A histological and histochemical study of the postnatal development of the juxtagiomerular apparatus in the rat

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The present study was concerned with the histolo.gical and histochemical postnatal development ot theJuxtaglomerular apparatus. The kidneys ot 30 ma1ealbinorats, aging one da;yto one year, were used in thisstudy. The animals were diY1dedinto 6 groups, eachcontaining tive animals, according to their age ;Tiz ; the animals aging 1 da;y, 1 week, 1 month, 3montlw, 6 months, and 1 year were comprised in thegroUP8I, 2, 3, 4, 5 and 6 respectively.Twotechniques were employedtor demonstrationthe different component. ot the juxtaglomerular apparatus; namely, the granUlation index technique ,and the topographical tubulo- vascular technique ,In the firet technique, the PASreaction was Usedto stain the granules in the juxtaglomerular components.In the second technique, the direct contactof the macula densa with the vascular componentwas studied the results of the tirst technique revealedthat the tirst group had a high granulat10nindex which Malbe a re3ult of intensive stimularityeffects on renin production. Such a stimulationmayoccure in re.ponse to the difficiency ot soduim- 49 -intake or the low blood pressure in re al arteriole.The indioes deoreased until the sevent dB¥of ageafter which they increased gradually u to one year.the explanation of the decreased granu ation indexi. probably due to the fast developJDet of theglomeruli and the slower differentiat on of juxtaglomerularcells. Be.ides, the stimu ator,y -factors(Parturition and low haemodynamicspa ters)decrease and a stabilized water salt b lance 1sachieved.fhe results of JDes.cond technique revealed thatnone of the examinedglomerul1 showed he presenceot a direct contact between the .,ascul r componentand the macula densa 1n group 1 (one dB¥of age).Moreover. the aggregated nucle1 of the macula region·were not observed. However. the proent ge of contactregularly increased w1th age. reaching a peak atthe age ot three IIIOnths(group 4) • Again. the•• U_tes slightly decreased at the ag of s1x IIIOnth.(group 5). and then 1ncreased to fo another peakat the age of one year (group 6).- 50-In conclusion, the application of the granulationindex technique •• a morphological me s to estimatethe functional activity is not prefera theamount of granularity is subject to ges that areenhanced by nutritional, hormonal, physiologicalfactors. On the other hand, the micro atomical contactbetween the vascular and tubular components ismore substantial and appears consisten 17 steady init. existence with the maturity of the animal.