Author reply: The neutrophil-to-lymphocyte ratio in clinical practice

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We would like to thank our colleagues for their precise comments on our article.[1] Neutrophil-to-lymphocyte ratio (NLR) is a valuable tool for evaluation of inflammation and is obtained from an inexpensive and widely attainable laboratory test — complete blood count. Currently, there are valuable tests for prediction of prostate cancer, particularly high-grade cases. These tests include: PCA3; prostate health index (PHI) multibiomarker test, which combines free and total prostate-specific antigen (PSA) with [-2]proPSA; and four kallikrein protein biomarkers (total PSA, free PSA, intact PSA, and human kallikrein-related peptidase 2), named as 4K score.[2-4] However, these tests are expensive and not yet available worldwide. Therefore, tests that are widely available, like NLR, are especially important for use in developing countries.

Distinct phases of carcinogenesis and cancer growth cause different immune system responses.[5] Initially, association of NLR and prostate cancer was shown in metastatic cases, that is, higher NLR indicated more aggressive disease and poor response to treatment.[6] Recently, further studies investigating the role of NLR in the pre-biopsy setting were published.[1,7] In these studies, higher NLR values were found to be associated with higher rates of prostate cancer. There is also one study focusing on and early-stage and low-risk prostate cancer. In this study, Kwon et al found that lymphocyte count was associated with Gleason score upgrading and neutrophil count was associated with biochemical failure; NLR was not found to have association with any of the study endpoints.[8]

Our group also investigated the results of low-risk cases in which the patients underwent radical prostatectomy. We found that NLR was associated with higher rates of Gleason score upgrading and high-grade prostate cancer cases, but not with disease upstaging (data not yet published).

Although the results from the early-stage prostate cancer cases are conflicting, there is good proof of alterations in the immune system in the development and progression of prostate cancer. However, as it was mentioned in the comment to our study, levels of immune cells in the peripheral blood are prone to change in many circumstances.[9] Due to the retrospective nature of our study, we could not retrieve data on the conditions that might have affected levels of immune cells. On the other hand, such data, although valuable, still does not clarify the changes in immune system and immune response to development and progression of prostate cancer cells. A study with immunohistochemical examination of the prostate tissue from biopsy or radical prostatectomy specimens would better identify the changes in the prostatic tissue level.

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References

1. Gokce MI, Hamidi N, Suer E, et al. Evaluation of neutrophil-to-lymphocyte ratio prior to prostate biopsy to predict biopsy histology: Results of 1836 patients. *Can Urol Assoc J* 2015;9:E761-5. http://dx.doi.org/10.5489/cuaj.3091
2. Cary KC, Cooperberg MR. Biomarkers in prostate cancer surveillance and screening: Past, present, and future. *Ther Adv Urol* 2013;5:318-29. http://dx.doi.org/10.1177/1756287213495915
3. Catalona WJ, Partin AW, Sanda MG, et al. A multicenterstudy of [-2]pro-prostate-specific antigen combined with prostate-specific antigen and free prostate-specific antigen for prostate cancer detection in the 2.0 to 10.0 ng/ml prostate-specific antigen range. *J Urol* 2011;185:1650-5. http://dx.doi.org/10.1016/j.juro.2010.12.032
4. Lilja H, Ulmert D, Vickers AJ. Prostate-specific antigen and prostate cancer: Prediction, detection, and monitoring. *Nat Rev Cancer* 2008;8:268-78. http://dx.doi.org/10.1038/nrc2351
5. Kim R, Emi M, Tanabe K. Cancer immunoediting from immune surveillance to immune escape. *Immunology* 2007;121:1-14. http://dx.doi.org/10.1111/j.1365-2567.2007.02587.x
6. van Soest RJ, Templeton AJ, Vera-Badillo FE, et al. Neutrophil-to-lymphocyte ratio as a prognostic biomarker for men with metastatic castration-resistant prostate cancer receiving first-line chemotherapy: Data from two randomized phase 3 trials. *Ann Oncol* 2015; 26:743-9. http://dx.doi.org/10.1093/annonc/mdu569
7. Kawahara T, Fukui S, Sakamaki K, et al. Neutrophil-to-lymphocyte ratio predicts prostatic carcinoma in men undergoing needle biopsy. *Oncotarget* 2015;6:32169-76.
8. Kwon YS, Han CS, Yu JW, et al. Neutrophil and lymphocyte counts as clinical markers for stratifying low-risk prostate cancer. *Clin Genitourin Cancer* 2016;14:e1-8. http://dx.doi.org/10.1016/j.clgc.2015.07.018
9. Balta S, Demırer Z, Aparci M, et al. The lymphocyte-monocyte ratio in clinical practice. *J ClinPathol* 2016;69:88-9. http://dx.doi.org/10.1136/jclinpath-2015-203233

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