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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 emu, 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

molard ( $10 \pm 0.3$  mm) (8.0.2 mm) and chicken ( $15 \pm 0.2$ ) mm ) ( $4 \pm 0.4$  mm), respectively. The median kidney weight was the most difficult ( $5.8 \pm 0.20$  g) and this value was significantly higher than the weight of billionaires ( $8.9 \pm 0.11$  g) and chicken ( $6.8 \pm 0.10$  g) compared to the total body weight.

**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.** We observed increasing in lengths of the kidneys with age in birds and it was noticed that the middle lobe at ages 30 and 180 days increased in length than the other lobes (table.1). The total length of the kidneys and their lobes in the quail birds was not significant except for the average lobe of 180 days ( $P \geq 0.95$ ).

*Table 1*

**Dynamics of Kidney length and length of lobes in quail bird**

Days	Group			
	Total length ,MM	Cranial lobe length,MM	Medial lobe length,MM	Caudal lobe length,MM
	M ± m	M ± m	M ± m	M ± m
30	$43.75 \pm 0.95$	$14.5 \pm 0.34$	$16.17 \pm 0.60^*$	$13.08 \pm 0.49$
90	$38 \pm 3.18$	$15.33 \pm 0.33$	$13.67 \pm 1.45$	$9.67 \pm 1.76$
180	$46.43 \pm 2.41^*$	$16.29 \pm 0.75$	$17.43 \pm 0.75^*$	$12.71 \pm 1.13^*$

In the study, we observed a decrease in the width of the middle lobe of the kidneys at the age of 90 and 180 days. For the width of the lobes and their surroundings at all ages, the value was insignificant ( $P \geq 0.95$ ) (table 2).

An increase in the periphery of the kidneys with regard to the frontal lobe with age in addition to a decrease in the periphery of the middle and posterior lobe at the age of 90 days.

Absolute value increases with age of quail birds. In absolute terms, the increase in absolute value was observed among females, especially at the age of 90-180 days.

**Dynamics of Presentation of kidneys and presentation of lobes  
when quail bird**

Days	Group		
	Cranial lobe, мм	Middle lobe ,мм	Caudal lobe, мм
	M ± m	M ± m	M ± m
30	9.5 ± 0.428	9.33 ± 0.667	9.43 ± 0.685
90	8.08 ± 0.611	5.67 ± 0.882*	7.86 ± 0.508
180	8.83 ± 0.70	6.67 ± 1.453 *	8.29 ± 0.522

Absolute value was found to be high in left kidneys in females aged 30 days while it was low in right kidneys in females. On the 90th day of quail birds, we observed that the absolute value of females was much higher than that of males.

In our study of the relative mass of kidneys in quail birds, we have noticed a higher value in females than males. We found high relative mass in the right kidneys in males aged 30-180 days and high in left kidneys in females aged 30 days.

In the table, we noticed a decrease in the lengths of the three lobes of kidneys in female quail birds, 180 days old.

From our study of kidney lobes we found an increase in the width of front lobe of quail in females and males at the age of 90 days in contrast to birds in the ages of 30-180 days and we note that also in the middle and posterior lobes. With the advent of quail birds we have noticed an increase in the width of the front and middle lobes with the decrease of the posterior lobe in the three stages of age.

The study found that the circumference of the middle and posterior lobes in females at the age of 90 days is significantly higher than other lobes, especially in females.

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