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PDL-1 is highly expressed on circulating epithelial tumor cells (CETCs) and could be a crucial factor in the inhibition of immune response to CETCs during metastasis formation

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Background:

Analysis of CETCs is a promising diagnostic field for estimating the risk for metastatic relapse and progression. The phenotypic characterization of CETCs may provide real time information and can be of great value in therapy monitoring. Programmed cell death ligand 1 (PDL-1) is an important protein frequently upregulated in a number of different cancers, including breast, prostate, colorectal and lung. Cancer cells expressing PDL-1 inhibit immune-modulatory T-cell activation allowing disease progression. Therefore this immune checkpoint has emerged as important target for immune therapy. The purpose of the current study was to investigate its expression on CETCs.

Methods:

CETCs were determined from blood of 47 patients suffering from breast, prostate, colorectal and lung cancer. The number of vital CETCs and the expression of PDL-1 were investigated using the maintrac method.

Results:

PDL-1 expressing CETCs were detected in 92 %, 100%, 100% and 83% of breast, prostate, colorectal and lung cancer patients, respectively, however at different frequencies. There was no association between the number of PDL-1 positive CETCs and tumor entity. Interestingly, we found a relationship between the numbers of PDL-1 positive CETCs and progression of cancer disease. Patients with metastatic disease had more PDL-1 positive CETCs as compared to patients without metastasis.

Conclusion:

PDL-1 is highly expressed on CETCs regardless of the type of cancer and may be a promising target of anticancer therapies. Monitoring the number of PDL-1 positive CETCs could reflect individual patient's response for an anti-PDL-1 therapy.