ANATOMICAL REMARKS ABOUT THE DIGESTIVE TRACT IN VIPERA AMMODYTES

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Abstract. The snake has evolved its body for crawling so has few external features. Elongation has also resulted in asymmetry of viscera with right-sided organs lying cranial to and being larger than left. To explain the location of organs more easily, it is best to divide the length of the snake into three regions. The cranial region has the heart, trachea, esophagus, thyroid and proximal lung. The middle region has the stomach, liver, lung, spleen, and pancreas. The caudal region has the small and large intestines, kidneys and gonads. The gall bladder lies near the pylorus of the stomach and is located some distance from the posterior pole of the liver.

Keywords: snake, digestive system, alimentary tract, viper.

INTRODUCTION

All snakes are carnivorous, so the gastrointestinal tract is a linear duct, which extends from the oral cavity to the cloaca. Vipera ammodytes has long fangs, thin and backwardly curved in order to prevent the escape of the prey. All snakes have pleurodont teeth, attached to the medial jawbone, continually being replaced by new teeth lying in reserve in the gums. In venomous species, like Vipera ammodytes, maxillary teeth are modified into fangs (Halliday, Kraig, 2002; Mader, 2005; O’Malley, 2005; Jacobson, 2007, Vitt, Laurie, Janalee, Caldwell, 2014).

MATERIAL AND METHODS

The research has been conducted in the laboratory of Comparative Anatomy, Faculty of Veterinary Medicine of Cluj-Napoca, by examining 5 specimens of Vipera ammodytes. The snakes were brought dead to the Anatomy Department, by a breeder near Cluj-Napoca. We began by performing the necropsy with a longitudinal incision on the ventral side, using dissection instruments and protection equipment, revealing the digestive system organs and their topography.

RESULTS AND DISCUSSION

We acknowledge that the tongue is long, forked and lies in a sheath beneath the glottis and rostral trachea. It is very mobile and can be protruded through the lingual fossa without opening its mouth. The tongue of Vipera ammodytes is heavily keratinized and has few taste buds. The glottis is highly moveable, being located on the floor of the oral cavity.

The esophagus have a relatively thin wall and as the axial musculature plays a role in the transportation of food to the stomach, it becomes amuscular. The esophagus is extremely distensible in order to allow large prey. The only distinguishing feature between the stomach and esophagus is that the stomach has a glandular mucosa. The esophagus is fusiform, having longitudinal folds (proximal esophagus) and broad and flat folds (distal esophagus).
The intestine continues the digesting process started in the stomach. It has extensive longitudinal folds to increase surface area for absorption and allows distension to accommodate large prey. The liver is elongated and consists in one lobe. When consuming large meals, the gall bladder (who is located near the pylorus, at a distance from the posterior pole of the liver) is essential to help digest fat. The pancreas is ovoid and located at the caudal side from the gall bladder, on the mesenteric border of the duodenum. The spleen is adherent to the pancreas, forming the splenopancreas. The pancreas is found caudal to the pylorus, near the gall bladder and spleen those three organs being referred to as the triad. Cloaca is the terminus of the gastro-intestinal tract. In snakes, the cloaca is linear rather than round and is divided into three sections by mucosal folds: urodeum, coprodeum and proctodeum.

**CONCLUSIONS**

Alimentary tract of Vipera ammodytes is anatomically simple in comparison with that of mammals. Generally, the digestive system of snakes is comprised of mouth, buccal cavity, oropharynx, esophagus, stomach, small intestine, large intestine, colon and cloaca.

They do not have rectum-anus, as is found in higher vertebrates. Instead, they have a cloaca which is a combined excretory-reproductive organ. Other important organs associated with the digestive system of the snake are the liver, gall bladder and pancreas.

**REFERENCES**

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