

JCK Oral

JCK Oral 1 (II-JCKO1)

Basic/New Insights

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Sat. Jul 8, 2017 8:30 AM - 9:20 AM ROOM 3 (Exhibition and Event Hall Room 3)

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[II-JCKO1-05]Roles of Tbx4 for pulmonary vascular development

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[Objectives] A T-box transcription factor, Tbx4, is involved in embryogenesis. Recently, it was reported that Tbx4 was expressed in the lung mesenchymal cells (LMC), possible precursors for pulmonary arterial endothelial cells (PAEC) and smooth muscle cells (PASMC). In addition, some microdeletions and mutations in the genome region of Tbx4 were detected in the patients with childhood-onset pulmonary arterial hypertension. The purpose of this study is to elucidate roles of Tbx4 for the development of the pulmonary vessels.

[Methods] We performed microarray analysis compared between CD31-positive cells sorted from the lung tissues at embryonic day (E) E14 and those at postnatal day (P) 2. Then we focused on Tbx4 as a molecule expressed highly at E14. The temporal expression pattern of Tbx4 in LMC was observed by qPCR. *In vitro* tube formation activity using Tbx4-knockdown LMC and BrdU incorporation assay using Tbx4-knockdown PASMC were examined.

[Results] Microarray showed the expression level of Tbx4 at E14 was significantly higher than that at P2. Interestingly, Tbx4 expression level in the LMC reached to the peak at E14-15 and later decreased. The knockdown of Tbx4 in LMC increased tube length in tube formation assay. In contrast the knockdown in the PASMC attenuated cell proliferation activities.

[Conclusions] Our results suggest that Tbx4 in the LMC may have roles for maintaining immaturity of precursors of pulmonary vascular cells and that the downregulation of Tbx4 expression after E14-15 may proceed their differentiation.