

## ***РАЗВИТИЕ И ВОЗРАСТНЫЕ ОСОБЕННОСТИ СЕРДЦА***

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## ***DEVELOPMENT AND AGE FEATURES OF HEART***

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In ontogenesis at the person heart develops from a mesoderm in the form of a pair bookmark at a stage 1-3 somite (approximately for the 17th day of development of a germ). Simple tubular heart which is located in a neck is formed of this pair bookmark. The headit passes into a primitive bulb of heart, and back - into an expanded venous sine. The forward (head) end of simple tubular heart is arterial, and back - venous. The average department of tubular heart intensively grows in length therefore it is bent in the form of an arch in the ventrally direction (in the sagittal plane). Top of this arch - future top of heart. The bottom (caudally) department of an arch represents venous department of heart, top (cranially) - arterial.

Further the simple tubular heart which had an appearance of an arch, is bent counterclockwise S-shaped and turns into sigmoidal heart. On an external surface of sigmoidal heart appear atria-ventricular furrow (future coronal furrow).

The general auricle quickly grows, covers behind an arterial trunk on which parties two embolae - a laying of the right and left ears are visible (in front). The auricle is reported with a ventricle the narrow atria-ventricular channel. In walls of the channel there are ventrally and dorsally thickenings - atria-ventricular endocardianly rollers from which then on border of cameras of heart valves - two - and three-leaved develop.

In the mouth of an arterial trunk are formed four endocardianly of the roller which turn into semi-lunar gates (valves) of the beginning of an aorta and a pulmonary trunk later.

On the 4th week on an internal surface of the general auricle there is primary (interatrial) partition. It grows towards the atria-ventricular channel and divides the general auricle on right and left. From a top rear wall of an auricle the partition which grows together with primary grows and completely separates the right auricle from the left.

At the beginning of the 8th week of development in low back department of a ventricle there is a fold. It grows forward and up aside the endocardianly of rollers of the atria-ventricular channel, forming the interventricular partition which is completely separating the right ventricle from the

left. At the same time in an arterial trunk there are two longitudinal folds growing in the sagittal plane towards each other, and also down - towards an interventricular partition. Connecting among themselves, these folds form a partition which separates ascending part of an aorta from a pulmonary trunk.

The newborn has a roundish heart. Its cross size is equal 2,7-3,9 cm, length averages 3,0-3,5 cm. Auricles in comparison with ventricles are great, right much more the left. Heart grows especially quickly within the first year of life of the child, and its length increases more, than width. Separate parts of heart change during the different age periods unequally. On the first year of life of an auricle ventricles grow quicker, than. Aged from 2 till 5 years and especially in 6 years growth of auricles and ventricles happens equally intensively. After 10 years ventricles increase quicker. Heart lump at newborn 24 g. At the end of the first year of life it increases approximately twice, by 4-5 years - by 3 times, in 9-10 years - by 5 times and by 15-16 years - by 10 times. The mass of heart is up to 5-6 years more at boys, than at girls; in 9-13 years, on the contrary, it is more at girls. In 15 years the mass of heart is more again at boys, than at girls.

Heart volume from the neonatal period increases to 16-year age by 3-3,5 times, and most intensively increases from 1 year to 5 years and during puberty.

The myocardium of the left ventricle grows quicker, than a myocardium of the right ventricle. By the end of the second year of life its weight is twice more than a weight of the right ventricle. In 16 years these ratios remain. At children of the first year of life fleshy trabecular cover almost all internal surface of both ventricles. Trabecular at youthful age (17-20 years) are most strongly developed. After 60-75 years the trabecular network is smoothed, its mesh character remains only in the field of a heart top.

Newborns and children of all age groups have elastic atria-ventricular valves, shutters brilliant. In 20-25 years of a shutter of these valves are condensed, their edges become rough. At senile age there is a partial atrophy the papillary of muscles in this connection function of valves can suffer.

At newborns and children of chest age heart settles down highly and lies cross. Heart transition from cross situation in the slanting begins at the end of the first year of life. At 2-3 summer children slanting position of heart prevails. The lower bound of heart at children till 1 year is located on one intercostal interval above, than at adults. The upper bound is at the level of the second intercostal space, the top of heart is projected in the fourth left intercostal space. The right border of heart most often settles down according to the right edge of a breast, on 0,5-1,0 cm to the right from it. In process of increase in age of the child the relations of a chest-costal (forward) surface of heart to a chest wall change.