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# The immunomodulatory and prognostic role of indoleamine-2,3-dioxygenase-1 in cutaneous T-cell lymphomas

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Indoleamine-2,3-deoxygenase (IDO-1), catabolizing tryptophan(Trp) to kynurenine (Kyn), causes an immunosuppressive microenvironment in many neoplasias. In this study we identify the IDO-expressing cell subtypes in cutaneous T-cell lymphoma (CTCL) and determine the significance of serum Kyn/Trpcatabolite levels. IDO-1 mRNA and protein expression was studied in 68 FFPE skin samples of mycosis fungoides (MF), lymphomatoidpapulosis (LyP), lichen ruberplanus (LRP), and subcutaneous panniculitic-like T cell lymphoma (SPTL), and in three CTCL cell lines. For co-expression, anti-CD33 (myeloid-derived suppressor cells, MDSC) and anti-CD163 (tumor-associated macrophages, TAM) antibodies were used. Levels of 14 Trp metabolites were measured in 69 patient and healthy control sera by liquid chromatography–tandem mass spectrometry (LC-MS/MS). The relative expression of IDO-1 mRNA was markedly elevated in MF and LyP samples compared to LRP and also in the MF-derived cell line MyLa compared to the CD30+ CTCL lines Mac-1 and Mac-2A. Interestingly, IDO was co-expressed by CD33+ MDSCs in MF and in LyP and by the CD163+ TAMS in SPTL. The increase of IDO also associated with the eleveted level of Treg cells in LyP as 50% of the cases studied showed a moderate or strong FoxP3 expression. Serum Kyn/Tryp ratios showed significant increase in MF ($p<0.05$) compared with those of healthy controls and correlated with MF activity. We show that IDO is produced by the MF cell line MyLa and by CD33+ MDSCs in MF and in LyP but instead by CD163+ TAMs in SPTL. FoxP3+ Tregs, abundant in LyP, may contribute to the indolent clinical behavior. Serum Kyn/Tryp ratio in MF associates to a progressive disease behavior and may be a useful clinical indicator.

## Biography

Pilvi Maliniemi is currently a graduate student, who will be completing her PhD this year 2015 from the Medical Faculty of Helsinki University. She has already published eight (8) papers in reputed journals in the field of Mitochondrial Diseases and Molecular Oncology of Cutaneous T Cell Lymphomas.

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