Annals of Oncology 26 (Supplement 6): vi53–vi66, 2015
doi:10.1093/annonc/mdv341.10

Session F. Genitourinary cancer

F10 Clinical outcome of circulating tumor cells in metastatic castration-resistant prostate cancer patients treated with docetaxel: long-term prospective single-centre study

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Background: To evaluate the long-term effects of circulating tumor cells (CTCs) in patients with metastatic castration-resistant prostate cancer (mCRPC) treated with docetaxel-based chemotherapy.

Patients and methods: From January 2006 to April 2010, blood samples were prospectively collected from 58 patients with progressive mCRPC at baseline (before initiating therapy), after 1st and 2nd cycle of chemotherapy, at the 1st instrumental re-evaluation and at the time of disease progression. CTCs were enumerated using the CellSearch System setting a cut-off of > 5 CTCs per 7.5 mL of whole blood. Progression-free survival (PFS) and overall survival (OS) were estimated using the Kaplan-Meier method. The log-rank test was used to evaluate differences among patients according to CTC count distribution.

Results: Forty-seven (81%) patients had detectable CTCs with a median of 12 cells (range 0-1959). Baseline CTC number was correlated with PSA ($p = 0.05$), alkaline phosphatase ($p < 0.01$), bone metastases ($p = 0.01$) and number of previous chemotherapy lines ($p = 0.03$). At univariate survival analysis, baseline CTC number > 5, PSA > 100 ng/ml, alkaline phosphatase > upper normal level and the presence of bone metastases were associated with poor OS ($p < 0.001$, $p = 0.022$, $p = 0.001$ and $p = 0.018$, respectively). Three groups of patients were considered for survival and tumor response: group 1 with < 5 CTCs at both baseline and first cycle, group 2 with decreased CTCs from > 5 to < 5, and group 3 with rising or persistent number of CTCs > 5. CTCs trend (from baseline to 1st and 2nd cycle of chemotherapy and to 1st re-evaluation) of the three groups was significantly associated with OS ($p < 0.001$): the best survival for group 1, intermediate for group 2 and the worst for group 3. CTCs changes from baseline to 1st cycle of chemotherapy were significantly associated with disease control, 28 out of 29 patients (96%) of group 1 and 2 versus 17 out of 25 patients (68%) of group 3 had partial response/stable disease ($p = 0.03$) according to RECIST criteria.

Conclusions: At a median follow-up of 5 years, our data confirm the prognostic role of CTCs at baseline and during docetaxel chemotherapy and hypothesize a predictive role potentially serving as an early metric to help redirect and optimize therapy in mCRPC patients.