

Studies on the Histomorphometry of the Digestive Tract and Associated Digestive Glands in Ostrich (*Struthio camelus*) with Gender and Progressing Age in Pakistan

Authors : Zaima Umar, Anas S. Qureshi, Adeel Sarfraz, Saqib Umar, Talha Umar, Muhammad Usman

Abstract : Ostrich has been a good source of food and income for people across the world. To get a better understanding of health and health-related problems, the knowledge of its digestive system is of utmost importance. The present study was conducted to determine the morphological and histometrical variations in the digestive system and associated glands of ostrich (*Struthio camelus*) as regard to the gender and progressive age. A total of 40 apparently healthy ostriches of both genders and two progressive age groups; young one (less than two year, group A); and adult (2-15 years, group B) in equal number were used in this study. Digestive organs including tongue, esophagus, proventriculus, gizzard, small and large intestines and associated glands like liver and pancreas were collected immediately after slaughtering the birds. The organs of the digestive system and associated glands of each group were studied grossly and histologically. Grossly colour, shape consistency, weight and various dimensions (length, width, and circumference) of organs of the digestive tract and associated glands were recorded. The mean (\pm SEM) of all gross anatomical parameters in group A were significantly ($p \leq 0.01$) different from that of group B. For microscopic studies, 1-2 cm tissue samples of organs of the digestive system and associated glands were taken. The tissue was marked and fixed in the neutral buffer formaldehyde solution for histological studies. After fixation, the sections of 5-7 μ m were cut and stained by haematoxylin and eosin stain. All the layers (epithelium, lamina propria, lamina muscularis, submucosa and tunica muscularis) were measured (μ m) with the help of automated computer software Image J®. The results of this study provide valuable information on the gender and age-related histological and histometrical variations in the digestive organs of ostrich (*Struthio camelus*). The microscopic studies of different parts of the digestive system revealed highly significant differences ($p \leq 0.01$) among the two groups. The esophagus was lined by non-keratinized stratified squamous epithelium. The duodenum, jejunum, and ileum showed similar histological structures. Statistical analysis revealed significant ($p \leq 0.05$) increase in the thickness of different tunics of the gastrointestinal tract in adult birds (up to 15 years) as compared with young ones (less than two years). Therefore, it can be concluded that there is a gradual but consistent growth in the observed digestive organs mimicking that of other poultry species and may be helpful in determining the growth pattern in this bird. However, there is a need to record the changes at closer time intervals.

Keywords : ostrich, digestive system, histomorphometry, grossly

Conference Title : ICASVM 2019 : International Conference on Animal Science and Veterinary Medicine

Conference Location : Tokyo, Japan

Conference Dates : September 09-10, 2019