

Histological developmental and immunohistochemistry study of the lung in rat(*Rattus rattus*)

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Abstract

The goal of the current study, which involved 21 fetuses, was to describe the developmental structure of the rat fetus lung. The embryos were taken on days 17, 19, and 21 of pregnancy. According to the current study, the lung was in the canalicular stage during the 17th gestational day. At this stage of development, all lung airways had significantly lengthened and expanded. The terminal bronchiole divides into two, then into four acinar canals, which are large, straight canals. The cuboidal epithelial cells that line these acinar canals have also started to flatten and transform into potential type I pneumocytes. The lung was in the saccular stage on the 19th day of pregnancy. The terminal bronchioles split into several possible alveolar ducts, which terminated in the typical collections of enlarged airspaces called terminal sacs, there is a single layer of cells with cilia on the epithelial surface, a blue nucleus with a gap in the cells, and a terminal opening on the air vesicle with several capillary networks that transform the lining cells into alveolar cells. Close contact between some capillaries and the flattened cells resulted in the emergence of the first blood-air barriers. From the 21st gestational day through the first postnatal day, there was an alveolar stage. The cartilage, which had largely grown by day 21 of pregnancy, contained collagen. Collagen II was discovered on the tracheal hyaline cartilage ring's periphery, inside the bronchi body, and across the whole cartilage ring.

Key words: Rats, lung, Development, Immunohistochemical

I. INTRODUCTION

One of the most often used animal models in experimental investigations looking at prenatal lung development is the rat fetus; yet, there is currently limited information on the morphological traits of rat lung development throughout fetal and early neonatal stages. Life is not abundant [1]. The trachea, bronchi, bronchioles, and lungs are all parts of the lower respiratory tract [2]. The embryonic events that take place during the key stage of the rat's development allow the foregut to transform from a single tube