Oncology of the chest

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Alveolar lymphocytes (AL) in early-stage non-small cell lung cancer (NSCLC) present increased cytotoxic functionality and declined apoptosis rate

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Question. Progression of lung cancer is considered to associate with local immune suppression. The novel strategies of NSCLC immune therapy seem to be partially unsuccessful due to immune editing present in lungs. The aim of the study was to examine the AL phenotypic properties in NSCLC, with particular attention to the markers of T cell cytotoxicity and apoptosis.

Methods. BAL was harvested from tumor-affected lung region in 16 patients with NSCLC and 9 controls (all smokers). AL were phenotyped for major subsets as well as for markers of effector/memory/cytotoxicity function both in Th and Tc cells, including FasL, TRAIL and granzyme B expression. AL apoptosis rate was assessed by cell cycle analysis and TUNEL assay and cell scatter properties.

Results. Significantly higher BAL CD4/CD8 ratio, (1.2±0.3 vs 0.9±0.7 in controls, median±SEM), elevated NK cell percentage, increased expression of FasL (especially on CD4+ cells: 13±7.5 vs 2.3±1.7%, $p<0.05$) and TRAIL (for AL together) were observed in NSCLC subjects. Unexpectedly, nTreg (assessed as CD4+25high+27+ cells) percentage was declined in NSCLC. AL apoptosis rate was remarkably decreased in NSCLC patients, as compared to controls (0.8±0.4% vs 1.5±0.5%, $p<0.05$).

Conclusions. AL in NSCLC-affected lung regions are activated, resistant to apoptosis characterized by increased cytotoxic potential (FasL+ cells, TRAIL+ cells, NK cells). Markers of cytotoxicity were expressed on both Th and Tc cells. Immune therapy should be considered as a powerful option in early NSCLC stage, before immune editing develops.