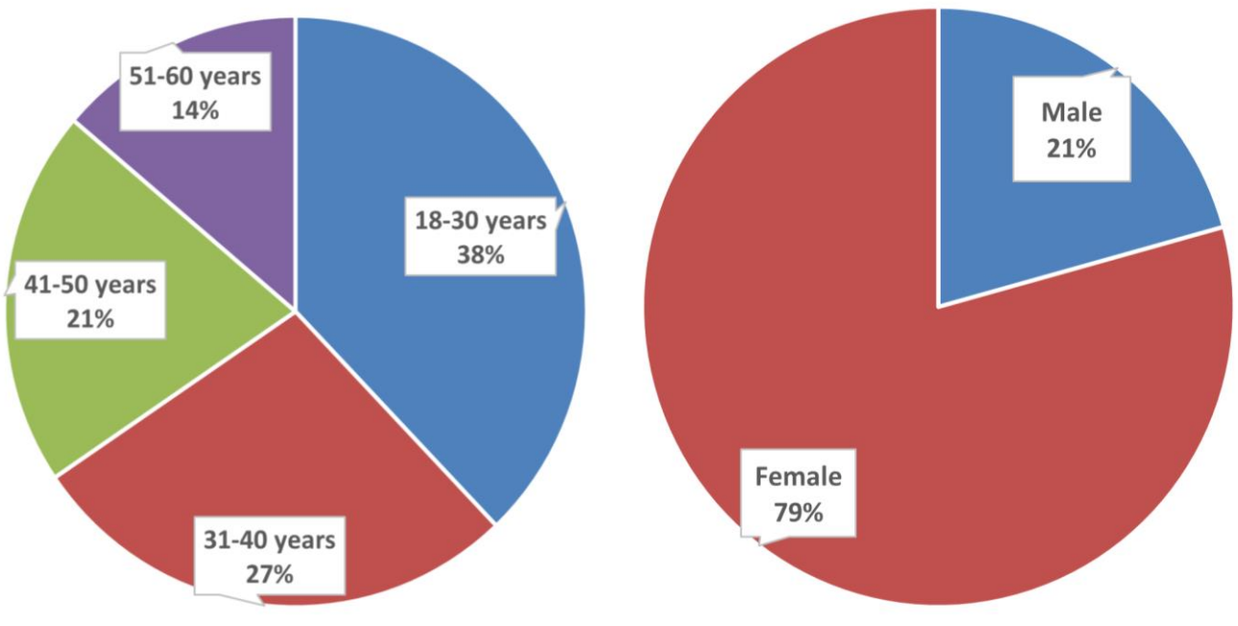

Fig 3. Age and sex distribution of the study population

Results

- In tumor cells, PD-1 expression: negative in all specimens

Pathological variables	PD-L1 in tumor cells	PD-1 in TILs	PD-L1 in TILs
All samples	62% positive → 21% strong positive	48%: >1%; 17.2%: 26-40%	24% positive
Classical variant	**61.6% moderate/ strong positive**	69%: >1%; 31%: 26-40%	**30.8% positive**
High risk variants	Negative	<1%	Negative
ETE	**60% positive**	60%: >1%	80% negative
PNE	**100% positive**	50%: >1%	50% negative
LVI	**100% positive**	25%: >1%	75% negative

Table 1. Cliniopathological variables and PD-1 and PD-L1 IHCs
High risk variants: Diffuse sclerosis, tall cell, hobnail, cribriform
ETE- Extrathyrodial extension LVI: Lymphovascular invasion
PNE: Perinodal extension **Bold**: $p<0.05$

- No association between the strength of PD-L1 expression and ETE

Discussion/ Conclusion

- Various studies [2,3] have described the association of these immune markers in aggressive tumors like ATC, PDTC etc.
- Role of PD-1/ PD-L1 still unclear in Papillary thyroid cancer prognosis.[3]
- PD-L1 expression in tumor cells and TILs is associated with classical variant of Papillary thyroid cancer.
- PD-L1 expression in tumor cells is also associated with aggressive features like Extra thyroidal extension, Perinodal extension and Lymphovascular invasion.
- Studies with larger sample size and correlation with clinical follow up of patients is warranted.

References

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2. Boruah M, Gaddam P, Agarwal S, Mir RA, Gupta R, Sharma MC, S Deo SV, Nilima N. PD-L1 expression in rare and aggressive thyroid cancers: A preliminary investigation for a role of immunotherapy. J Cancer Res Ther. 2023 Jan-Mar;19(2):312-320.
3. Ahn S, Kim TH, Kim SW, Ki CS, Jang HW, Kim JS, Kim JH, Choe JH, Shin JH, Hahn SY, Oh YL, Chung JH. Comprehensive screening for PD-L1 expression in thyroid cancer. Endocr Relat Cancer. 2017 Feb;24(2):97-106.