A prognostic model for predicting radiographic progression-free survival (RPFS) in metastatic castrate-resistant prostate cancer men treated with second-line chemotherapy


1Department of Biostatistics and Bioinformatics, Duke University, Durham, NC, USA
2UCSF Helen Diller Family Comprehensive Cancer Center, University of California, San Francisco, CA, USA
3Medical Oncology, Duke Comprehensive Cancer Center and the Duke Prostate Center, Durham, NC, USA
4Biostatistics, Sanofi, Bridgewater, NJ, USA
5Medical Oncology Service, Hopital European George Pompidou, Paris, FRANCE
6Department of Medicine: Section of Hematology & Medical Oncology and Department of Urology, Tulane Cancer Center, New Orleans, LA, USA
7Medical Oncology, The Royal Marsden NHS Foundation Trust and Institute of Cancer Research ICR, Sutton, UK

Aim: This work sought to develop and validate a prognostic model to predict RPFS in men who had progressed following first-line chemotherapy, and were selected to receive second-line chemotherapy.

Methods: Data from a phase III trial in mCRPC men who had developed progressive disease following first-line chemotherapy (TROPIC trial) were used. The TROPIC was randomly split into training (n = 507) and testing (n = 248) sets. RPFS was defined as the time from randomization to first bone progression, objective progression (RECIST1.1), or death, whichever occurred first. Adaptive LASSO selected eight prognostic factors of RPFS. A prognostic score was computed from the regression coefficients and the model was assessed on the testing set for its predictive accuracy using the time-dependent area under the curve (tAUC).

Results: The eight prognostic variables in the final model included: ECOG performance status, race, time since last docetaxel use, presence of lung metastases, presence of liver metastases, duration of hormonal use, hemoglobin, and treatment with cabazitaxel. In the training and testing sets, the tAUC for this model were 0.72 (95% CI = 0.66-0.79) and 0.67 (95% CI = 0.60-0.76) respectively.

Conclusions: A prognostic model of RPFS in the post-docetaxel second-line chemotherapy mCRPC setting was developed and validated. This model incorporates established prognostic factors and can be used to select patients to participate in clinical trials on the basis of their prognosis. External validation is needed.

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