

Internal Anatomy of Domestic Cock (Gallus Gallus Domesticus)

Dr. J. Violet Beulah, M. V. Sc

Department of Veterinary Anatomy, Madras Veterinary College

Abstract: *Gallus domestics birds represent an excellent nutritional source. The current study was carried in 6 male domestic chicken of same age group of 14 weeks old, they were sacrificed and the gross anatomical study of respiratory system, digestive system, circulatory system and reproductive system respectively. In respiratory system the lungs were segmented and located between the rib bones leading from either side of the back bones. In digestive system liver is in front of the soft skin above the vent. In circulatory system, has almost identical circulatory system as in humans. In reproductive system intra-abdominal testis was observed. Other gross anatomical features of various organs were discussed.*

Keywords: Domestic cock, respiratory system, digestive system, circulatory and reproductive system

1. Introduction

Domestic birds were kept for egg or meat production and these include geese, pigeon, chicken, Turkey, duck and Guinea fowl. Also the birds reared or hunted for a purpose are members of bird group collectively known as poultry. Birds also serve as experimental animals, household pets and major source of animal protein. Poultry has become the cheapest and richest source of animal protein among the various livestock, hence one of the most important branches of livestock industry. Chickens are birds kept for both meat and egg and are raised for egg are called layers. Poultry meat is appreciated and acclaimed as being the favourite word wide. Productively chicken are two types namely domestic and feral chickens. Chickens have been observed forming symbiotic relationships with cattle by pecking at the flies that swarm around the cows feces and by scavenging on their waste.

2. Materials and Methods

Study was conducted in 6 domestic male chicken from backyard farming, sacrificed by cervical displacement. The birds were acclimatized and observed before euthanizing for 1 week to ascertain the health status of the birds. The live birds were euthanized with chloroform, dipped in water and placed on the dissection table. Defeathering of entire carcass was done to give a better accessibility of visceral organs for clean dissection. A sharp scissors was used to cut through the abdominal wall along the posterior margin of sternum and carefully reflected by cutting further through the thoracic region exposing the thoracic and abdominal visceral organs, were schematized and photographed, then the organs were removed. Then the visceral organs was dissected out, this was done by cutting gastrointestinal tract at the termination of the oesophagus, the proventriculus, gizzard, the pancreas which rest on duodenal loop and the large intestine including cedar are removed after detailed examination.

3. Results and Discussion

Respiratory system

Lungs of chicken function in the same way as that of most other animals. Air enters through the nostrils then goes down a tube called the trachea, located right beside the oesophagus (fig 1)



Figure 1

as it was reported by (Jaco., 2013) in chicken. Both tubes are located on the underside of the neck when the chicken is standing. The entrance point to this air tube is located at the back of the beaker and is called the larynx. The trachea looks like a thin plastic tube with rings around it. This ends at a y shaped junction and 2 bronchial tubes lead off to the right and left lungs. The trachea and bronchial tubes look like semi-transparent plastic tubes as it was observed by (Jaco., 2013). The lungs are segmented and located between the rib bones leading from either side of the back bones of the chicken as it was mentioned by (Jaco., 2013) in chicken.

Digestive system

Chickens do not have stomach like other animals, but have a different means of food storage and digestion. First the food enters the beaker and goes halfway down the oesophagus throat, storage area called a crop where it is moistened and thus softened. Food then continues down the remainder

oesophagus and enters what is called proventriculus or true stomach and is directly attached to the gizzard (fig 2)



Figure 2

as it was observed by (Betty., 1979) in domesticated chicks, enters the small intestine where nutrients are picked up by blood vessels and circulates throughout the chickens body. Food particles then move into the large intestine, which has 2 blind or dead end attachments called coca. After digestion in both intestines, the waste material including both urine and stools are excreted throughout one opening called the vent.

Liver is just in front of the soft skin above the vent. There is often yellow or white fat between the skin and liver as it was reported by (Betty, 1979 and Jaco., 2013) in chicken. Liver is slightly lighter colour. Under and in front of the liver is a small sac of green fluid called the gall bladder (fig 2) as it was observed by (Jaco., 2013) in chicken. Liver is a very important organ for the living bird being the chemical factory that metabolizes most of the important substances a bird needs. The waste product of all this is called bile, which has a function in digestion.

Small intestine, duodenum act as the entry for the bile duct from the liver and the pancreas (fig 2). Both organs have much the same as in humans as it was reported by (Jaco., 2013) bile emulsifies fats as well as being a waste product from the liver. The pancreas provides cocktail enzymes that act directly on food and also provides insulin that moderates chicken metabolism.

Large intestine, this part of the chickens anatomy is punctuated by 2 blind sacs called caeca (fig 2). The large intestine is packed with bacteria that break down cellulose and the whole length of this part of the intestine reabsorbed water.

Circulatory System

All birds have almost identical circulatory system as in humans as it was observed by (Jaco., 2013) in chickens. They have the same, four chambered heart, which completely separates oxygenated and deoxygenated blood, essentially two circulatory systems with a single pump working. The

chickens heart is very efficient and consists of two atria at the top and two ventricles at the bottom (fig 3).



Figure 3

Reproductive system

Male chicken as with other birds, the testes produces sperm and then the sperm travel through a vasdeferens to the cloaca as it was mentioned by (Jaco., 2013) in chicken. Male chicken has 2 testes located along the chickens back near the top of the kidney (fig 4).



Figure 4

The testes are elliptical and light yellow. The vasdeferens is the duct through which sperm are transported from the testes, also the main area for sperm storage. Each vasdeferens opens into a small bump or papilla on the back wall of the cloaca. The papilla serve as the mating organs.

4. Conclusion

The gross anatomy of respiratory system, reproductive system and digestive system of domestic chicken is entirely different from that of animals and humans whereas the circulatory system of domestic chicken is similar to that of animals and humans.

References

- [1] Bello, A, Shehu.S.A., Sununu, A.T, Umar.M.A., Umar, A.A., Danmarigo, A and Baraya, Y.S, 2018, Comparative Anatomy of the lower reproductive tract of domestic fowl (*Gallus Gallusdomesticus*) and Guinea fowl (*Numidameleagris*). A Histological study 1(13)
- [2] Betty, J 1979, Domestic chicks and Geese 82-112
- [3] Bull, L.M., Martin's, B.F.R.M., Cesario.D.M., Padovani.R.C and Mendes, A.A., 2007, Anatomical study on Domestic fowl (*Gallus domesticus*).International Journal of Morphology 25(4) : 709-716.
- [4] Jaco, Anatomy of chicken 2013, Poultry Anatomy, Poultry club south Africa 1-7
- [5] Kings, A.S., Mcllelland, J 1975 Outlines of Avian Anatomy, London Bailiere Tindall1-42
- [6] Klasing,C.K., 1999, Avian Gastrointestinal Anatomy and Physiology. Seminars in Avian and Exotic pet medicine 8(2) : 42-50.