

SOME ANATOMICAL AND HISTOLOGICAL OBSERVATIONS ON THE SETEPPE BUZZARD LIVER(*BUTEO BUTEO VULPINUS GLOGER*)

DALAL ABED ALHUSSEIN KADHEM

Department of Biology, Education College for Girls, Iraq

ABSTRACT

The present study was conducted on the eight male seteppe buzzard liver, the anatomical study showed, the liver had two lobes involve left and right lobes are connect at midline anteriorly, the subdivision of left lobe was ventral and dorsal parts, the right lobe was larger than left lobe. The gall bladder appears as a diverticulum with short cystic duct, the liver of seteppe buzzard was covered by collagenous fibers capsule, so liver lobes consist of numerous classic liver lobules which composed of central vein was surrounded by hepatic plates, each plate constitute from two hepatic cells in thickness, among the hepatic plates there are liver sinusoids which lined by endothelial cells and kupffer's cells (phagocytic). Also there is interlobular bile duct which lined by simple cuboidal epithelium, the capsule of seteppe buzzard liver sends trabeculae of fibrous connective tissue that separated the liver lobules and contains large blood vessels (arteries and veins) and bile ducts.

KEYWORDS: Liver, Buteo Buteo Vulpinus Gloger, Seteppe Buzzard, Fowls, Paranchyma, Poultry

INTRODUCTION

The poultry liver similar in the basic structure with mammalian liver, expect two differences, the first; the liver lobules are not clear in the poultry, the second; lost the septa and septules, lead to not distinguish the classic liver lobules clearly in the poultry (1).

The structural units of the hepatic (plates) in the birds not clear, so paranchymal cells appear in the cross sections, as arches, it is arranged around the biliary ducts, the number of hepatic cells in each arch range (four – six) (2,3).

While the longitudinal section of the bird liver, the paranchymal cells in the hepatic plates appear few, the thickness of hepatic plates about two hepatic cells, while the thickness of hepatic cord in the mammalian is one hepatic cell, the thickness of the hepatic plate in the poultry reach into (23) micrometer, So the mean diameter of hepatic cells in the poultry is (12) micrometer (4).

The ultrastructural studies were conducted on the hepatic cells cytoplasm, The workers were pointed, the clear cell organelles in the hepatic cells cytoplasm in the birds were the mitochondria, the shapes of the mitochondria varied from elongated to pear – shaped and appear attenuated or, or as irregular rods (5).

The aim of Present study to investigate the anatomy and histology of the seteppe buzzard liver

MATERIALS AND METHODS

The present study was carried out on eight (8) birds were brought from local market of birds in Najaf, the study was involved mature males.

The birds were anestheized by inhalation anesthesia (ether) after that scrafied ,then the birds put in the anatomy petridish in the suitable position in order to the anatomy of birds was carried out after made incision under the abdomen of the bird ,then removed the skin (skining),to approach the liver lobes of bird ,then removed the liver from the body of bird put in the normal saline (0.9% NaCl²) The spciemems from liver lobes took for histological preparation and fixed in (10%) formalin for period (48) hrs, then the spciemems transformed into series of agraduate ethyl alcohol (from 70 % into 100%),followedthat clearing process by using Xylol ,then embedding in the paraffein ,after that the blocks cut at thickness (six) micrometer, the histological sections were stained by Hematoxlin and Eosin (6).

The histological sections were examined by light microscope type (Olympus) ,the photo of liver lobules took by Digital camera type (Sony).

RESULTS AND DISCUSSIONS

Our results were revealed that, the liver of male seteppe buzzard, had left and right lobes were connected cranially at the midline. The left lobe was subdivided into ventral and dorsal portion, while the right lobe was larger than left lobe, these anatomical observations agreement with previous studies on the domestic fowl and turkey (7,8).

The gallbladder of steppe buzzard was as diverticulum, the cystic duct was short, our anatomical observations varied with previous studies (9), they mentioned, some birds without gall_ bladder such as Ostrich, some parrots and pigeons , the branch of right hepatic duct which termed the right hepato enteric duct drain directly into duodenum, while the result of present study was observed two ducts; the right and left hepatic ducts connect to form the common hepatoenteric duct and open in the duodenum.

The liver of seteppe buzzard was covered by Glisons capsule, that consists of collagenous fibers with fibroblasts , the Glison capsule which surrounded from outside by mesothelial cells (figure 1). Each liver lobe consists of many lobules which separated by connective tissue septa its contains branches of hepatic arteries and branches of hepatic vein as well as bile ducts lined by cuboidal epithelium (figure 2,3), these observations was corresponding with pervious studies (10,11), they mentioned, the liver of chicken as in mammals , the posterior vena cava was embedded in the substance of liver , near the anterior end of the liver , the posterior vena cava receives the hepatic veins , but the present study showed large hepatic arteries and veins in the septa among the liver lobules (figure 3).

Histologically , the paranchyma of seteppe buzzard liver lobules composed of hepatic cells that arranged as groups or like arches (figure 5,6) the hepatic cells werelike cubic- shapes, that had spherical nuclei which located in the center of hepatic cells. Among the hepatic cells arches there are wide sinusoids (large diameter capillaries), it is lined by endothelial cells and kupffers cells (phagocytic) (figure 4,7). Our histological results was similar with previous investegators (12,13) ,they pointed, the avian liver structural unit appears as plates of two cells thickness, and arranged as groups.

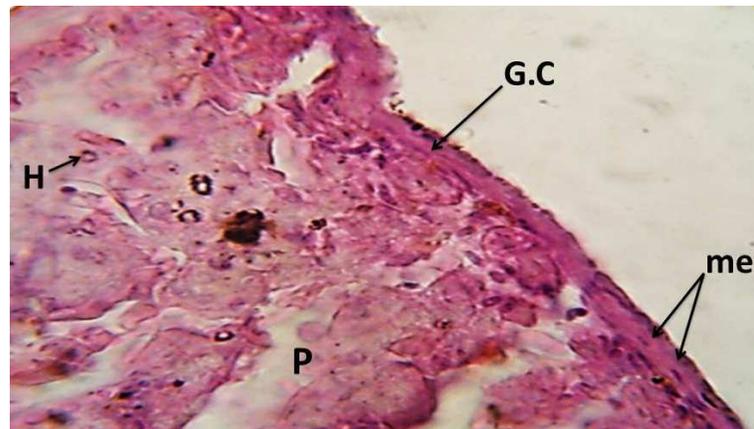


Figure 1: Show the Falcon Liver Lobule, which is surrounded by Glisson Capsule (G.C), Mesothelial Cells (me), Paranchyma of Liver (P) and Hepatic Cells (H). Hematoxylin & Eosin 250X

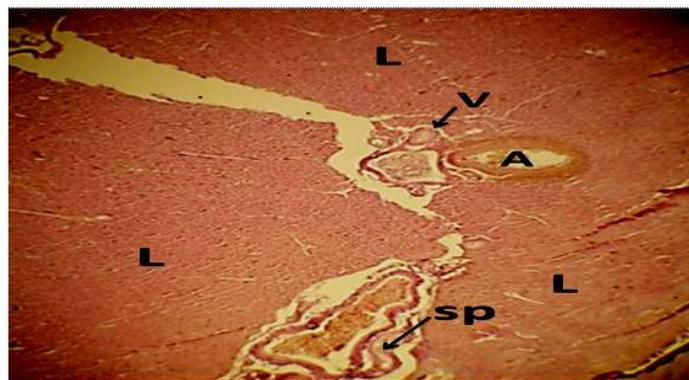


Figure 2: Revealed the Falcon Liver Lobules (L) and Septa (SP), among Liver Lobules there are Hepatic Artery (A) and Hepatic Vein (V). Verhoeff and Van Gieson Stain 150X

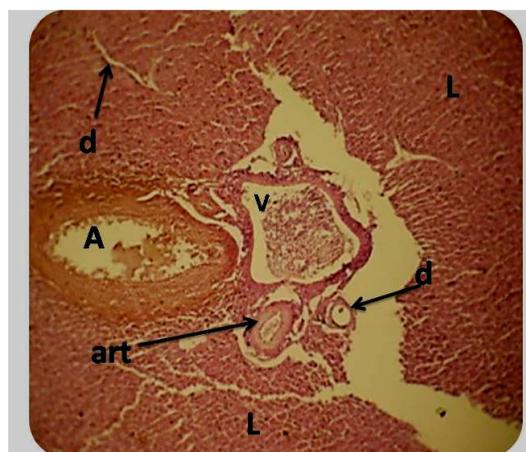


Figure 3: Shows the Falcon Hepatic Triad, which consists of Hepatic Artery (A), Hepatic Arteriole (Art), Hepatic Vein (V) and Bile Ductule (D), among Liver Lobules (L). Verhoeff and Van Gieson 250

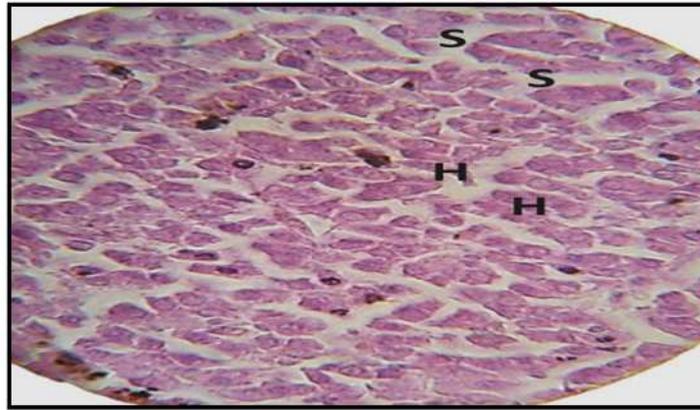


Figure 4: Falcon Liver Lobule; Composed of Hepatic Cells (H) As Groups or Arches, Separated by Large Diameter Capalleries (Sinusoids) (S). Hematoxylin &Eosin 450X

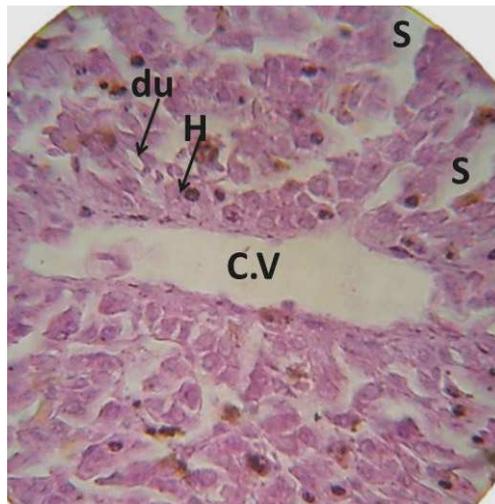


Figure 5: Falcon Liver Lobule,in the Lobule there is Elongated Center Vein (C.V).Which Enclosed by Hepatic Cells (H).Bile Ductule(Du). Hematoxylin & Eosin 450X



Figure 6: Falcon Liver Lobule, Large Bile Duct (BD), it Appeared Near the Irregular Central Vein (C.V). Hepatic Cells (H). Sinusoids(S). Hematoxylin & Eosin 450X

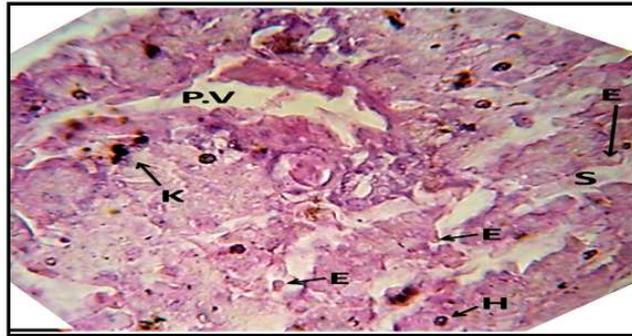


Figure 7: Seteppe Buzzard Liver Lobule,Consist of Branch of Portal Vein (P.V)and Hepatic Cells Arranged in Plates (H),among the Hepatic Plates there are Sinusoids (S) Lined Py Endothelial Cells (E) and Kupffer's Cells (K) (Phagocytic Cells). Hematoxylin &Eosin 450X

REFERENCES

1. Elias,H.(1949).Are examination of the structure of the mammalian liver ;I.Parenchymal archtecture.Am.J.Anat;84:311-333.II.The hepatic lobule and its relation to the vascular and biliary systems. Am.J.Anat;85:379-456.
2. Hickey,J.J. and Elias,H.(1949). The structure of the liver of birds.Auk.,71:458-462.
3. Fowier ,M.E.(1991). Comparative clinic anatomy of ratites. J. Zool.Wildlife Med. ,22:204.(
4. Purton,M.D.(1969). Structure and ultrastructure of the liver in the domestic fowl ,Gallus gallus.J.Zool., London.,159:273-282.
5. Luna , G.(1968).Mannual of histopathological staining methods of the armed forces institute of pathology.3rded.MG Graw Hill,Book com.New York.pp:25 -45.
6. Duke ,G.E. (1986).Alimentary canal:Secretion and digestion ,special digestive functions and absorption in avian physiology strukieed: 4th pp: 269 -288. Springer verbiage. new York.
7. Strukie,P.D. (1976).Avian physiology.2ed.Springer – Veriag.New York. pp:270 - 280.
8. Mcllelland , J. (1979).Digestive system. In "Form and Function in birds " (A.S.King and J.Mcllelland.ed.) Academic press London. pp: 69 -181.
9. Ziswiler , V. and Fomer , D.S. (1972).Digestion and digestive system In Avian Biology. (D. SFomerand James , R.King.)Academic press London. pp: 343.
10. Lisbona , F;Jimenen ,M.;Esteiler , A. and Lopez , M. (1981).Essential billary secretion in the chicken.Comp.Bioch.Physiol.; 69: 341 -344.
11. Mcllelland , J. (1975).Aves digestive system In sisson and Grossmans.The Anatomy of Domestic Animals (R.Getty. ed.) Saunders. Philadelphia.Vol.2. pp: 1857-1882.
12. Robinson , M. (1970).LaboratoryAnatomy of Domestic chicken , Brown compancy, Dobuque, Iowa.

