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IMMUNE CELLS PRODUCE THYROGLOBULIN ANTIBODIES IN THYROID CANCER: A TISSUE-SPECIFIC IMMUNE RESPONSE

Anti-thyroglobulin-antibodies (Tg-Ab) frequently occur in the follow-up of patients with differentiated thyroid cancer (DTC), but the reason for this is still unknown. Recent research data show that DTC patients showing lymphocytic tumor infiltrates have a better outcome compared to those without. The same is also true for DTC patients showing Tg-Ab positivity. The purpose of this ongoing study is hence to investigate epitope-specific antitumor immunity in DTC patients.

Until now, we included 18 thyroid cancer patients in this study (14 HLA-A2 positive and 4 HLA-A2 negative DTC patients). We performed tetramer analyses specific for Tg- and thyreoperoxidase (TPO)-epitopes in order to detect tumor specific T lymphocytes. We selected three epitopes for Tg and TPO as well, based on the mathematical epitope prediction program SYFPEITHI.

Our preliminary data suggests that HLA-A2 pos. DTC patients have a significantly increased number of Tg- and TPO-specific T cells ($0.42 \pm 0.36\%$ and $0.34 \pm 0.30\%$) in their peripheral blood compared to HLA-A2 neg. DTC patients ($0.10 \pm 0.06\%$, $p < 0.0001$ and $0.13 \pm 0.05\%$, $p = 0.03$), as well as normal controls ($0.03 \pm 0.05\%$, $p < 0.0001$ and $0.06 \pm 0.14\%$, $p = 0.01$). Comparing the antibody level (Tg) to the frequency of epitope-specific T cells revealed no correlation. We also compared the number of tetramer positive T cells in patients with higher tumor burden (morphological tumor detection, $n = 5$) compared to those without metastases ($n = 7$). Here we detected a slightly, but statistically not significantly higher amount of tetramer pos. T cells in patients with detectable tumor burden ($0.49 \pm 0.45\%$ and $0.41 \pm 0.30\%$ for Tg; $0.43 \pm 0.41\%$ and $0.30 \pm 0.19\%$ for TPO). In summary, this is the first study showing an epitope-specific antitumor immunity in DTC patients directed not only against Tg but also against TPO. The Tg-Ab occurrence in these patients may be caused by specific cellular immunity in DTC patients. This is crucial as until now, no data is available regarding the antitumor immunity in DTC.