Prognostic impact of the neutrophil-to-lymphocyte ratio in men with metastatic castration-resistant prostate cancer

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BACKGROUND
We retrospectively evaluated the prognostic impact of neutrophil-lymphocyte ratio (NLR) as a marker for inflammatory and immune state in men with progressive metastatic castration resistant prostate cancer (mCRPC) following docetaxel.

METHODS
The SUN-1120 phase III trial comparing prednisone combined with sunitinib (n = 584) or placebo (n = 289) for mCRPC following docetaxel-based chemotherapy was evaluated. The arms were combined for analysis, since no difference was observed in the primary endpoint of overall survival (OS). A logarithmic transformation was applied to non-normal factors. The Kaplan-Meier method was used for OS estimation. To identify an optimal prognostic model for survival, we used a Cox proportional hazards regression method with forward stepwise selection, stratifying for ECOG PS, progression type (prostate specific antigen [PSA] or radiographic) and treatment group. Patients were categorized into risk groups.

RESULTS
Complete data was evaluable for 784 men. The factors used in the model that remained individually significant for OS in multivariable analysis were: log-lactate dehydrogenase level (LDH) level (HR 2.86 [95% CI = 2.29, 3.56], P < .001), hemoglobin (0.80 [0.74, 0.85], P < .001), > 1 organ involved by metastatic disease (1.49 [1.21, 1.84], P < .001), log-alkaline phosphatase (1.13 [0.99, 1.28], P = .074), log-number of prior cycles of docetaxel (0.84 [0.71, 0.98], P = .031), progression on docetaxel (1.35 [1.00, 1.81], P = .049), log-PSA (1.06 [1.00, 1.12], P = .075) and log-NLR (1.55 [1.32, 1.83], P < .001). NLR increased the c-statistic of the prognostic model from 0.703 to 0.715.

CONCLUSION
High NLR may be associated with an independent poor prognostic impact in post-docetaxel patients with mCRPC. These data warrant external validation.

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