

ULTRASTRUCTURE OF PINEAL GLAND TUMOR IN WHITE RAT**M. A. Abd alsamad*****A. E. Hadi*****Y. J. Mohammed*****M. A. Hasan ****

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ABSTRACT

Tumors of pineal gland are very rare brain lesion in the rats and other species like humans. Neoplasms of pineal gland should be included in the possible differential diagnosis list for brain tumor, This type happened when the tumor is sited in the pineal body region. Research scientific investigation of pineal glands of rats being of important from the scientific point view, Transmission electron microscopic study of old and young rats was done to study the pineal gland associated with aging, these changes characterized by presence of fat like droplet in cytoplasm. Furthermore in the terminal end pinealocytes which were synapsis like associated with the presence of core vesicles containing neurotransmitter like in consistency.

Keywords: White Rat, Pineal gland tumor.

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دراسة ورم الغدة الصنوبرية في الجرذان البيضاء

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المستخلص

أورام الغدة الصنوبرية هي افة دماغية في الجرذان ونادرة جدا في الانواع الاخرى بما في ذلك الانسان. يجب تضمين الاورام الصنوبرية في قائمة التشخيص التفريقي المحتمل للدماغ خاصة عندما يكون الورم موجودا في منطقة الجسم الصنوبري. الدراسة الحالية بينت اهمية الغدة الصنوبرية من وجهة نظر علمية، تم اجراء هذه الدراسة بواسطة المجهر الالكتروني على انسجة الغدة الصنوبرية المرتبطة بالشيخوخة للجرذان المختبرية الكبيرة والمتوسطة العمر، تتميز هذه التغيرات بوجود الدهون بشكل قطيرات في الساييتوبلازم، علاوة على ذلك في الخلايا الصنوبرية الطرفية النهائية التي كانت تشبة المشابك مثل ارتباطها بالحويصلات الاساسية التي تحتوي على ناقل عصبي كما هو الحال في الاتساق.

الكلمات المفتاحية: الجرذان البيضاء، ورم الغدة الصنوبرية.

INTRODUCTION

At the top of the brain pineal gland is sited at the cerebral transverse fissure and intersection of the median line and joined to the third ventricle by the stalk and is covered by the pia mater. Melatonin plays important turn in the homeostasis maintenance involving melanin, hypothesis and the gonads. Melatonin secretes from The pinealocyte. (5). The pineal gland in adult rat have been studied by different authors included ultrastructure features (1). The innervated pineal gland of rat by fibers of sympathetic originating at the ganglion superior cervical. The integrity of these fibers is a normal gland function necessary (4). the activity of endocrine of the pineal gland depends on innervation of neurological which being different from the other endocrine glands. Darkness and light have a different significance have in pineal gland through control of secretion of melatonin. Darkness increases it, whereas the production of melatonin decreases by light (2).light impulses are sent to suprachiasmatic nuclei, through retino hypothalamic tract through being converted into electrical impulses in the photoreceptors of retina. (10). In the present study the electron microscopic of the pineal gland in the white rat is described, especially its lesser known aspects, as well as those features which show a clearer evolution with increasing age during the adult period.

MATERIALS AND METHODS

A total 52 young and ageing white rats (Aged 7 and 24 months respectively) of male and female were used. preserved under standard status of light and nourishment. Were randomly allocated and housed in separate cages of the college of veterinary medicine, University of Basrah. Promptly after over ether exposure., pineal gland were removed from these rats, then approximately cut about 0.5mm dice, and fixed by immersion in 0-1 M phosphate-buffered 2 % glutaraldehyde-2 % paraformaldehyde, pH 7-4, than washing them through the same buffer, they were post fixed in phosphate- buffered 1% osmium tetroxide and embedded in Vestopal. Ultrathin sections were stained with uranyl acetate and lead citrate and examined in Philips electron microscope.

RESULTS AND DISCUSSION

Tumor of the pineal gland may be indicated by slight enlargement of the gland which can be confirmed only by light and electron microscope. Its appeared there are no little data in research studies on the ultrastructure cellular finding for the scientific investigation of pineal gland in rats to scientific benefit to study the pineal gland of human and other large animals such as dogs and monkeys. Furthermore the present topic will Constance on the ultrastructural finding of the pinealocytes in rat. Study of the pineal gland in white rats showed fat droplet enclosed by limiting membrane those more of varying size or in some instance those more presence of lysosome and phagolysosome the above finding was supported by study of (3,7,8,9, and 11) which reported presence of dark cell with droplets as incandescent vacuoles with membrane of mark or in phagolysosomes, as well as enclosed mark membrane with vacuoles with faint amorphous materials. The present study of the electron microscopic pineal gland in white rates, also showed darkness and they were indicative of degeneration of pinealocyte which will be increased severity with advancing age as was supported by electron microscopic finding of (1 and 9) which showed lipid droplet vesicles, some with dim core, degeneration of mitochondria and ends nerves with mainly dim core vesicles, other with synapses with abundant mitochondria and a little dark core vesicles. A study by (1,4,6,9 and 11), described in detail the electron microscope of pineal gland of Sprague Dawley rat showed display pinealocytes degeneration and in synapses of pinealocytes or nerve endings. The ultrastructure sereach of pineal gland tumor of white rat in the current study describe presence the end of pinealocytes which were synapse like containing ultrastructure finding of dark stained vesicles and varying of mitochondria indicating possibility neurotransmitter function and activity. Figures (10 and 11) showed light pinealocytes with a number of intact mitochondria lysosomes and large granules with few lipid droplet, as well as figure (12) showed light pinealocyte with cisternae of rough endoplasmic reticulum and figure (13) represented light pinealocytes with

large phagolysosome, rich in fat droplets. The present paper gave a very interesting and beneficial scientific finding which could be basic for future scientific research on pineal gland which are very important in large mammals such as human, dogs, monkeys and other animals. In conclusion, pineal gland are characterized that they undergo further degeneration with aging and the presence ultrastructure scientific research of the present paper open the door for future research on this topic which could be very important for human research of pineal gland.

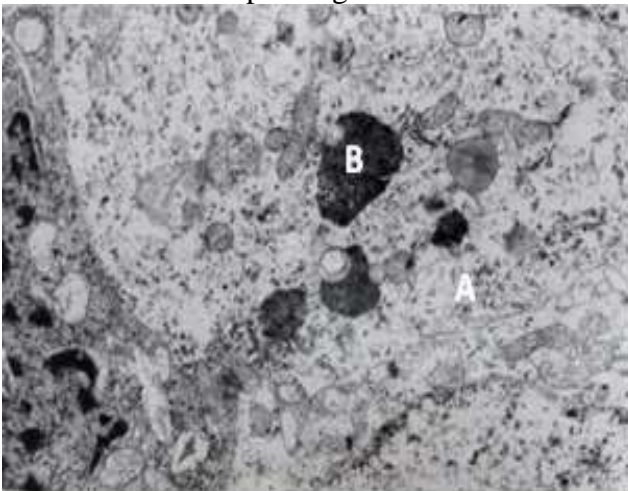


Figure 1. A. Electron light and dark pinealocytes with dark stain lysosomes and very numerous of mitochondria. (X18000)

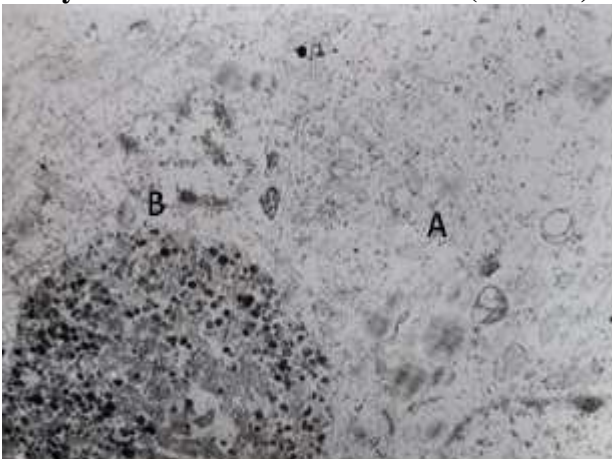


Figure 2. A. Electron microscope of light pinealocytes accumulating fine lipid droplet B. synapse with dark viscous.(X15000)

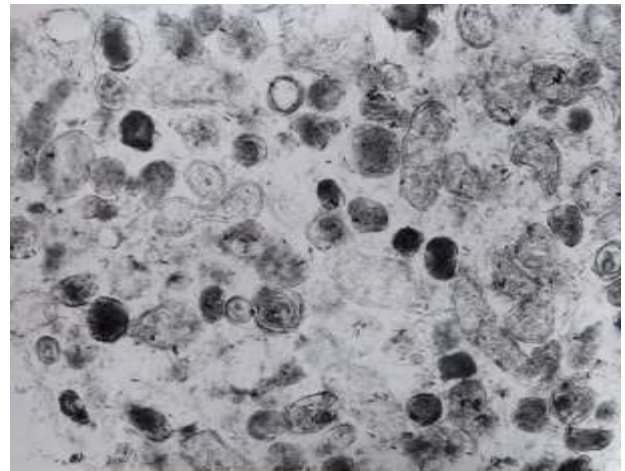


Figure 3. Electron microscope containing both intact mitochondria and degenerated dark stain mitochondria. (X18000)

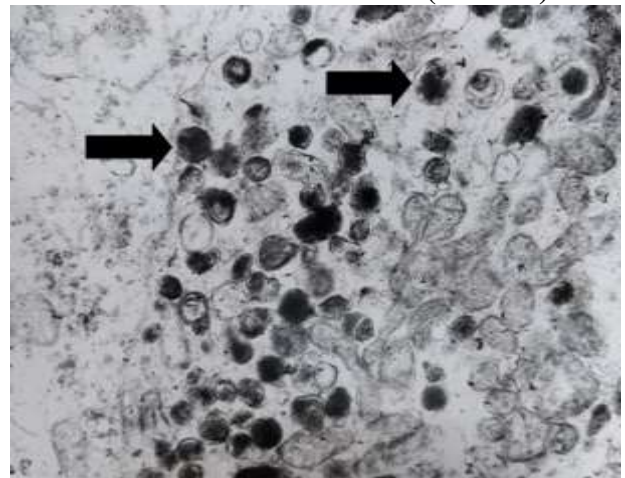


Figure 4. Electron microscope of synapsis with increased number of dark stained degenerated mitochondria. (X.18000)

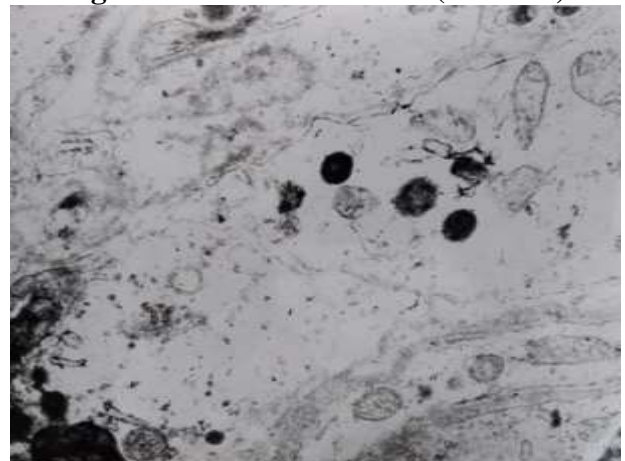


Figure 5. Electron microscope of synaps clear disappear of mitochondria with poor mitochondria component. (EM.18000 X)

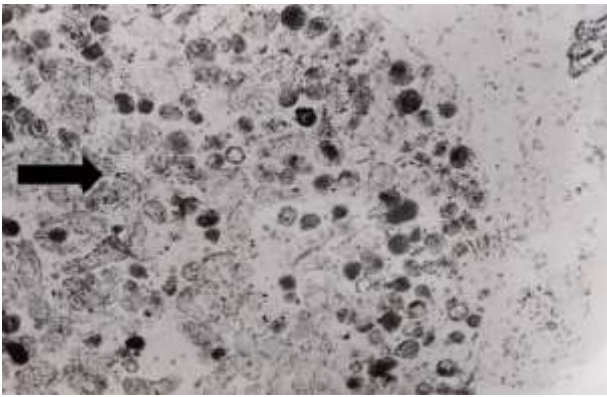


Figure 6. Electron microscope of synaps rich various sized and density vesicles. (X15000)



Figure 9. Electron microscope of synapse with large dense vesicles and mitochondria with sings of lamination. (X.20000)

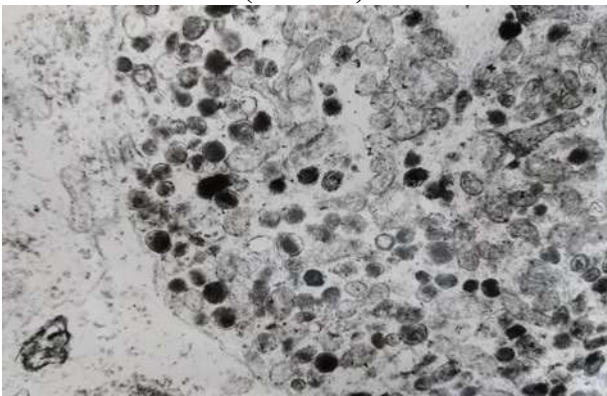


Figure 7. Electron microscope of synaps with evidence of mitochondria lamination and large number of dense vesicles. (X15000)

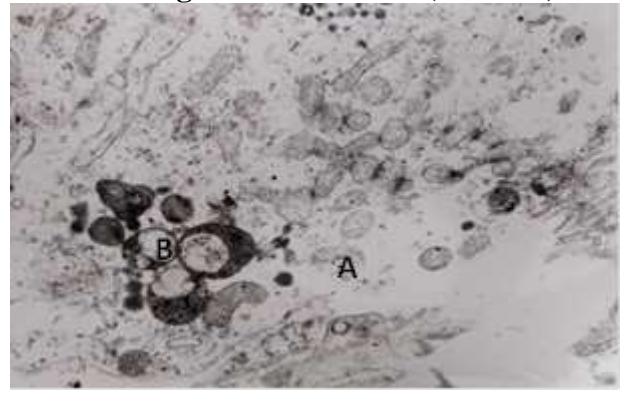


Figure 10. Electron microscope. A. light pinealocytes with a number of intact mitochondria lysosomes and B. large granules with few lipid droplet. (X18000)

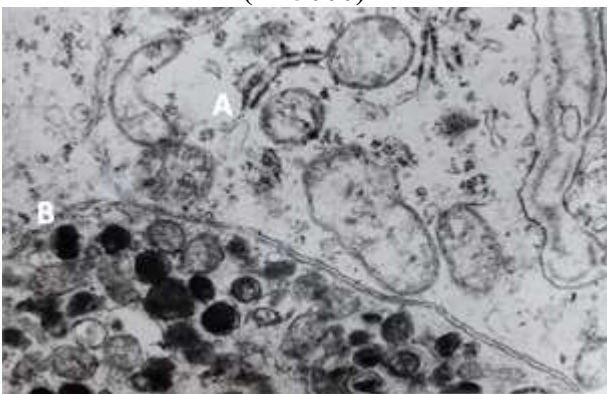


Figure 8. Electron microscope. A. light pinealocyte with swelling mitochondrial membrane and synaps B. with numerous dense vesicles. (X18000)



Figure 11. Electron microscope of light pinealocytes with a number of intact mitochondria lysosomes and phagolysosomes. (X24000)

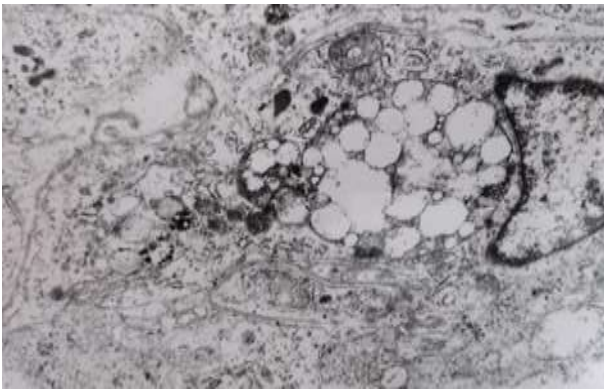


Figure 12. Electron microscope light pinealocyte with cisternae of rough endoplasmic reticulum. (X18000)



Figure 13. Electron microscope of light pinealocytes with large phagolysosome, rich in fat droplets. (X24000)

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