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CTC immune escape mediated by PD-L1

Breast cancer is the most common malignant tumor in women around the world. CTC (circulating tumor cell) is associated with the breast cancer patients' cancer-related deaths and prognosis. The recently circulating clusters were found and its metastasis and tumor formation ability is 23~50 times as CTC. However, its mechanism has not been clarified. These days, researchers have successfully completed CTC cluster separation, CTC cell culture, and PD-L1 was found to be related with histological grading of tumor. Meanwhile, the high expression of PD-L1 in CTC surface has also been reported. Since PD-L1 can mediate Treg to play the role of immunosuppression, we propose that CTC with positive PD-L1 is easier to connect PD-L1, immune cells and CK cytokines etc. Treg cells can protect CTC from being attacked by the immune system through the immunosuppression. Meanwhile, they can weaken CTL killing ability and trigger more MDSC. Finally, CTC formed the metastasis. To explore this hypothesis we have analyzed CTC and PD-L1 mRNA expression on CTC in 10 metastatic breast cancer patients and 10 primary breast cancer patients. We have also analyzed the relationship between clinical pathological features and PD-L1 expression on CTC, through overall and split chi square test. The results show that in the total 20 patients, 15 have more than 1 CTC in 7.5 ml peripheral blood. Among the 15 patients, each one has at least 1 CTC showing PD-L1. We found PD-L1 on CTC is related to the tumor size ($P=0.012$) lymph node status ($P=0.001$) and PR status ($P=0.037$). In tumor size group, we can see statistical difference between T2 and T3 ($P=0.003$), while in node status group statistical difference can be found in N1 vs. N3 ($P=0.000$) and N2 vs. N3 ($P=0.015$). However, we didn't see difference of PD-L1 on CTC in metastatic and non-metastatic patients ($P=0.418$). Next, we are preparing for the cell experiment to further discover it.

Biography

Wang Xuefei is a Medicine Doctor graduated from PUMCH (Peking Union Medical College and Hospital). Currently, she is the fellow of the breast surgery department in PUMCH. She is also a member of Beijing Breast Disease Society of Young Academic. These years, her researches are focused on metastatic breast cancer, especially on CTC of breast cancer. She has also obtained the patent of CTC hemodialysis, meanwhile, participated in a number of national projects, including Beijing Municipal Science and Technology project, National 11th Five-Year issue, National 12th Five-Year issue. She has published more than 14 articles and books, including 4 SCI articles, and did oral and poster presentation in many breast cancer related conferences.

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