

# Development and Texture of Pulmonary Trunk in Children

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**Abstract:** We have studied texture and sites of pulmonary trunk in children (from the birth to 12 years of life). Experiments were carried out on 55 children's corpses. The following results were obtained: pulmonary trunk develops continuously and asynchronously: rapid growth process develops in children of an early age, diameter of pulmonary trunk increases from the first days of its existence and subsequently develops in its length

## Key Words:

The structure and dimensions of the pulmonary trunk were studied on 55 cadavers of children (from birth to 12 years of age). It has been established that the development of the pulmonary trunk is continuous and asynchronous rapid development occurs at an early age, at the very beginning the diameter of the pulmonary trunk increases, and later it develops in length. The wall of the pulmonary trunk thickens on average 2,1 times, but this does not depend on the increase in its size. Pillow-shaped formations protrusion into the wall of the pulmonary trunk contributes to the fastest flow of blood into the lungs.

We have studied texture and sites of pulmonary trunk in children (from the birth to 12 years of life). Experiments were carried out on 55 children's corpses. The following results were obtained: pulmonary trunk develops continuously and asynchronously: rapid growth process develops in children of an early age, diameter of pulmonary trunk increases from the first days of its existence and subsequently develops in its length. The wall of the pulmonary trunk became thicker 2.1 times on the average but this growth does not depend on increase in its size. Pillow-shaped formation and protrusion into a wall of the pulmonary trunk is contributing to more rapid blood flow into the lungs.

In the early postnatal period, the internal organs of humans and mammals rapidly develop and form [1,2,3,4]. This genetic determination process takes place on the basis of the specific conditions of a deaf person. Although many scientific studies have been carried out in this regard, but considering the fact that the structure of the umbilical vein and long branch artery vessels have not been studied, considering its cardiopulmonological aspects, we decided to study the development and structure of the umbilical vein outside the umbilical cord.

The tasks of our research consisted of the following:

1. Determination of the morphometric indicators of the left and right upper limb and its arterial vessels in the period from birth to 12 years.
2. To study the dynamics of the structure of these arteries (up to 12 years of age).

Researches were conducted on the corpses of young children (up to 12 years old) who died due to accidental accidents.

The materials taken from the corpses were divided into 5 groups according to the age of the children (in accordance with the recommendations of the VII International Scientific Conference on Morphology, Physiology and Biochemistry and PARD), infancy, childhood, first and second childhood. In each group, the topography of at least 10-12 veins and arteries, location, cycle, length, diameter and thickness of the arteries were analyzed. The diameter and length of the upper body were measured using a barbell circle.

For microscopic examinations, the lung organ and the tissue of its arteries were fixed in 10% formalin. Then tissues were removed from alcohol and celloidin was poured into them. Transverse and longitudinal sections with a thickness of 4-6  $\mu\text{m}$  were stained by hematoxylin-eosin, Van-Gizon, and Mallory methods.

The thickness of the vessel wall layers was measured using a MOVx15 ocular-micrometer. The obtained morphometric results were analyzed using statistical methods.

The lung undergoes a number of morphological and morphometric changes from birth to 12 years of age. During this time, the member lengthens to an average of 2.4 mm, and its diameter increases by an average of 3 times. In this case, it is observed that a sharp change in the size of the lung organ mainly corresponds to the period of early childhood (table). According to the results of macroscopic examinations, the length of the head increases by 1.90 mm, and the diameter increases by 1.70 mm.

According to the results of the macroscopic examination, the length of the lungs increases by 1.90 mm and the diameter by 1.10 mm during infancy and childhood.

By early childhood (1-3 years old), the length of the member increased by 61%, diameter by 72% (table). This is considered the most drastic change of the lung organ, and no such enlargement was observed in other periods. Dynamics of the structure of the lung organ in childhood ( $M \pm m$ , mm)

Age periods	The length of lung organs	Diameter
In infancy	10,91±0,45	5,65±0,47
In infancy	12,81±0,43	7,35±0,39
In early childhood	20,56±0,90	12,64±0,59
I childhood	24,30±0,69	15,10±0,65
II childhood	26,11±0,75	17,68±0,51

In the first period of childhood (4-7 years old), the length of the lung organ increased to an average of 4 mm (19.5%), diametrically to 2.5 mm (20%), that is, both sizes changed synchronously.

In the second period of childhood (8-12 years old), the length of the lungs increases by 7.5%, and the diameter increases by 17%.

In general childhood (up to 12 years), the wall thickness increases simultaneously with the increase in the length and diameter of the lung organ. In babies, it is equal to 10  $\mu$ m, and at the age of 12 it is 12  $\mu$ m, that is, the thickness increases by 22.1%. When comparing the thickness of the pulmonary organ devoid characteristic of different young people, it can be significantly changed mainly in infancy (20.5%) and second childhood (40.5%).

Each mining vein consists of inner, middle and outer layers, and their thickness varies between 0-12 mesh. In  $\mu$ тaφтe, the thickness of the middle layer (average) was 50.2%, the outer layer was 48.2%, and the inner layer was 1.5%. In this case, the inner layer thickens on average by 29 microns until the age of 12, and is equal to 443 microns. Therefore, their relative size is from 1.5% to 3%. The thickness of the middle layer thickens from 430  $\mu$ m to 980  $\mu$ m, that is, by 230%, and the outer layer (up to 12 years) thickens almost 2.1 times (from 410  $\mu$ m to 850  $\mu$ m).

When comparing the thickening of these layers during the general childhood, we can say that the deaf layer thickens asynchronously and continuously.

In infants, the inner layer of the spinal cord consists of flat endothelium cells, and the subendothelial layer is underdeveloped and thin. During infancy, the subendothelial layer thickens a little, and it is possible to see fiber-like fibers in it.

In early childhood, the internal elastic membrane between the inner and outer layers of the spinal cord is underdeveloped, the elastic fibers in the subendothelium are thin, and fibroblasts and other connective tissue cells are located in the transverse and transverse directions. During the second childhood the thickness of the sub-endothelial plaque is increasing and it is directed along the wall of lungs.

Muscle tissue is composed of smooth muscle cells and is mainly found between circular elastic bundles. Collagen fibers are few and oriented parallel to elastic fibers.

During infancy, no significant changes are observed in the urinary tract.

During the early childhood, elastic fibers and membranes formed by them are formed in the upper layer of the upper layer. The number of fibers reaches 35-40, they are condensed at the border of the outer layer, and the outer elastic membrane is not formed. Collagen fibers are also thickened.

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In the second period of childhood, the number of elastic fibers reaches 60 in the outer layer of the upper body, and the internal and external elastic membranes develop well. Muscle cells are relatively reduced and they are arranged in a circular, circular manner. Because of this, cushion-like, bud-like structures are formed that bend the inner layer of the uzan to the uzan cavity. Such structures are also found in arteriovenular anastomoses, and they regulate the amount of blood flow. With their help, the heart undergoes complete metabolic changes and is returned to the heart [6,7].

### Conclusion

1. In different periods of general childhood (up to the age of 12), the elongation and reduction of the diameter of the umbilical vein occur differently (asynchronously): during early childhood, these processes are relatively accelerated, and the diameter of the vessel mainly increases. In the later periods, the uzan lengthens relatively quickly.

2. During these periods, the wall thickness of lungs by an average of 2.1 times.

3. Pillow-like, bud-like structures are formed on the wall of lungs, which perfectly control the removal of the mine from the upper part.

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