

RESULTS

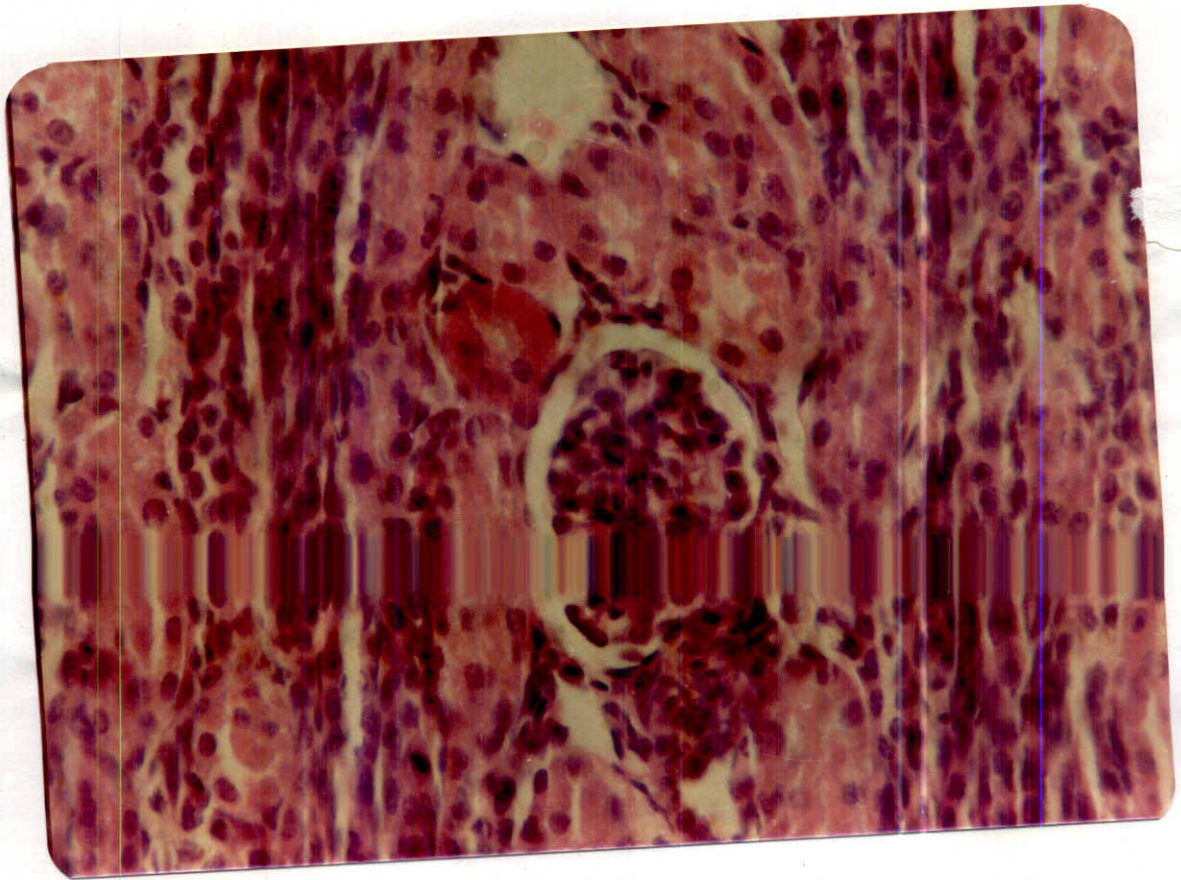


Fig. (1): A photomicrograph of a section of the rabbit kidney (of age 3 months) showing the renal corpuscle with its vascular pole (V) and Urinary pole (U) Note the Proximal tubule (P) with the brush border of its cells and the few number of nuclei. (HX & E,, X 400).

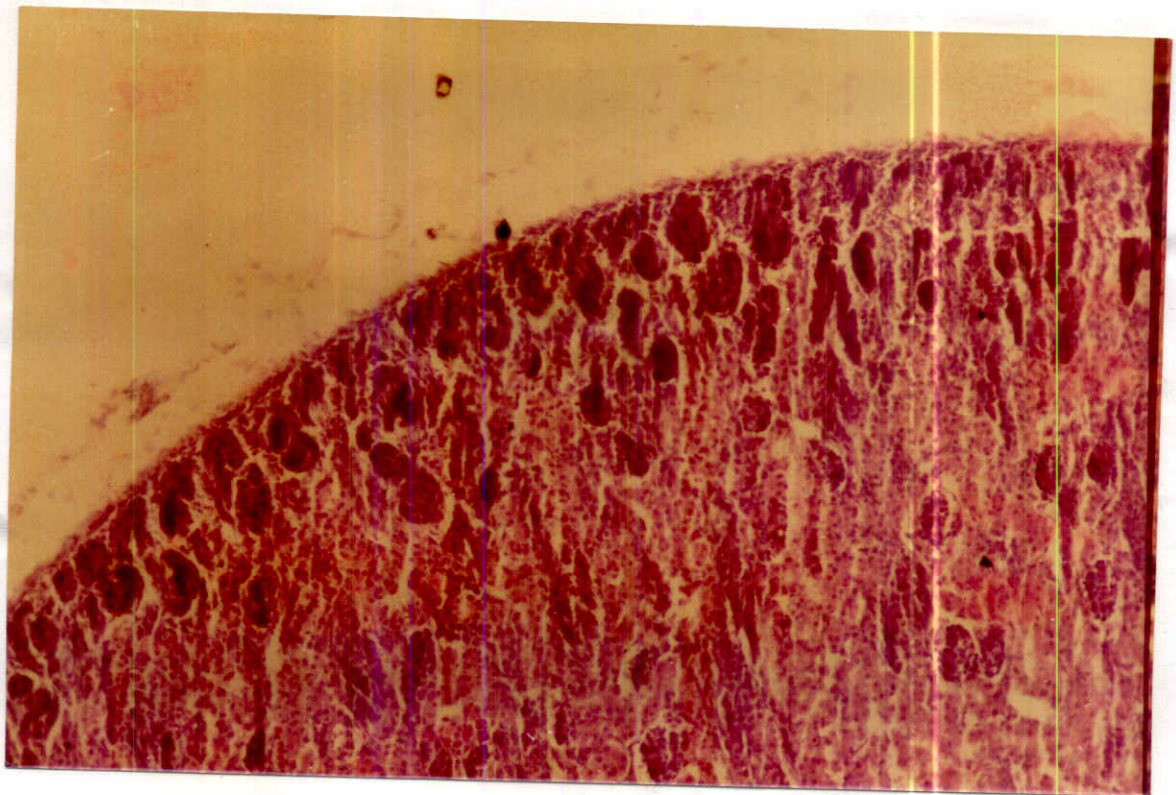


Fig. (2): A photomicrograph of a section of the kidney a neonatal rabbits showing the subcapsular nephrogenic zone and the three cortical zones, subcapsular (S.C.) midcortical (M.C) and juxtamedullary (JM).

Table [1]: Showing the values of the diameters of the renal corpuscles in the three cortical levels in each animal of the different age groups. Subcapsular (S.C.), and Midcortical (M.C.) and Juxtamedullary (J.M.).

No.	Group 1			Group 2			Group 3			Group 4			Group 5			Group 6		
	1 S.C.	1 M.C.	1 J.M.	1 S.C.	1 M.C.	1 J.M.	1 S.C.	1 M.C.	1 J.M.	1 S.C.	1 M.C.	1 J.M.	1 S.C.	1 M.C.	1 J.M.	1 S.C.	1 M.C.	1 J.M.
1	33.92 um	37.30 um	52.68 um	38.76 um	50.86 um	50.70 um	50.94 um	52.62 um	56.16 um	55.14 um	56.70 um	69.82 um	55.50 um	59.40 um	65.46 um	67.80 um	64.34 um	67.62 um
2	35.10 um	38.44 um	50.82 um	37.62 um	42.24 um	52.44 um	50.34 um	53.34 um	60.18 um	57.04 um	59.04 um	64.80 um	54.84 um	54.78 um	69.00 um	62.16 um	63.06 um	70.81 um
3	33.00 um	40.74 um	50.70 um	37.44 um	44.88 um	50.06 um	50.70 um	51.84 um	67.06 um	55.26 um	59.70 um	70.90 um	55.68 um	55.80 um	70.42 um	63.80 um	66.68 um	71.04 um
4	34.88 um	38.26 um	35.44 um	37.08 um	50.32 um	47.48 um	50.46 um	51.90 um	64.32 um	56.80 um	53.16 um	67.36 um	60.58 um	68.26 um	67.90 um	65.08 um	60.58 um	73.80 um
5	31.93 um	38.99 um	46.74 um	38.79 um	50.16 um	48.30 um	39.24 um	54.30 um	54.06 um	41.84 um	52.20 um	66.52 um	65.20 um	65.08 um	77.30 um	57.86 um	56.06 um	78.46 um

Table [2]: Showing the mean value of the diameters of subcapsular, midcortical and juxtamedullary renal corpuscles in the different age groups. The population variances (σ^2) are estimated for the measured diameters in each age group.

group	Subcapsular	σ^2	Midcortical	σ^2	Juxtamedullary	σ^2
1	33.78um	1.76	38.75um	1.62	47.28	48.70
2	37.86um	0.49	45.69um	19.33	49.80um	3.88
3	48.36um	25.86	52.80um	1.71	60.36um	17.68
4	53.22um	41.23	56.16um	7.16	67.88um	6.12
5	58.36um	19.87	60.66um	34.27	70.00um	20.01
6	61.34um	23.68	62.14um	16.4	72.35um	52.22

(b) Mid cortical corpuscles:

The diameter of the corpuscle ranged from 37.30 to 40.74 um, with an average diameter of 38.75 um and a population variance of 1.62.

(c) Juxtamedullary corpuscles:

The diameter of the corpuscle ranged from 35.40 to 52.68 um with an average of 47.28 um and a population variance of 48.70.

2. Group 2

(a) Subcapsular corpuscles:

The diameters of the corpuscles ranged from 37.08 to 38.76 um with an average diameter of 37.86 um and a population variance of 0.486.

(b) Mid cortical corpuscles:

The diameter of the corpuscles ranged from 42.24 to 50.86 um with an average diameter of 45.69 um and a population variance of 19.33.

(c) Juxtamedullary corpuscles:

The diameter of the corpuscles ranged from 47.48 to 52.44 um with an average diameter of 49.80

um and a population variance of 3.88.

3. Groups 3

(a) Subcapsular corpuscles:

The diameter of the corpuscles ranged from 39.24 to 50.94 um with an average of 48.36 um and a population variance of 25.86.

(b) Midcortical corpuscles:

The diameter of the corpuscles ranged from 51.84 to 54.30 um with an average of 52.80 um and a population variance of 1.71.

(c) Juxtamedullary corpuscles:

The diameter of the corpuscles ranged from 54.06 to 67.06 um with an average diameter of 60.36 um and population variance of 17.68.

4. Group 4

(a) Subcapsular corpuscles:

The diameters of the corpuscles ranged from 41.84 to 57.06 um with an average diameter of 53.22 um and a pupulation variance of 41.23.

(b) Midcortical corpuscles:

The diameters of the corpuscles ranged from 52.86 to 59.70 um with an average diameter of 56.16 um and a population variance of 7.16.

(c) Juxtamedullary corpuscles:

The diameters of the corpuscles ranged from 64.80 to 70.90 um with an average diameter of 67.88 um and a population variance of 6.12.

5. Group 5

(a) Subcapsular corpuscles:

The diameters of the corpuscles ranged from 54.84 to 65.20 um with an average diameter of 58.36 um and a population variance of 19.87.

(b) Midcortical corpuscles:

The diameters of the corpuscles ranged from 54.78 to 68.26 um with an average diameter of 60.66 um and a population variance of 34.27.

(c) Juxtamedullary corpuscles:

The diameter of the corpuscles ranged from 66.00 to 77.30 um with an average diameter of 70.00

um and a population variance of 20.01.

6. Group 6

(a) Subcapsular corpuscles:

The diameters of the corpuscles ranged from 62.16 to 67.86um with an average diameter of 61.34 um and a population variance of 23.68.

(b) Midcortical corpuscles:

The diameters of the corpuscles ranged from 56.06 to 66.68 um with an average diameter of 62.14 um and a population variance of 16.4.

(c) Juxtamedullary corpuscles:

The diameters of the corpuscles ranged from 67.62 to 78.46 um with an average diameter of 72.35 um and a population variance of 52.22.

Obviously, the mean diameter of the renal corpuscle was increased with age development; being smallest in group 1 and largest in group 6. (Fig. 3).

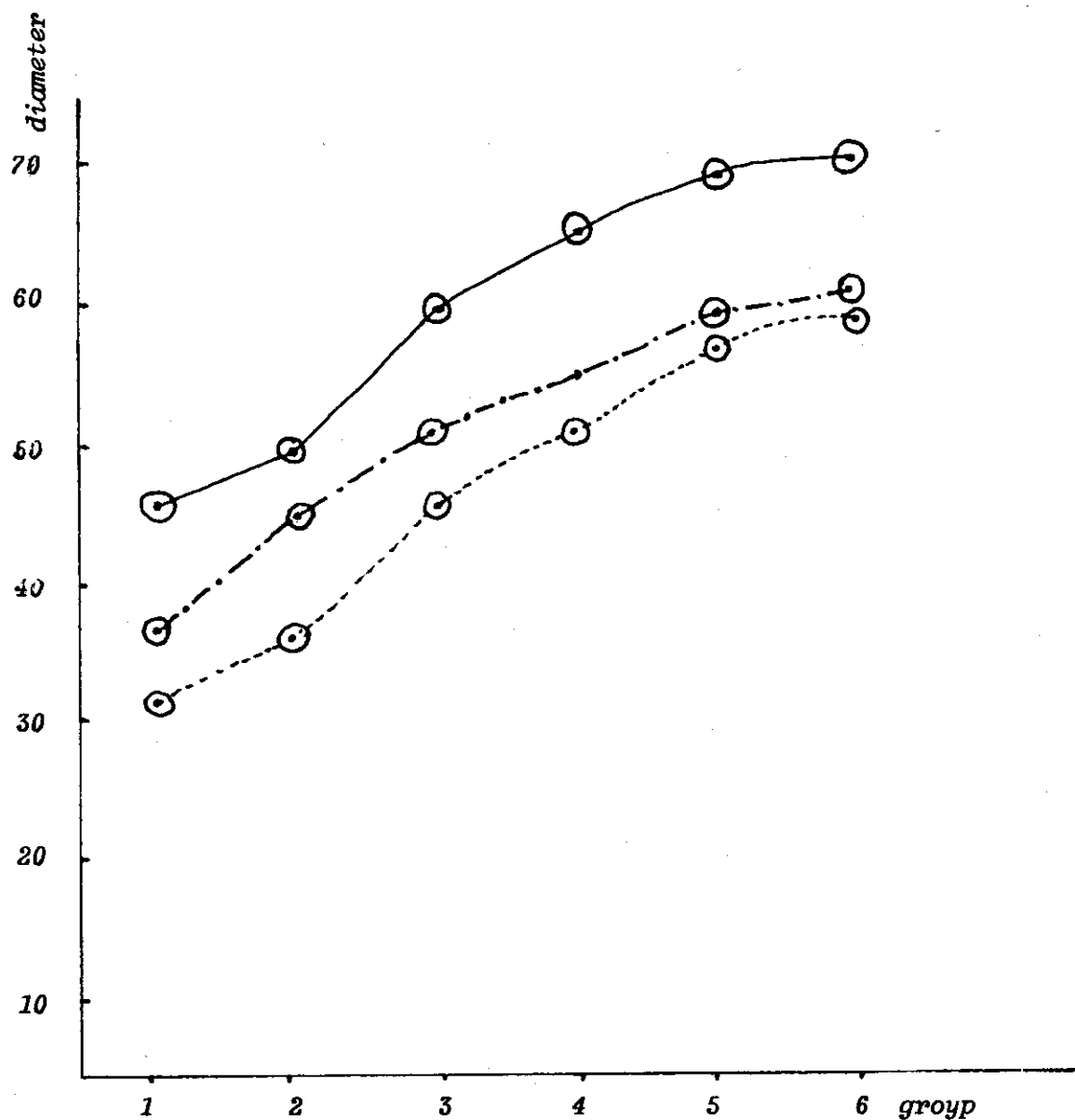


Fig. (3): A chart showing the valumetric postnatal development of the renal corpuscles in the three cortical zones in the different age groups. The continuous line (-) represent the juxtamedullary zone, the dashed line represents the midcortical zone (-.-) and the dotted line (....) represents the subcapsular zone.

II. The tubules:

The proximal tubules were the most prominent component in the cortex. The cells were strikingly acidophilic with a brush border towards the lumen. In cross section, about 4 to 6 nuclei were seen and the cells were broader than taller (Fig. 1).

The distal tubules were smaller in diameter than the proximal tubules. The cytoplasm of the cells showed less acidophilia, and the cells were more in number and less in size than those of the proximal tubules (Fig. 4).

The volumetric development of the proximal and distal tubules in each animal of the six groups was presented in table 3, and the mean values were collectively presented in table 4.

1. Group 1

(a) The proximal tubules:

The outside diameter of the proximal tubule ranged from 27.24 to 32.46 μm with an average diameter of 29.29 μ and a population variance (σ^2) of 3.75.

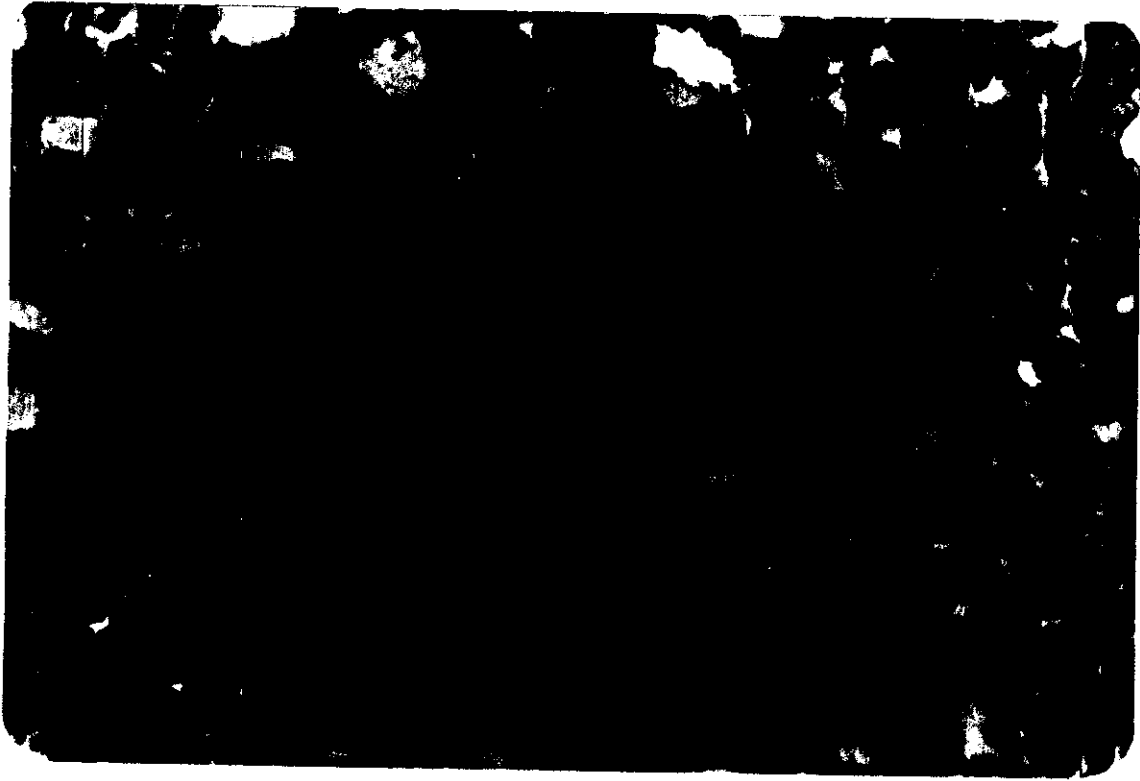


Fig. (4): A photomicrograph of a cross section of the rabbit kidney (of age 3 months) cortex showing the distal-convaluted tubules (D). Not the number of nuclei & the small size of the cells (HX & E X 400).

Table [3]: Showing the values of the outside diameters of the proximal (P.) and Distal (D.) tubules in each animal of the different age groups.

animal Number	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	P.	D.	P.	D.	P.	D.	P.	D.	P.	D.	P.	D.
1	29.28 um	27.36 um	30.96 um	29.16 um	34.38 um	32.34 um	35.22 um	31.74 um	38.04 um	42.32 um	40.14 um	36.48 um
2	27.24 um	30.50 um	32.34 um	29.82 um	34.26 um	34.14 um	37.86 um	32.76 um	40.92 um	37.92 um	42.36 um	40.62 um
3	28.48 um	29.16 um	32.16 um	30.06 um	34.20 um	32.82 um	36.90 um	34.20 um	41.40 um	39.30 um	33.56 um	41.70 um
4	28.98 um	25.30 um	31.74 um	30.66 um	34.32 um	33.02 um	36.78 um	34.56 um	42.66 um	38.64 um	44.34 um	40.92 um
5	32.46 um	24.48 um	33.12 um	30.30 um	34.14 um	33.9 um	38.52 um	34.50 um	41.22 um	38.58 um	44.64 um	40.38 um

Table [4]: Showing the mean values of the diameters of proximal and distal tubules in the different age groups of experimental animals. The population variance (σ^2) are calculated from the measured diameters in each group of animals.

Group	Proximal tubules	σ^2	Distal tubules	σ^2
1	29.29um	3.75	27.36um	6.41
2	32.04um	0.68	30.00um	0.25
3	34.26um	0.01	33.24um	0.57
4	37.06um	1.57	33.55um	1.56
5	40.86um	2.90	39.35um	2.99
6	41.01um	7.1	40.00um	5.66

(b) The distal tubules:

The outside diameter ranged from 24.48 to 30.50 um with an average diameter of 27.36 um and a population variance of 6.41.

2. Group 2:

(a) The proximal tubules:

The outside diameter ranged from 30.96 to 33.12 um with an average diameter of 32.04um and a population variance of 0.68.

(b) The distal tubules:

The outside diameter ranged from 29.16 to 30.66um with an average diameter of 30.00 um and a population variance of 0.25.

3. Group 3:

(a) The proximal tubules:

The outside diameter ranged from 34.14 to 34.38 um with an average diameter of 34.26 um and a population variance of 0.01.

(b) The distal tubules:

The outside diameter ranged from 32.34 to

34.14 um with an average diameter of 33.24 um and a population variance of 0.57.

4. Group 4:

(a) The proximal tubules:

The outside diameter ranged from 35.22 to 38.52 um with an average diameter of 37.06 um and a population variance of 1.57.

(b) The distal tubules:

The outside diameter ranged from 31.74 to 34.56 um with an average diameter of 33.55um and a population variance of 1.56.

5. Group 5:

(a) The proximal tubules:

The outside diameter ranged from 38.04 to 42.66 um with an average diameter of 40.86 um and a population variance of 2.90.

(b) The distal tubules:

The outside diameter ranged from 37.92 to 42.32 um with an average diameter of 39.35 um and a population variance of 2.99.

6. Group 6:

(a) The proximal tubules:

The outside diameter ranged from 33.56 to 44.64 μm with an average diameter of 41.01 μm and a population variance of 7.1.

(b) The distal tubules:

The outside diameter ranged from 36.48 to 41.70 μm with an average diameter of 40.00 μm and a population variance of 5.66.

In analogy to the corpuscular development, the tubular volumetric development was noted to increase regularly with age. Meanwhile, the diameter of proximal tubules was always larger than that of the distal tubule within the same age group (Fig. 5).

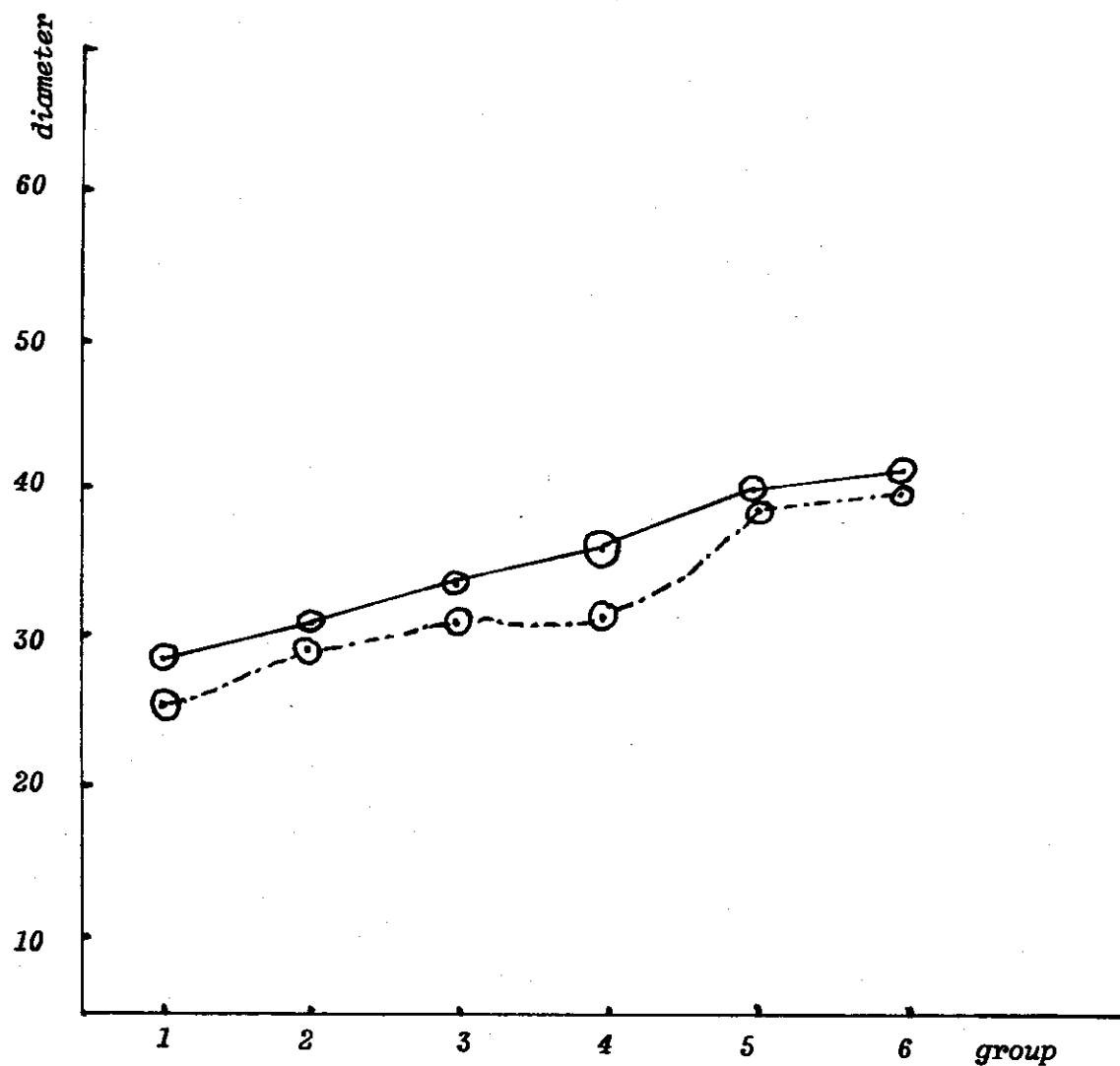


Fig. (5): A chart showing the volumetric postnatal development of the proximal and distal tubules in the six age groups. The continuous line (-) represents the proximal tubule and the dashed line (-.-.) represents the distal tubule.