

SUMMARY

The present study was concerned with the histological and histochemical postnatal development of the juxtaglomerular apparatus. The kidneys of 30 male albino rats, aging one day to one year, were used in this study. The animals were divided into 6 groups, each containing five animals, according to their age ; viz ; the animals aging 1 day, 1 week, 1 month, 3 months, 6 months , and 1 year were comprised in the groups 1, 2, 3, 4, 5 and 6 respectively.

Two techniques were employed for demonstration the different components of the juxtaglomerular apparatus ; namely, the granulation index technique , and the topographical tubulo- vascular technique , In the first technique, the PAS reaction was used to stain the granules in the juxtaglomerular components. In the second technique, the direct contact of the macula densa with the vascular component was studied the results of the first technique revealed that the first group had a high granulation index which may be a result of intensive stimularity effects on renin production. Such a stimulation may occure in response to the difficiency of sodium

intake or the low blood pressure in renal arteriole. The indices decreased until the seventh day of age after which they increased gradually up to one year. the explanation of the decreased granulation index is probably due to the fast development of the glomeruli and the slower differentiation of juxtaglomerular cells . Besides, the stimulatory factors ( Parturition and low haemodynamics parameters ) decrease and a stabilized water-salt balance is achieved .

The results of the second technique revealed that none of the examined glomeruli showed the presence of a direct contact between the vascular component and the macula densa in group 1 ( one day of age). Moreover, the aggregated nuclei of the macula region were not observed. However, the percentage of contact regularly increased with age, reaching a peak at the age of three months ( group 4 ) . Again, the estimates slightly decreased at the age of six months ( group 5 ), and then increased to form another peak at the age of one year ( group 6 ).

In conclusion, the application of the granulation index technique as a morphological means to estimate the functional activity is not preferable since the amount of granularity is subject to changes that are enhanced by nutritional , hormonal, and physiological factors. On the other hand, the microanatomical contact between the vascular and tubular components is more substantial and appears consistently steady in its existence with the maturity of the animal .