Accounts of circulating tumor cells and ctc clusters with pd-l1 expression in sarcoma patients

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Abstract

Background:

Sarcomas are known for their heterogeneity, varying histological subtypes, and clinical behavior. The dynamic epithelial to mesenchymal transitions (EMT)- processes in solid cancers establish disease aggressiveness. There are challenges in characterizing CTCs in sarcomas due to a lack of cell-specific markers with inadequate characterization. Compared to other adenocarcinomas, the studies on sarcoma-derived CTCs are limited. Thus, isolation and characterization of CTCs with protein expression and cellular transitions using affinity ligands like, anti-epithelial cellular adhesion molecule (EpCAM) antibodies implicate the importance of better outcomes in sarcoma patients. The role of CTCs as a minimal cellular residual disease (MCRD) is highly implicative especially post-treatments, including post-surgery with curative intent.

Objective: To account for the prevalence of CTC and CTC Clusters for minimal cellular residual disease (MCRD) with PD-L1 Expression in Sarcoma Patients.

Methods:

In a retrospective analysis of 97 sarcoma patients (55.95% male and 44.05% female), peripheral blood was analyzed for CTCs with and without the expression of PD-L1 and CTC clusters. CTCs were isolated using the OncoDiscover platform approved by CDSCO in 1.5 ml blood. The platform consisted of a multifunctional magneto-nanosystem mediated by a(EpCAM) antibody. CTCs were identified as positive with EpCAM+ve, CK18+ve, DAPI+ve, and CD45-ve. In addition, PD-L1 expression on the CTCs was analyzed based on the linear intensity gradients of the fluorescence signals using image acquisition on an automated Zeiss Microscope.

Results:

Amongst 97 patients, 86.59% had baseline CTC outcomes with 13.40% of patients with follow-up samples. At baseline sample analysis, 68.04% (n=66) of the patients showed ≥1CTCs per 1.5 ml of blood. The CTC distribution ranged from 1-6 CTCs with a mean distribution value of 1.17. Whereas, 61.44% (n=51) of patients with CTCs showed an expression of PD-L1 with the mean value of 0.92. Noteworthy, the highest number of CTCs (31.11%, N=28) and CTC clusters (6.14%, N=7) were observed in ages 31-40.

Conclusions:

The presence of CTCs with CTC clusters and PD-L1 expression implies an MCRD with aggressive disease in sarcoma patients. Post treatments, the presence of CTCs is indicative of metastasis progression and thus such cancer patients require longitudinal monitoring for better clinical outcomes.

Do you have any conflicts of interest?

No, I do not have a conflict of interest.