

Avitaminosis E and the Thymus

Modification of the human fetal and newborn thymal structure by subliminal nutrition was reported (1) and was believed to be related to the vitamin E level (3). This work was intended to find out if vitamin E exerts its effect on the thymal structure itself or indirectly through its effect on the other systems such as the gonad.

Eight groups of 35 weaning Holzman white rat littermates were separated at 30 to 25 days of age with four groups for each sex and four individuals in each group. The first two groups of both sexes were castrated at the beginning of the vitamin E deficient diet and the second, third and fourth groups were castrated

after 125 days (155 to 160 days of age) in the vitamin E deficient (2) and in the normal Purina diets (J. M. ANDRIGUETTO, personal communication). The fifth and sixth of groups of sexes were raised as controls on the normal diet without castration. All the rats were killed at 249 to 254 days of age for routine HE stained histological preparations of their thymus glands.

The thymus from the rats castrated at the beginning of vitamin E deficient diet showed clear cortical and medullary regions with lymphocytes and hypoplastic endothelial reticulum without Hassall corpuscle (fig. 1), while that from the rats castrated 125 days after the beginning of the vitamin E deficient diet showed the

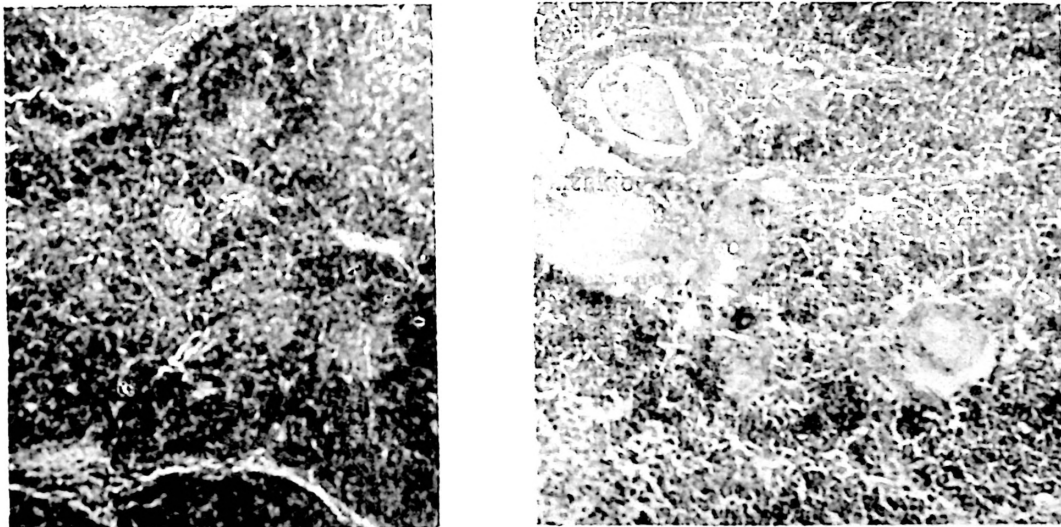


Fig. 1. *Thymus of castrated rat.*
Left: Under vitamin E deficient diet. 10 X. Right: After 125 days in the vitamin E deficient diet. 20 X.

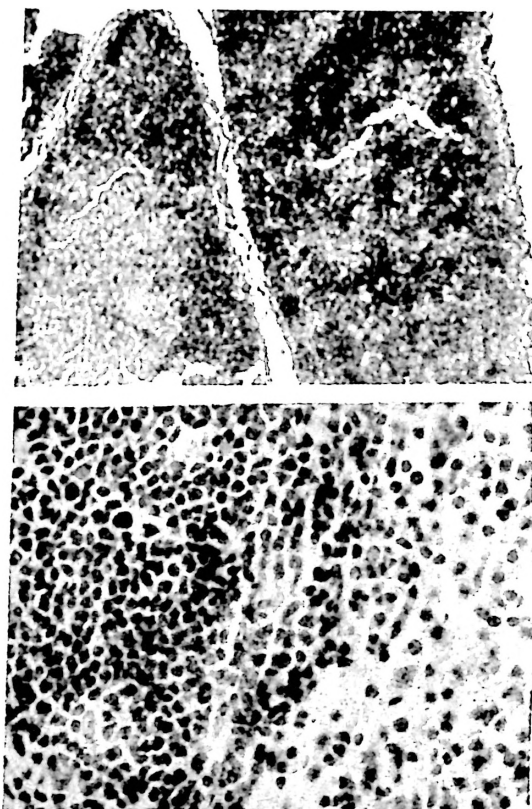


Fig. 2. *Thymus of castrated rat.*
Upper: At the beginning of the normal diet. 10 X. Under: After 125 days in the normal diet. 20 X.

cystic Hassal corpuscle and a hypoplasia of cells in the cortical and medullary regions with a reduction of cortical lymphocyte population after having been killed at 249 days of age (fig. 1). The thymus of the rats castrated at the beginning of the normal diet showed normal Hassal corpuscles and clear medullary and cortical

regions without modification (fig. 2 upper) while that from the rats castrated 125 days after the beginning of the normal diet showed larger population of medullary cells, some macrophages in the cortical region and also an increase in their cell volume (fig. 2 under).

The fact that an early castration in the vitamin E deficient rat showed a lesser modification in the thymal structure than that from rats of late castration indicated that vitamin E could influence the thymus gland via its influence on the gonadal hormones. By comparing differentially the thymus from the paired groups of vitamin E deficient and normal rats with and without castration, it appeared that there is also a direct influence of vitamin E on the thymal structure.

References

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