Detection of circulating tumor cells in different stages of prostate cancer.

To explore circulating tumor cell (CTCs) counts in different stages of prostate cancer (PC) in association with tumor burden, metastatic pattern and conventional serum biomarkers. Overall survival (OS) analyses were conducted with respect to optimized CTC cutoff levels. Circulating tumor cell counts were assessed in healthy controls (n = 15) as well as in locally advanced high risk (LAPC, n = 20), metastatic castration resistant (mCRPC, n = 40) and taxane-refractory (mTRPC, n = 15) PC patients. CTCs were detected using the CellSearch System. In metastatic PC (mPC), CTC counts were significantly increased compared to LAPC (p=3 CTCs compared to<3 CTCs (p = 0.001), a cutoff level applicable in mCRPC (p = 0.003) but not in mTRPC patients (p = 0.054). Circulating tumor cell counts are applicable as a prognostic molecular marker, especially in mCRPC patients harboring bone metastases with or without visceral metastases. For clinical practice, mPC patients with elevated CTC counts in combination with short PSA-DT, high alkaline phosphatase and lactate dehydrogenase levels as well as low hemoglobin levels are at high risk of disease progression and limited OS.