

P018 Can preoperative Neutrophil/Lymphocyte Ratio (NLR) predict Grade Group Upgrading (GGU) at radical prostatectomy?

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Introduction & Objectives: This study aimed to investigate the relationship between preoperative neutrophil/lymphocyte ratio (NLR) and grade group upgrading (GGU) at radical prostatectomy (RP).

Materials & Methods: Between March 2016 and March 2020, 188 RP operations were performed in our institution. A total of 181 cases were included in this study after the exclusions of 4 cases receiving neoadjuvant hormone therapy, 2 cases undergoing salvage prostatectomy and 1 case with incomplete records. Grade Group Upgrading (GGU) was defined as at least one increase of biopsic grade group at RP pathology. The ratio of preoperative neutrophil levels to lymphocyte levels was defined as NLR. By using '3' as cutoff value for NLR, the patients were divided into two groups: NLR<3, n=137 ve NLR≥3, n=44. The prospectively collected demographical, clinical and histopathological parameters were retrospectively compared between two groups. Appropriate statistical methods were used.

Results: In overall, median NLR was 2.20 (0.76-11.29) and it did not differ between GGU and non-GGU groups (2.21 vs. 2.19, p=0.781). Between NLR<3 and NLR≥3 groups, the GGU rate was found similar (51.1% vs.47.7%, p=0.698). The higher PSA density in NLR<3 group was not statistically significant but clinically notable (0.14 ng/ml/gr vs. 0.12 ng/ml/gr, p=0.084) whereas clinical T stage and prostate biopsy parameters were not different between two groups. In NLR<3 group, median prostate weight was lower (49 gr vs.77.5 gr, p=0.001), median tumor percent was higher (34.5% vs.24.4%, p=0.032) and locally advanced pathologic stage was increased (46.7% vs.27.9%, p=0.045)

Table 1. The comparison of GGU and non-GGU groups in terms of NLR

	Overall	Grade Group Upgrading	Non-Grade Group Upgrading	p
n	181	91	90	
NLR	2.20 (0.76-11.29)	2.21 (0.76-7.56)	2.19 (0.96-11.29)	0.781
NLR ≥ 3	44, 24.3	21, 23.1	23, 25.6	0.698
NLR ≥ 2.5	66, 36.5	34, 37.4	32, 35.6	0.801
NLR ≥ 2	104, 57.5	52, 57.1	52, 57.8	0.931

Table 2. The comparison of clinical and histopathological outcomes between NLR < 3 and NLR ≥ 3 groups

	Overall	NLR < 3	NLR ≥ 3	P
n	181	137	44	
Age (year)	63±6.29	62.89±5.96	63.34±7.29	0.681
Body Mass Index (kg/m²)	26.78± 3.44	27.86±3.60	26.63±2.74	0.039
PSA (ng/ml)	7 (1.31-138.0)	6.8 (1.93-138.0)	7.38 (1.31-40.0)	0.655
PSA density (ng/ml/gr)	0.14 (0.02-1.64)	0.14 (0.02-1.64)	0.12 (0.04-0.49)	0.084
Clinical T stage (n, %)				0.340
T1c	79, 43.6	57, 41.6	22, 50.0	
T2	97, 53.6	76, 55.5	21, 47.7	
T3	5, 2.8	4, 2.9	1, 2.3	
Prostate Biopsy				0.296
Institutional (n, %)	91, 50.3	67, 48.9	24, 26.4	
Preop Consultation (n, %)	46, 25.4	33, 24.1	13, 28.3	
Other Centre (n, %)	44, 24.3	37, 27.0	7, 15.9	
Prostate Biopsy				0.315
Total core numbers (n)	12 (1-21)	12 (1-20)	12 (2-21)	0.281
Tumor positive core numbers (n)	3 (1-12)	3 (1-12)	3 (1-12)	0.403
Prostate Biopsy				0.315
GGG1 (n, %)	58, 32.0	39, 28.5	19, 43.2	
GGG2 (n, %)	71, 39.2	58, 42.3	13, 29.5	
GGG3 (n, %)	26, 14.4	21, 15.3	5, 11.4	
GGG4 (n, %)	20, 11.0	13, 9.5	7, 15.9	
GGG5 (n, %)	6, 3.3	6, 4.4	0, 0.0	
Radical Prostatectomy				0.085
GGG1 (n, %)	23, 12.7	17, 12.4	6, 13.6	
GGG2 (n, %)	69, 38.1	46, 33.6	23, 52.3	
GGG3 (n, %)	42, 23.2	37, 27.0	5, 11.4	
GGG4 (n, %)	30, 16.6	21, 15.3	9, 20.5	
GGG5 (n, %)	17, 9.4	16, 11.7	1, 2.3	
Grade Group Upgrading (n, %)	91, 50.3	70, 51.1	21, 47.7	0.698
Prostate weight (gr)	52 (18-368)	49 (18-368)	77.5 (23-129)	0.001
Tumor size (cm)	2 (0.2-7.0)	2.0 (0.2-7.0)	1.7 (0.3-5.0)	0.105
Tumor percentage (%)	32.43 (2.13-100)	34.50 (2.94-100.0)	24.4 (2.13-96.97)	0.032
Ekstracapsular invasion (n, %)	67, 37.2	56, 40.9	11, 16.4	0.103
Apical involvement (n, %)	123, 68.3	91, 66.4	32, 74.4	0.426
Bladder neck involvement (n, %)	34, 18.9	26, 19.0	8, 18.6	1.000
Seminal vesicle involvement (n, %)	15, 8.3	12, 8.8	3, 6.8	0.927
Surgical margin positivity (n, %)	22, 12.2	18, 13.1	4, 9.1	0.653
Perineural invasion (n, %)	134, 74.4	103, 75.2	31, 72.1	0.838
Vascular invasion (n, %)	13, 7.3	11, 8.1	2, 4.7	0.736
Lymph node dissection (n, %)	156, 86.2	120, 87.6	36, 81.8	0.475
Lymph node positivity (n, %)	6, 3.8	4, 3.2	2, 5.6	0.618
Pathologic T stage (n, %)				0.045
Localized (T2N0)	104, 57.8	73, 53.3	31, 72.1	
Locally advanced (T3-4N0 veya N1)	76, 42.2	64, 46.7	12, 27.9	

Conclusions: Neutrophil/lymphocyte ratio was not found to predict GGU at RP. Higher PSA density and lower prostate weight those were shown to predict GGU was found to be in relation with $NLR < 3$.