Вклад в развитие анатомии Леонардо Да Винчи

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Leonardo da Vinci's contribution to anatomy development

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How did a creative gift and naturalist ardor of Leonardo assist the study of human body structure?

The point is that for Leonardo an art and research activity was the cooperative aspects of permanent aspiration to look after and fix original appearance and internal device of the world and man.

In the process of human nature image in painting or sculpture, Leonardo da Vinci wanted to be show truth it is allowed him to be not only a simply very realistic artist but also artist special and memorizable.

For the achievement of above mentioned, Leonardo required the slender system of anatomic knowledge. Taking advantage of Galen principle - not to trust to the books, and to trust the eyes and hands at anatomising - Leonardo began illegal dissections of dead bodies. What an extraordinary strength of mind, will and purposefulness it was necessary to possess, to do this step of human bodies anatomising!

In fact, from one side, post-morteming is dangerous self on itself, and on the other hand it was possible to meet in the tenacious paws of inquisition - and then not world glory and calling, but fire would wait Leonardo.

Shortly before his death, Leonardo repented to the cardinal Aragon in that he unsealed over 30 dead bodies in oder to the research structure and life of human body. Concerning it, Leonardo was an innovator and passed another prominent anatomist of nissance – Andreas Vesalius for the 50 years period.

Leonardo, he filledassures taut 120 albums wit anatomic pictures. A small part of his anatomic records and pictures reached our time only as separate folias that became the valuable exhibits of state and private artistic collections. Today more than 200 folias of anatomic pictures

were saved with explanations and images. It is fragments from his handwritten books that he always carried with itself and at any time could leave a coming idea or picture in them.

At the same time he first began to use anatomic pictures not for illustration of Galen and Hippocrates's texts, but also for the independent study of anatomy, passing herein, including, and already mentioned above Vesalius (that, unlike Leonardo, did not pull through from inquisition and was exiled).

In this connection it is possible to confess Leonardo da Vinci as the first scientific anatomy illustrator. The anatomic pictures of Leonardo differ in unique exactness for the time.

What could interest a man in an anatomy, what systems and vehicles of organs attracted the most part of Leonardo's attention as artist?

Naturally, it, foremost locomotorium, skeleton and musculature. Leonardo is the first drew correctly and surprisingly exactly the forms and thus proportions of all parts of man's skeleton.

All preceding images of skeleton were, as a rule, conditional, schemes and primitive. He in history of science supposed the first, that a sacrum consisted of five, but not from three vertebrae, correctly described lordosis and kyphosis of rachis, angle of slope of sacrum (and Galen counted a sacrum to the lines, and that is why even named the bent rectum of line in nature - rectum). Such anatomic features - inclination and bends of ribs, so important for understanding of breathing mechanism, mood of pelvis were first considered. Leonardo counted up, that there were 25 bones in a foot, being not afraid of contradiction with Avizenna and Galen considering, that in a foot 26 bones. He was the first who drew the arthral surfaces of bones correctly. Similarly described a lot of anatomic features of man's skeleton, related to vertical walking, - for example, slanting in relation to a vertical line position of thigh-bone.

This is in respect of Leonardo's contribution to the descriptive anatomy of skeleton. As for the Leonardo's contribution to syndesmology and miology, then it is necessary, first of all, to mark circumstance that Leonardo tried to study the structure of muscles and joints in loading and close intercommunication. Thus, Leonardo can be considered the founder of dynamic anatomy, in fact, he even worked out a plan writing of the vast treatise sanctified to description of man and animals motions.

Examining motions of human body, Leonardo studied not only the structure of muscles but also their motive ability, innervation (Da Vinci understood the value of nerves, as explorers of stimuli to the action of muscles), feed vessels and even methods of their attaching to the skeleton and feature of these attachments. Leonardo classified the muscles on a size, force, form and character of tendons and method of attaching to the skeleton bones – doesn't it remind the modern classification of muscles, accepted in miology?

"Nature created service muscles in a man, pulling the tendons, that can move parts of the body according to the will and desire , like the servants, who were sent by an owner to different provinces and cities, that are representatives in these places and carry out the will of their owner. Tendons with its muscles serve nerves as soldiers to their condottieros, and nerves serve to general sense, as condottieros to theirs captains; and common sense serves to the soul, as a captain to the owner" – in this way Leonardo described work of the muscular system.

In particular, Leonardo paid considerable attention to the study of eyes structure: visual analyzer. He considered an eye "lord and prince of other four feelings" and described eyes and visual nerves from positions of physiological optics and anatomy.

Leonardo also examined the structure of brain and skull. No one before him did not investigate the construction of skull so exactly - this "seat nested soul" by God.

Leonardo made the section of skull in three planes – sagittal, frontal and horizontal – making a tree-dimensional image of the bone. He did sketching of separate details of outside facial and cerebral parts of skull. It allowed to Leonardo to open the pneumatic bosoms of skull. He applied also the method of injection by the molten beeswax to ventricles of brain.

Among other things, Leonardo was the first who described work of heart correctly. The Gallen's theory of circulation of blood dominating at that time could not resist any criticism. The hypothesis of blood circulation by Leonardo anticipated very much the subsequent opening in this area made by Visalia, Serviette and Garvey. "Heart by itself is not a source of life, but vessel, made out of dense musculature, revived and fed by arteries and veins, like other muscles.

Actually, tendons and blood that is cleared in it are life and feed of other muscles. There are four ventricles in a heart, namely - two overhead, named ears, and under them - two lower, right and left, named ventricles" - wrote Leonardo.