Clarifications Regarding the Topographical Location of the Vascular, Lymphatic and Nervous Formations from the Thorax Aperture in Pigs and Sheep

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Abstract. The purpose of the studies is to contribute with some clarifications to the topographical location of the vascular, lymphatic and nervous formations from the thorax aperture in pigs and sheep.

The literature data is little relevant because they depict other formations from the anterior mediastinum, without making a correlation between them.

The study was conducted on 20 pig corpses from production farms, with digestive, not respiratory disorders in general, so as not to affect the studied area, and on sheep corpses used by students for dissection. The vascular formations were injected with a mixture prepared in the laboratory of anatomy.

The paper shows pictures from several dissections, determining as accurately as possible the topographical location of the anatomical formations, and it has a strong applicative character for human medicine, since the closest species to man as experimental morphological model is the pig.

Keywords: mediastinum, lymphatic duct, cranial vena cava, caudal cervical ganglion

INTRODUCTION

The fundamental research on the topography of the vascular nervous formations from the aperture of the thorax cavity in animals is approached by many researchers, but the data are presented separately, either for the vascular formations, or for the nervous formations, or for the lymphatic formations (1, 2, 4). These data are a real support to interpret the physiological phenomena and to clarify several aspects regarding the way of approaching the formations during surgery on the anterior mediastinum. The morphology of the species resembles that of the man, which recommends it as an experimental model, provided the European legislation of the experimental animals is observed (4, 5)

MATERIAL AND METHOD

The studies were conducted in the laboratory of anatomy of the Faculty of Veterinary Medicine, on 20 pig corpses from a production farm. Before dissecting, the aorta and the veins were injected with a mixture of substances prepared in the laboratory of anatomy. The nervous formations were treated with a solution of acetic acid 10%. The lymph formations were injected with methylene blue. The lymphatic anatomy of 5 pigs was studied and classified and a new technique for lymphatic cannulation was developed. The cannulation success rate was 55%.
RESULTS AND DISCUSSION

Formation anatomical approach is at chest level as having first milestone coast. It protects the right apical pleural recessive and dissect contained septal formations precardiac mediastinal. In relation to the first rib to show the skull mediastinal lymphonodes who are willing and medial to this axilar lymphonode of the first rib that is located in relation to the edge of the skull. Vegetative plexus is located between cervicotoracic formations located superficial venous and arterial located medial formations (fig.1).

The right caudal cervical ganglion, joined in 15 animals with the thoracic paravertebral ganglion 1 and 2 forms a pericarional aglomeration located on the median face of the first rib in the dorsal side of the anterior mediastinum, being placed dorsally in relation to the long neck muscle, laterally in relation to the vertebral artery, ventrally in relation to the right subclavicular artery and on the right of the bicaortic trunk. In all studied cases we have identified the middle cervical ganglion which is attached to the caudal cervical ganglion through the subclavicular loop (fig.2).

The right lymph duct passes at a distance of 2 cm ventrally from the cervical-thoracic plexus formed around the cervical-thoracic ganglia, running thereafter sideways vento-
cranially, descending from the right side of the aorta towards the cranial vena cava into which it pours. Before pouring in the cranial vena cava, the duct displays a branching which, after passing the aorta-pulmonary ligament, joins again the main duct (fig. 3).

Cardiac lymph is the most direct medium for analyzing metabolical changes in the myocardial cell. Currently, sheep are the animals used for investigation of myocardial lymphatic function. However, questions arise when comparing and interpreting the human system to the experimental model, since the sheep coronary anatomy is different from human anatomy and pulmonary lymph contamination is found in up to 81% of the cases. Swine, having similar coronary anatomy to humans, are a proven model for cardiovascular research. The purpose of this study was to investigate the cardiac lymphatic anatomy of the swine and to develop a reliable cannulation technique to collect the lymph (fig. 4).

Conclusion: We conclude that porcine myocardial lymphatics can be successfully cannulated for the investigation of myocardial lymphatic function.
REFERENCES


