Prospective evaluation of pre-operative neutrophil / lymphocyte ratio (NLR) as a prognosticator in upper tract urothelial carcinoma (UTUC) patients treated conservatively

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Objectives
To prospectively evaluate the prognostic value of neutrophil / lymphocyte ratio (NLR) in conservatively treated UTUC patients.

Materials and Methods
• Since 2016, NLR was prospectively collected and evaluated in 30 consecutive UTUC patients (Group 1).
• It was compared to a retrospective post-hoc dataset from 130 consecutive UTUC patients (2005-2015) (Group 2).
• All patients underwent uretero-renaloscopy and RIRS (retrograde intra renal surgery) for UTUC.
• EAU guidelines follow up scheme was applied: panendoscopy+cytology every 3 months for 1st year, then 6 monthly for 2 years, then annually + yearly UroCT.
• At 1st patient encounter, white blood cells (WBC), platelet (PLT), neutrophil (N), and lymphocyte (L) counts, were collected and recorded.
• NLR was derived by dividing N by L.
• These data were compared with tumor characteristics: stage (Ta vs. >T1), grade (G1 vs. ≥G2), focality (uni vs. multi), site (ureter vs. kidney vs. ureter+kidney), and size (<1 cm vs. >1 cm).
• The endpoints were: recurrence at the first follow-up, multiple recurrences during follow-up, and progression (Grade+/Stage).
• They were stratified by the NLR cut-off point, according to the receiver operating characteristic analysis.
• T-test and chi-square test were used to evaluate parametric and non parametric variables.
• Statistical significance was considered at p<0.05.

Results
• The mean NLR value was 2.90 1.05 in Group 1 and 3.48 1.92 in Group 2 (p=0.79).
• Significantly higher NLR values were observed in Group 1 and Group 2 patients with ≥pT1 (p=0.03 and p=0.0001), ≥G2 (p=0.03 and p=0.0009), multifocal (p=0.01 and p=0.028), >1 cm tumor (p=0.04 and p=0.0001), respectively.
• The optimal NLR cut-off value was 3 for all the endpoints.
• Patients with NLR>3 exhibited significantly higher risk of recurrence at first follow-up (p=0.04, OR 5.33 in Group 1 and p=0.007, OR 2.35 in Group 2), significantly higher risk of multiple recurrences (p=0.02, OR 7.33 in Group 1 and p=0.006, OR 1.54 in Group 2).
• No disease progression has so far been observed in Group 1 due to the short follow-up of this prospective cohort to date, while patients in Group 2 with NLR>3 exhibited 5 fold disease progression risk (p=0.04, OR 5.00).

Conclusions
• The pre-operative evaluation of NLR may provide valuable prognostic information for the clinical management of UTUC patients treated conservatively.
• NLR >3 was associated with higher recurrence and progression rates.
• It may identify those needing more frequent endoscopic follow-up, and lower thresholds to conversion to more aggressive surgical strategies.
• Prospective multicenter multinational studies are needed to validate the role of NLR as a prognosticator of recurrence and progression in these patients.

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