

**LYMPHATICS IN THE LUNG OF A PRECOICIAL BIRD
BEFORE AND AFTER HATCHING**

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ABSTRACT

A light and electron microscopic study of pulmonary lymphatics was carried out in quail embryos (embryonic day; ED 13-17), completed with samples of lungs of quail 90 min, 24 h after hatching and two 2-day-old and three adult quail. The aim of the study was to depict the morphology of pulmonary lymphatics by determining the dynamics in ontogeny and to establish the rules of their distribution. The primitive lymphatics appear on ED 13 and 14 as closed thin-walled tubes in abundant interparabronchial mesenchyme. They seemingly differentiate from the mesenchymal cells. Due to the proliferation, growth, and enlargement of the parabronchial compartments, the interparabronchial septa disappear to a large extent, and the external walls of parabronchi appose and join. On ED 16 and 17, the mesenchyme is squeezed to the trigonal fields among the neighboring parabronchi. The lymphatics form broad, voluminous lakes around the arteries; on the other hand, they are also found in close contact with the gas exchange tissue as juxta-air capillary lymphatics. After hatching, the former interparabronchial septa disappear, and the imaginary boundary between parabronchi is demarcated by interparabronchial arteries and veins. The lymphatics are confined to the adventitial connective tissue which conducts the larger arteries and veins of the original trigone of the interparabronchial septa. The richly vascularized parabronchi in mature quail are poor in connective tissue and to a large extent devoid of lymphatics, in comparison to the mammalian lung where the lymphatic capillaries have their roots at the level of the respiratory bronchioles.

The avian pulmonary lymphatics serve as an appropriate model for the analysis of principles controlling the origin and distribution of lymphatics in general.