



The roles of telocytes in lung development and angiogenesis: an immunohistochemical, ultrastructural, scanning electron microscopy and morphometrical study.

Marwa M Hussein, Doaa M Mokhtar

Abstract:

Many studies have been carried out to investigate the occurrence and distribution of telocytes (TCs) in many organs. However, their morphological development is still unclear. This study was performed to demonstrate the morphological development of TCs in rabbits' lung from fetal to postnatal life using light-, electron- microscopy, immunohistochemistry, morphometrical and statistical analysis. During the fetal life, these cells formed an extensive network of telopodes (Tps) which were in close contact with developing alveoli, bronchioles, stem cells and many other interstitial components. In addition, the TCs' number was significantly increased around the neocapillaries in fetal lung. In the fetal life, TCs were stellate in shape and characterized by large cell bodies and many short Tps that contained abundant rER, mitochondria, and ribosomes. By gradual increasing of ages, TCs were spindle in shape with two Tps contained a massive amount of secretory structures (exosomes, ectosomes, and multivesicular bodies). Moreover, TCs in postnatal lung showed a significant decrease in number and diameter of their cell bodies and a significant increase in the length of Tps compared with those in fetal life. The TCs contributed with pneumocytes and endothelium in the formation of air-blood barrier. The TCs' immunohistochemical profiles for CD34, vimentin, c-kit, connexin 43, vascular endothelial growth factor (VEGF), and neuron- specific enolase (NSE) differed between ages during the lung development. This study provided an evidence that TCs contributed to angiogenesis, the formation of the air-blood barrier, lung organization, and development.

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