

HISTOARCHITECTURE OF ADRENAL GLAND
OF ADULT WHITE SWISS MICE

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SUMMARY

Forty adult white swiss mice used to study the adrenal gland. These animals were anaesthetized, sacrificed, then samples of adrenal glands were collected and six micrometers thick sections were stained by both H & E and silver stains. Light microscopic observations showed that the glands are built up closely of packed cellular zone (glomerulosa); followed by a broader one (zona fasciculata) consist of cellular cords heavily loaded by lipid droplets. The later is followed by a zona reticularis, which is composed of anastomosed cellular cords, closely opposite to the wide sinusoids. The study showed fibrous line of demarcation, separating cortex from medulla. Medullary tissue examination revealed the presence of group of ganglion cells. Finally, it was found that zonation of cortical tissues are devoid of zona intermediata.

INTRODUCTION

Numerous investigations in the past have been studied the adrenal gland for various purposes (1,2,3,4,5,6,7). The present light microscopic investigation was undertaken to study the adrenal gland in adult white swiss mice in order to give wide support for the conception.

MATERIALS AND METHODS

Forty adult mixed sexes white swiss mice, weighing 25-35 gm were used. The animal had free access of food, water and housed in room temperture. They received an appropriate dose of anaesthesia with ether and then sacrificed, adrenal glands were removed and cut into narrow wedge-shaped pieces and fixed with 10% formalin.

Serial sections of six micrometers were stained by both H & E and silver stains (8).

RESULTS

The adrenal gland was surrounded by a fibrous capsule. The capsule is pierced by various arteries which ends in numerous capillaries, being well observed between the columns of fasciculata. These capillaries are replaced by sinusoids. The adrenal cortex consist of 3-5 cell layer forming the glomerular zone. Their cells containing little cytoplasm and were closely packed together giving a deceptive appearance of containing an intermediate zone (fig.1). The zona glomerulosa is followed by slightly broader zone, characterized by cellular cords which are arranged in raws interposed by blood capillaries; this is the zona fasciculata (fig.2). It is formed by approximately ten cells thick. The cellular cytoplasm has a noticeably empty or spongy appearance due to the dissolution of lipid droplets during routine tissue processing. Sparce of dissolved lipid deposites were sometimes found in cells of other zones. The zona reticularis (fig.3) was formed by anastomosing cords of cells. The cells appear in close opposition to wide sinusoids. Aggregation of connective tissues fibers made a thin line of demarcation separate the cortex and medulla (fig.4). The medulla is formed by circumscribed group of cells interposed by wide blood sinusoids. The cells possessed round nuclei and abundant cytoplasm which lacks lipid. Ganglion cells were detected in the medullary stroma.

DISCUSSION

Swiss mice adrenal gland is encapsulated by a fibrous capsule. The arteial blood supply reach the caspule and pierce it from different locations. Numerous capillaries are found throughout the cords of cortical cells which terminate in sinusoids. The later have an irregular lumen and are marked by actual deficiency in their endothelial wall (9). The histological development of sinusoids could be considered as reflecting changes in the physiological

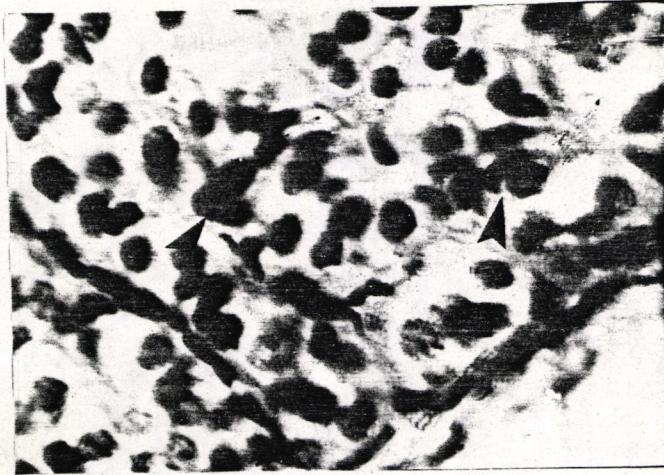


Fig. 1: Zona glomerulosa showing the deceptive appearance (arrows). H & E, X 1250.

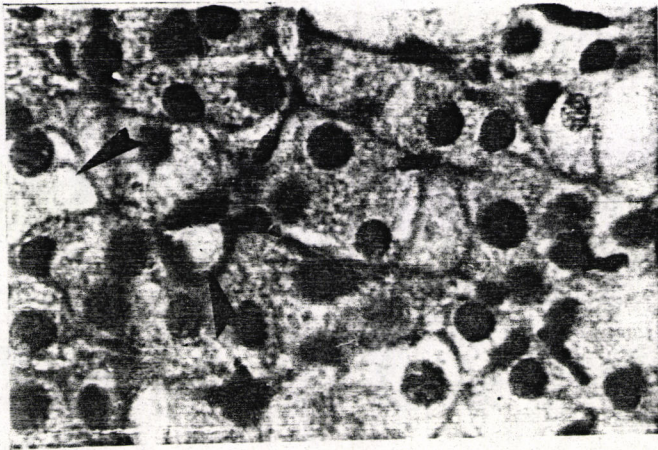


Fig. 2: Zona fasciculata interposed by sinusoidal capillaries (arrows). H & E, X 1250.

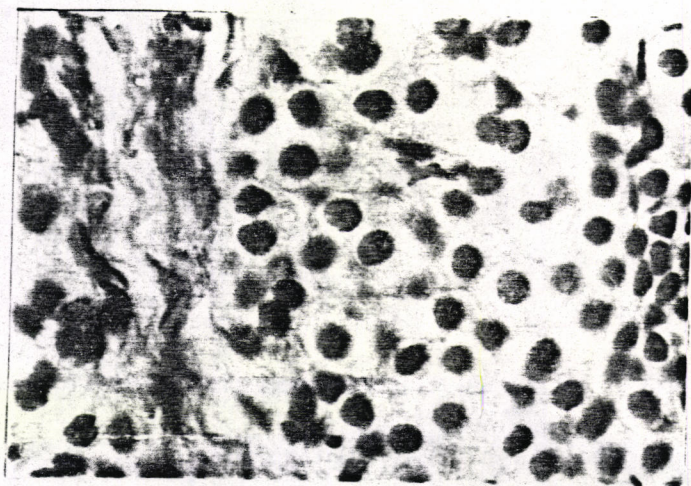


Fig. 3: Anastomosing cords of cells related to zona reticularis. H & E, X 500.

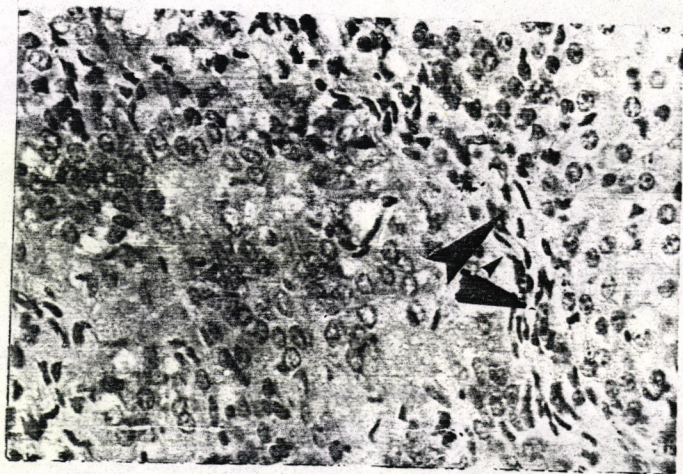


Fig. 4: Line of demarcation of fibrous septum (arrows).
H & E, X 250.

activity of the gland. The zona glomerulosa is represented by cells which aggregated as clusters of cells containing little cytoplasm. Number of cells distinguished as part of the zona glomerulosa or bear small lipid droplets may be considered as part of zona fasciculata. These cells were thought (10, 11) to form an additional zone, the zona intermedia. Our observations after examination of serial sections with different orientations revealed that there is no zona intermedia. The narrowing of the glomerulosa, widening of both fasciculata and reticulosa may agreed with (10) and (11) opinion. The alteration in the pattern of zone congestion, well or ill defined of endothelial cells of the sinusoids may be subjected to physiological function. The largest zone which intervening between zona glomerulosa and zona reticularis is zona fasciculata. This zone is formed by approximately ten cells thick. These are considered as larger than those of the other zones and their cytoplasm contain lipid droplets with centrally located nuclei (11, (12). The cells of zona reticularis intervene in an anastomosing network, accompanied by large sinusoid which continue into medulla. The medulla was demarcated from the cortex by a band of connective tissue; this fact agreed with (13). The medullary cells showed round nuclei and abundant cytoplasm, possessed light basophilic granules and lack lipid strands. Their clusters of cells separated by sinusoids (14).

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دراسة المنظومة النسيجية للغدة الكظرية
في الفأر الابيض السويسري البالغ

نعمان سلمان مهدي السامرائي ، فايق جبار تقي المفار

الخلاصة

استخدم أربعون فأراً سويسرياً لدراسة الغدة الكظرية وخررت هذه الحيوانات وقتلت بواسطة الايثر، ثم جمعت نماذج الغدة الكظرية. قطعت النماذج بسلك ٦ مايكروميتر. صبغت الشرائح النسيجية بمبغتي الهيماتوكسلين - أيوسين والفضة. أظهر الفحص المجهرى الضوئي للغدة طبقة من الخلايا المترامة (النطاق الكببيبي) تليها طبقة واسعة (النطاق الحزيمي) ذي حبال خلوية مثقلة بالقطيرات الدهنية، يتبعها طبقة من الخلايا (النطاق الشبكي) على شكل حبال خلوية متداخلة ملازمة للحبيبات الدموية الواسعة.

تشير الدراسة الى وجود خط فاصل متميز ليفي بين القشرة والنخاع. يبين الفحص النسيجي للنخاع وجود مجموعة من خلايا العقدة العمبية. وأخيراً وجد أن طبقات أنسجة القشرة تفتقد الى النطاق الأوسط.