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**Title:** Tumor size and inflammatory cytokines in exhaled breath condensate in patients with non small cell lung cancer (NSCLC)

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**Body:** Background: both local and systemic inflammation play a key role in the genesis and progression of lung cancer; vascular endothelial growth factor (VEGF) has been related to progression and local extension of many tumors. Involvement of T helper 17 lymphocytes (Th17) and their cytokines (IL17, IL6) in cancer has been recently postulated. Lung inflammation may be non-invasively assessed by cytokine assay in exhaled breath condensate (EBC). Aim and objectives: to assess the possible correlations between systemic and local Th17 related cytokines, VEGF and tumor size evaluated by CT-scan in patients with NSCLS. Methods: Fifteen consecutive patients (12 males; mean age 64 years) with NSCLC classified in stage IA-IB-IIA, were enrolled. Lung CT-scan, EBC and serum samples were obtained in each patient. IL-6, IL-17 and VEGF were measured by ELISA. Results: Tumor mean diameter was 3.28 cm (SD 2.33). Mean cytokines values in serum and EBC are shown in table 1.

Table 1

Cytokine	Serum	EBC
IL-17	0.17 (±0.43)	2.85 (±1.22)
IL-6	1.05 (±1.27)	0.29 (±0.09)
VEGF	19.27 (±29.04)	78.45 (±29.65)

Mean (± SD) serum and EBC cytokines levels (ng/ml)

EBC level of VEGF was significantly correlated with EBC IL-6 ( $r=0.314$ ,  $p=0.030$ ) and IL-17 ( $r=0.697$ ,  $p<0.001$ ). A significant correlation between tumor diameter and IL-6, IL-17 and VEGF in EBC was observed

( $r=0.440$   $p=0.013$ ,  $r=0.444$   $p=0.013$ ,  $r=0.332$   $p=0.039$  respectively). No correlation was found between serum cytokine and tumor size. Conclusion: This is the first observation reporting Th17 cytokines in EBC in NSCLC. The correlation between Th17 cytokines and tumor size suggests the involvement of Th17 cells in the progression of neoplasia.