**Aim:** Although an association between the lymphatic system and metastases has been clearly demonstrated in a number of animal experimental models of cancer, clinical data are much less consistent. The role of the lymphatic system in lung cancer cell dissemination remains uncertain. We examined mRNA expression of the genes encoded for lymphatic-specific growth factors VEGFC, VEGFD, their receptor VEGFR3 and co-receptor NRP2, transcription factors PROX and FOXC2, lymphatic vessel-associated proteins LYVE-1 and podoplanin (PDPN), integrin alpha 9 (ITGA9) and intercellular junction protein desmoplakin (DSP) in stage I-II non-small cell lung cancer (NSCLC). We assumed that an increased activity of the genes would point to the induction of the process of new lymphatic vessel formation through lymphangiogenesis.

**Methods:** The study was performed on 141 pairs of fresh-frozen surgical specimens of NSCLC cross-sections and matched unaffected lung tissues. Comparative RT-PCR method was used to assess mRNA level.

**Results:** In the NSCLCs, mRNA expression of the majority of the analyzed genes was similar (PDPN and PROX1, $p = 0.640$ and $p = 0.611$, respectively) or significantly lower (VEGFC, VEGFD, VEGFR3, LYVE1, ITGA9, $p < 0.0001$ for all; FOX2, $p = 0.0003$ and NRP2, $p = 0.021$) than in matched normal lung tissues. Strong correlation between mRNA levels of the particular genes was found, suggesting common patterns of their regulation. Only a desmoplakin encoding gene DSP was upregulated ($p < 0.0001$). In most cases, no association was identified between the expression of the genes and patients’ clinicopathological characteristics. The only exceptions were more significant decreases in mRNA level of the PDPN ($p = 0.002$), FOX2 ($p = 0.035$) and NRP2 ($p = 0.022$) in smaller tumors and PROX1 ($p = 0.02$) and ITGA9 ($p = 0.007$) in squamous cell compared to adenocarcinoma tumors.

**Conclusions:** Our results seem to suggest a lack of the activation of the process of lymphangiogenesis in NSCLC.

**Disclosure:** All authors have declared no conflicts of interest.