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# DYNAMICS OF KIDNEY MORPHOLOGICAL CHANGES FEMALES AND MALES OF THE QUAIL BIRDS

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***Abstract:*** *Kidney circumference in females and males with age and anterior lobe circumference is high in 90 days from 30 (18%) and 180 days (3%). We observed an increase in lobes at the age of 30 days. By studying the dynamics of renal morphological changes together and their correlation with the age of quail body weight, was not significant in the sum for females and males.*

***Key words:*** *quail birds, Kidney, morphological changes, lobes, males and females.*

**Introduction.** Morphological results showed that the kidneys of coot bird consisted of three parts, a large cranial, small caudal, and a middle part **.** Histological results demonstrated that the kidneys consisted of 2 zones: the cortex and the medulla. The cortex made up the majority of the kidney, while the medulla formed only a small portion of the organ. Proximal and distal tubules and 2 types of glomeruli (looped and loopless) were localized in the cortex **[1; 2; 6; 7].** Nickel R. [**5]** recorded the length of the kidney as 7.0-10.0 cm, breadth 2.0 cm and weight 5.0-6.0 gm. They further stated that the actual dimension of kidney was varied according to breed and age. Weight of the kidney was 0.21-0.28% of the body weight. Color of the kidney varied according to the amount of blood present in it. It varied from pink to brownish-red. **[3]** in coot birds kidneys which consisted of three lobes, a large cranial (its length 28±0.15 mm and its width13±0.08 mm), a small caudal (length 13±0.07mm and its width 4±0.08mm) and a middle lobe (its length 30±0.08mm and its width 7.5±0.10mm), while the parameters of present study in chicken and mallard showed that the caudal lobe in these birds were significantly higher ($p<0.01$). [**4]** revealed that, in harrier species the cranial lobe of kidney was the largest with elongated shape. In Mallard the cranial lobe was small round-oval, while middle and caudal lobe were lobulated and larger .In chicken the caudal lobe was the largest. Statistically, in harrier the mean length of cranial lobe (20±0.1mm) and the width of the middle lobe (5±0.5mm) were significantly higher than those of mallard (10±0.3mm) (8.0.2mm) and chicken (15±0.2mm) (4±0.4mm) respectively. The mean weight of the kidney in harrier is (5.8±0.20g) this value significantly was higher than those of mallared (8.9±0.11g) and chicken (6.8±0.10g) in compare to the total body weight. The results were showed **[3]** that each kidney consisted of three parts, a large cranial (mean length 28±0.15mm and its width13±0.08mm), a small caudal (mean length 13±0.07mm and its width 4±0.08mm) and a middle part (mean length30±0.08mm and its width7.5±0.10 mm). The volume surrounded by cortex and medulla was different among species, with the cortex ranging from 98.5 ± 11.94 mm3 in volume in the house sparrow to 9750 ± 45.9 mm3 in the domestic fowl, and the medulla from 8.6 ± 0.55 mm3 in the house sparrow to 2200 ± 9.54 mm3 in the domestic fowl. The cortex volume ratio was lowest in domestic fowl, at 73.84%, and highest in house sparrow, at 84.33%. The lowest value

of the medulla volume ratio was seen in the house sparrow (7.36%) and the highest mean estimation proportion was obtained for the domestic fowl (16.66%).

**Material and research methods.** The research material was quail birds that were given a high protein diet. We took three different age stages of birds to study (30-90-180) days. At first the weight of the live bird is measured and then the bird is slaughtered and a blood sample is taken to study biochemical changes and then study the morphological changes on the kidneys as a result of high protein taken from the diet.

Following the dissection of quail, the following morphological changes are studied:

-Measuring the absolute value of the kidneys and also for both the left and right faculties separately, using a thread and a ruler.

-The relative weight of both kidneys and the left and right faculties were calculated separately.

-The total length of both kidneys was then measured and then the three lobes in both left and right kidneys were measured using a caliper and ruler.

-Measuring the width of the three lobes present in both the right and left kidneys, using caliper and ruler.

-Initially measure the perimeter of both kidneys together and then measure the perimeter of each kidney alone and then measure the three lobes located in both the right and left kidneys using a thread and a ruler.

Statistical processing of digital material was performed using the updated methods of the variational package of data analysis Microsoft Excel 2010.

**Research results. Total morphological evaluation of quail birds.** Study of the value of the kidneys were observed to have a decrease in value at the age of 90 days. By examining the width of the front, middle and posterior lobes of both kidneys together, we observed an increase in the lobes at the age of 30 days (Table 1).

*Table 1*

**Dynamics of kidney morphological changes together and their association the age of the quail birds**

| Parameters | Age, days | | |
|---|---|---|---|
| | 30 | 90 | 180 |
| | M ± m | M ± m | M ± m |
| Mass of body | 131.5 ± 11.169 | 198 ± 27* | 191.67 ± 14.24 |
| Absolute mass,r main | 1.41 ± 0.173* | 1.29 ±0.07 | 1.47 ± 0.087* |
| Relative mass,% main | 0.013± 0.003 | 1.29 ± 0.07* | 0.01 ± 0 |
| Overall perimeter | 92.5 ± 2.87 | 109.5 ± 10.5* | 106.33 ± 2.963 |
| total width cranial lobe, mm | 18.63± 1.312* | 17± 2 | 17.33± 0.333 |
| Total width of medial lobe mm | 14.38 ± 0.625* | 10 ±2 | 13.33 ± 0.667 |
| Total width of caudal lobe mm | 14.75 ± 2.016* | 11 ± 3 | 14.33 ± 0.667 |

**P≥0.95*

By studying the dynamics of renal morphological changes together and their correlation with the age of quail body weight - absolute mass, total mass - relative mass, total percentage - total lobe perimeter - total skull lobe width, mm - total width of intermediate lobe, mm - caudal lobe The total width, mm, was insignificant in the sum for females and males (P≥0.95)

In our study of absolute value and relative mass in females and males, we found that it was low at 90 days and for the longest kidneys, lengths and widths of the three lobes were also

low at 90 days when compared with other ages. The circumference of the kidneys in both females and males increases with age and the frontal lobe circumference is high at 90 days and the middle and posterior lobes are high at 30 days (Table 2).

*Table 2*

**Dynamics of kidney morphological changes Females and Males and their association the age of the quail birds**

| Parameters | Age, days | | |
|---|---|---|---|
| | 30 | 90 | 180 |
| | M ± m | M ± m | M ± m |
| Absolute mass,г | 0.76 ± 0.178* | 0.67 ±0.029 | 0.81 ± 0.05* |
| Relative mass,% | 0.47± 0.070 | 0.52± 0.020 | 0.55± 0.029* |
| Main length, мм | 43.25 ± 1.026 | 39.25 ±2.323* | 45.17 ± 3.005 |
| length of cranial portion,mm | 14.69 ± 0.340 | 15.25 ± 0.479* | 15.167 ± 0.601 |
| Length of medial lobe mm | 14.69 ± 0.340* | 14.5 ± 0.5 | 15.17 ± 0.543* |
| Length of caudal lobe mm | 13.31± 0.574* | 9.5 ± 1.5 | 11.5 ± 0.619 |
| Width of cranial lobe mm | 9.31± 0.453 | 8.5± 0.645* | 9.31± 0.453 |
| Width of medial lobe mm | 7.19± 0.230 | 5 ± 0.577* | 6.67 ± 0.211 |
| Width of caudal lobe mm | 8.13 ± 0.295 | 5.5 ± 0.866* | 7.17 ± 0.307 |
| Perimeter of half kidney | 80.25± 0.620 | 81.75 ± 5.313 | 84.17 ±0.601* |
| Perimeter of half kidney , cranial lobe | 37.38 1.625 | 41.25 2.75* | 40.33 0.615 |
| Perimeter of half kidney , medial lobe mm | 47.13 ±1.517* | 37.75 ± 0.854 | 43 ±2.191 |
| Perimeter of half kidney , caudal lobe | 36 ± 0.802* | 24.5 ± 0.645 | 34 ± 1.125 |

**P≥0.95*

We observed that the absolute value, relative mass and overall kidney length of males and females in quail birds were not significant (P≥0.95). In the study of the width of the three lobes of the kidneys in males and females, the value was not significant at the age of 30 days for the three lobes (P≥0.95). 90 and 180 yo M of significant value. It was found that the circumference of the kidneys and the anterior kidney lobe circumference for males and females aged 30 and 90 days was not significant (P≥0.95) and 180 days was significant. The value was significant at 90 days.

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## MORPHOLOGICAL CHANGES OF KIDNEYS IN RELATION TO AGE OF QUAIL

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***Abstract:*** *In the study, we observed a decrease in width of middle lobe of kidneys at age of (22%) 90 and (18%) 180 days. An increase in the periphery of anterior lobe with age, as well as a decrease in the circumference of middle (35%) and posterior (31%) lobe at 90 days was seen. In absolute terms, increase in absolute value was observed among females, especially at age of (23%) 90 – (7%) 180 days.*

***Key words:*** *quail birds, Kidney, morphological changes, lobes, males and females.*

**Introduction.** Morphological results showed that the kidneys of coot bird consisted of three parts; a large cranial, small caudal, and a middle part [1]. In the emus, the weight percentage of kidney of the whole body was 1.78%. Typically, the average female emu is larger and heavier than that of male; hence, in the present study, the females had higher kidney weights. Compared to other birds, the average percentage of the kidney to body weight is most likely associated in the emu with a lower mass-specific metabolic rate, as evidenced by lower glomerular filtration rate in this species of bird [6]. The kidneys of this Nectarivore bird contain very little medullary tissue; 90% of the total volume of the kidneys is cortical tissue, with medulla accounting for only an additional 2%. More than 99% of the nephrons are the so-called `reptilian type', (which lack the loop of Henle). The few looped (`mammalian type') nephrons are incorporated into only a few medullary cones per kidney [7]. The left and right kidneys of the fowl were symmetrically embedded in depression on the ventral surface of the synsacrum and in the renal fossa of ilium that's why removal of the intact kidney is difficult [3, 5] recorded the length of the kidney as 7.0-10.0 cm, breadth 2.0 cm and weight 5.0-6.0 gm. They further stated that the actual dimension of kidney was varied according to breed and age. Weight of the kidney was 0.21-0.28% of the body weight. Color of the kidney varied according to the amount of blood present in it. It varied from pink to brownish-red. [2] revealed that the average total length of the total kidney in the turtle was significantly higher ($p < 0.01$) than that in most chickens, and this conclusion is consistent with the report that mentioned the mean total length of the right kidney was($60.6 \pm 0.047$ mm) and the left kidney ($60.6 \pm 0.081$ mm) in Rhode Island red chicken [4] mentioned that the total length of the kidney in birds was 7 cm. [2] showed average width of kidney lobes in chicken .Statistically, the average skull lobe length ($20 \pm 0.1$ mm) and width in the middle lobe ($5 \pm 0.5$ mm) were significantly higher than that in