323P Macrophage population analysis of the breast cancer microenvironment within the context of seroma formation after mastectomy (SerMa pilot study)

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Background: The primary goal of the SerMa pilot study was to identify possible immunological/inflammatory factors related to seroma formation after mastectomy and first diagnosis of breast cancer. CD68 is a common marker for tumor-associated monocytes and macrophages in general. CD163 is used to detect M2-polarized macrophages. Both are known to have an influence on defense reactions and wound healing due to their immunomodulatory effect. Thus, the aim of this evaluation was to evaluate whether a correlation can be shown within the context of postoperative seroma formation.

Methods: From 100 patients meeting the criteria of the study, tumor tissue of 80 patients was available for evaluation. Immunohistochemical antibody staining against CD68 and CD163 was performed, and two groups were compared: Patients with and without seroma formation. The number of macrophages in the tumor microenvironment was manually quantified at three sites representative of each specimen in the entire field of view at a magnification of 40x lens. The mean value of the three areas was used for further analysis.

Results: For CD68, the range of the mean value was from 0 to 354 macrophages. The number of CD68-positive macrophages was significantly increased ($p=0.036$) in patients with seroma development (mean=45.31) compared to those without (mean=34.31). For CD163, the range extends from 0 to 309 macrophages. Again, the number of CD163-positive macrophages was significantly increased ($p=0.027$) in patients with postoperative seroma formation (mean=45.57) compared to patients without (mean=33.99).

Conclusions: These data demonstrate a significant correlation of CD68 and CD163 positive macrophages in the tumor microenvironment and seroma formation in the breast after mastectomy. This study was the first to investigate these possible relationships. As highly associated with immunological processes, the significant higher detection of CD68 and CD163 within the population of "Seroma developers" supports our study group's previously published results on the identification of immunological markers in seroma fluid and thus the hypothesized relationship of seroma formation based on immunological/inflammatory processes.

Legal entity responsible for the study: N. Ditsch, U. Jeschke.

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