Aim: To define an association of the serum prostate-specific antigen (sPSA) level and expression of tumour-associated antigens in circulating tumour cells (CTC) in peripheral blood of patients with castration-resistant prostate cancer (CRPC).

Material and methods: Peripheral blood from patients with metastatic CRPC was taken prior to docetaxel therapy (DTx) and after the fourth cycle of chemotherapy. Detection of CTC was done by using a method of immunomagnetic separation and quantification of tumour-associated antigens (Fig. 1). The CTC count was evaluated verbally (positive vs. negative) together with a report of the absolute values (ng/μl). We have recorded the levels of sPSA and the fragments of respective antigens before and in the course of DTx and the values were compared. We have also evaluated the correlation between the change of sPSA and expression of CTC antigens during DTx. The correlation of the parameters was determined by using the Spearman correlation coefficient.

Results: A total of 26 patients were included in the analysis with both samples taken in 20 of them. Median age was 72 years (54-82), mean sPSA level before and after DTx was 18.6 ± 62.6 μg/l. The sPSA level has the strongest correlation with ΔsPSA 1 (Spearman’s rank correlation coefficient of 0.57783), with ΔsPSA 2 (0.57783) and Δ in verbal evaluation (0.4434). A change in verbal assessment of circulating tumour cells in castration-resistant prostate cancer (CRPC) may be correlated with a change in the sPSA level. Spearman’s rank correlation coefficient assesses the relationship between two variables. If the coefficient is higher than 0, it is a positive correlation (higher values of one variable imply higher values of the second variable) and vice versa. The correlation coefficient takes values from -1 to +1; the closer the value is to 1 or -1, the stronger is the correlation.

Conclusion: The sPSA level has the most accurate correlation with the level of gene fragment for PSA in CTC. A favourable change in CTC quantity will occur in more than a half of patients during DTx, however the change in CTC detection does not correlate with the change of the sPSA level.

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