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The flow cytometric study of immune modulation in the sentinel lymph nodes of gastric cancer patients

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Background: We introduced a novel method of intraoperative downstream LN metastases prediction with focused sentinel lymph node flow cytometry analysis. With this method we could detect SLN metastases as well as alterations in local immune response indigenous to metastatic involved SNLs. These alterations allowed an even more precise detection of downstream LN metastases.

Aim: The aim of our study was to determine whether accumulation of $CD25^{high}$ $CD127^{low}$ expressing activated regulatory T lymphocytes in SNLs could predict downstream lymph node metastases.

Methods: Thirteen patients with histologically verified adenocarcinoma of the stomach were included in our study. Intraoperative subserosal Patente Blue V dye injection was used for LN navigation. The first blue lymph node was extracted for intraoperative analysis. The SNL was halved, with one half for frozen section and the other half for flow cytometry analysis. The flow cytometry was used to detect CEACAM and EpCAM expressing tumor cells and $CD25^{high}$ $CD127^{low}$ expressing cells.

Results: From thirteen included patients, sixwere node positive on final histology. With the frozen section analysis only three from six node positive patients could be determined during the operation. Similarly, CEACAM/EpCAM expressing cells could be found in three from six node positive patients with flow cytometry. However, in all six node positive patients the SLNs contained lymphocytes in the $CD25^{high}$ $CD127^{low}$ region representing activated regulatory T lymphocytes. From 7 node negative patients only one patient had SNL containing $CD25^{high}$ $CD127^{low}$ expressing cells. The ROC analysis determined presence of $CD25^{high}$ CD127low cells in SNLs as a significant predictor for downstream LN metastases (AUC 1; $p = 0.002$).

Conclusion: The detection of $CD25^{high}$ $CD127^{low}$ expressing cells in SNL is an accurate predictor of downstream LN metastases.

Biography

Tomaz Jagric completed his MD and PhD from medicine and general surgery in Slovenia and Postdoctoral studies from Ljubljana Medical School. His main field of expertise is the upper gastrointestinal, hepatico-pancreato-billiary and laparoscopic gastric cancer surgery. He has been habilitated as assistant researcher on Maribor Medical School in Slovenia, and has since been working as the head researcher on many projects. Currently, he is leading two projects "Flow cytometric detection of micrometastases in the sentinel lymph nodes of gastric cancer patients" and "Detection of Free tumor cells in abdominal lavage fluids of patients with advanced gastric cancer as a selection marker for hyperthermic intraoperative intraperitoneal chemotherapy". He is also conducting several trails of negative pressure therapy in abdominal compartment syndrome as well as palliative rectal cancer stenting and stenting of malignant obstructions in gastric cancer patients.

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