SOME MACROSCOPIC AND MICROSCOPIC OBSERVATION ON THE PITUITARY GLAND OF GUINEA-PIG *Cavia culteri*

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ABSTRACT

This research was conducted to asses some macroscopical and microscopical observations of pituitary gland in guinea pig .

Pitutary gland is considered as a complex endocrine gland , located at the base of the brain where it lies in the sella turcica , a small deprission in the sphenoid bone .

It is attached to the hypothalamic region of the brain by a narrow stalk . The glands weight about (20 mg) . microscopically it is composed of an epithelial component or adenohypophyis and a nervous component or neurohypophysis . The parancymal cells of the pars distalis are the chromophilic cells . Pars intermedia consist of chromophobic cells and basophilic cells . neurohypophysis has scattered pituicytes among the nerve fibers .

INTRODUCTION

The hypophysis or pituitary gland is a complex endocrine gland , lies in a small deprission in the sphenoid bone . The parenchymal cells of pituitary gland synthesize hormones which may regulate specific tissue or organs of the body or which may have a more general systemic effect (1 ,2) .

These hormones have also important function in the regulation of metabolism , growth and reproduction . The aim of this research is to study some macroscopic and microscopic observations of the piuitary gland in guinea-pig .

MATERIAL AND METHODS

Hypopysis were dissected out in this study . Macroscopical obervations of thier location, shape and size were noticed.

The gland were weighted , rinsed with 9% normal saline . For light microscopy , specimens were fixed with Bouins fluid for 24 hours then dehydrate in graded ethanol and embedded in paraffin . They were cut serially at $6_{micrometer}$and stained with hematoxyline and eosine (3) and examined with olympic microscope .

RESULT AND DISCUSSION

Pitutary gland of guinea-pig was located at the base of the brain weighting approximatelly 20 mg and about 6 m in lenght , 3 m in width .

It has neural and vascular connections with the brain . This is in accordance with (1 , 2 , 4 , 5) in equine , ruminant , carnivorse and pig .

Microscopically , pituitary gland is subdivided into adenohypophysis and neurohypophysis .

Three subdivided (pars distalis , pars tueralis & ars intermedia) of the adenoyppysis were distiguished , pars distalis , pars tuberalis and pars intermedia (plate 1) . The neurohypophysis are also subdivided into three region , median eminennce , the infundibular strem and a thin investement of glandular tissue of pars tuberalis .

The stroma of pars distalis is composed of irregular cords or clusters of glandular cells which surrounded by delicate connective tissue fiber and separated from each other by thin-walled sinusoids . (5 , 6) interpratate that these sinusoid lined by fenestrated endothelium and their pras faclitate the diffussion of blood bearing releasing factor into the gland and allowed the protein secretory products of thier cells into the blood .

According to staining with acid or basic dyes , the cells of pars distalis were designated as acidophilic or basophils . Other cells that showed little or no cytoplasmic staining were known as chromophobe . It become evident by some authors that there were more cell types than acidophils , basophils , and chromophobes on the basis of the size and shape of their secretory granules as thyrotrophs cells , gonadotrophs cells and corticotrophs cells (7 , 8 , 9 , 10) .

Acidophilic cells are relatively large , rounded or ovoid cells . These cells tend to be more scattered with in te parenchyma of this pars distalis .

Basophil cells can be most easily distinguished from acidophils by their blue stained cytoplasm . These cells are larger than most acidophlic cells and are round or ovoid in

shape . They are most numerous in the central anterior portion of the pars distalis . They form small groups situated deep at some distance from sinusoids . Their granules are the smallest of any granules found in the parencymal cells of the hypopysis .

Chromophobe cells are much less numerous than previous cells and appeared as groups of small cells . They show little affinity for dyes in histological section . These cells occasionally reach the size of acidophils and basophils . They were devoid of secretory granules . (7 , 8) were considered these cells as to be reserve cells capable of differentiating into either acidopils or basophils (fig. 1, 2) .

The distinct area in this gland is the pars intermedia . This area is separated from pars distalis by a narrow cleft . This interlobar cleft is represented by scattered colloid – filled vesicales . Pars intermedia consist of chromophobe and basophil cells . The pars intermedia is beleived to be responsible for the secretion of melanocyte stimulating hormone which is thought to be involved in melanine production (1 , 2 , 7) .

The greater part of the pituitary gland is the neurohypophysis which consist of unmyelinated nerve fibers . These fibers are in close proximatelly to capillaries which from a rich plexus in this region . Cells of pituicytes were scatered among these nerve fibers . these pituicytes were varies in size and shape (fig. 3) .

(11,12,13,14,15,16) claimed that pituicytes are considered to be equivalent to neuroglial cells in the central nervous system , but whether they have a supportive function only or actively participates in the secretory process of adjacent nerve terminal is not known .

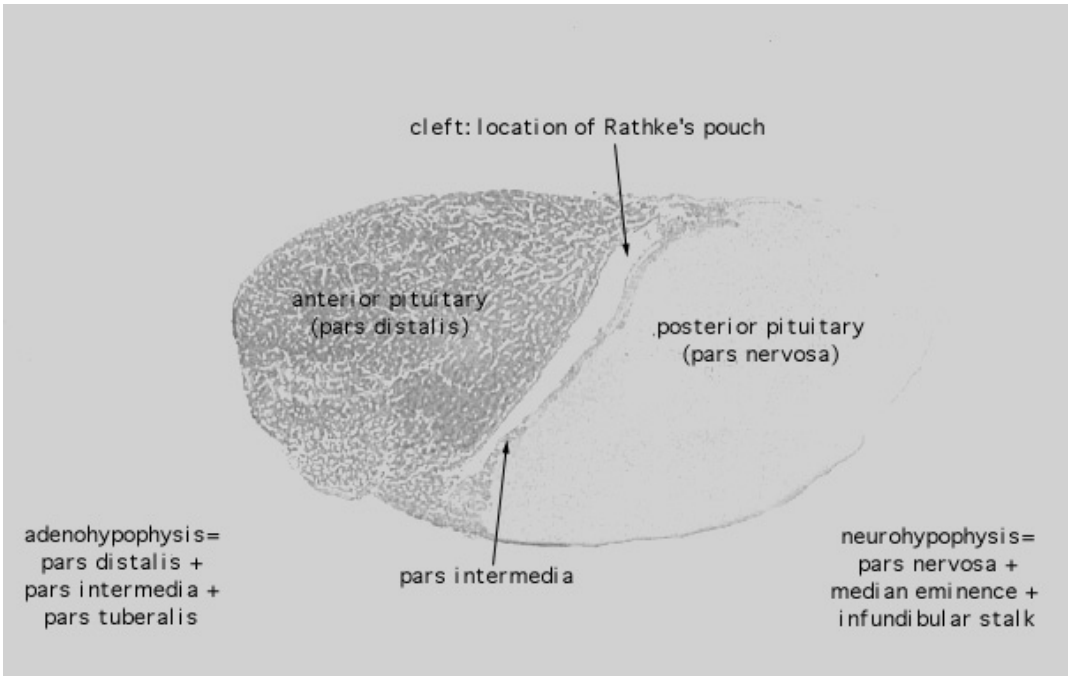

Fig 1 : The parts of pituitary gland in guinea–pig

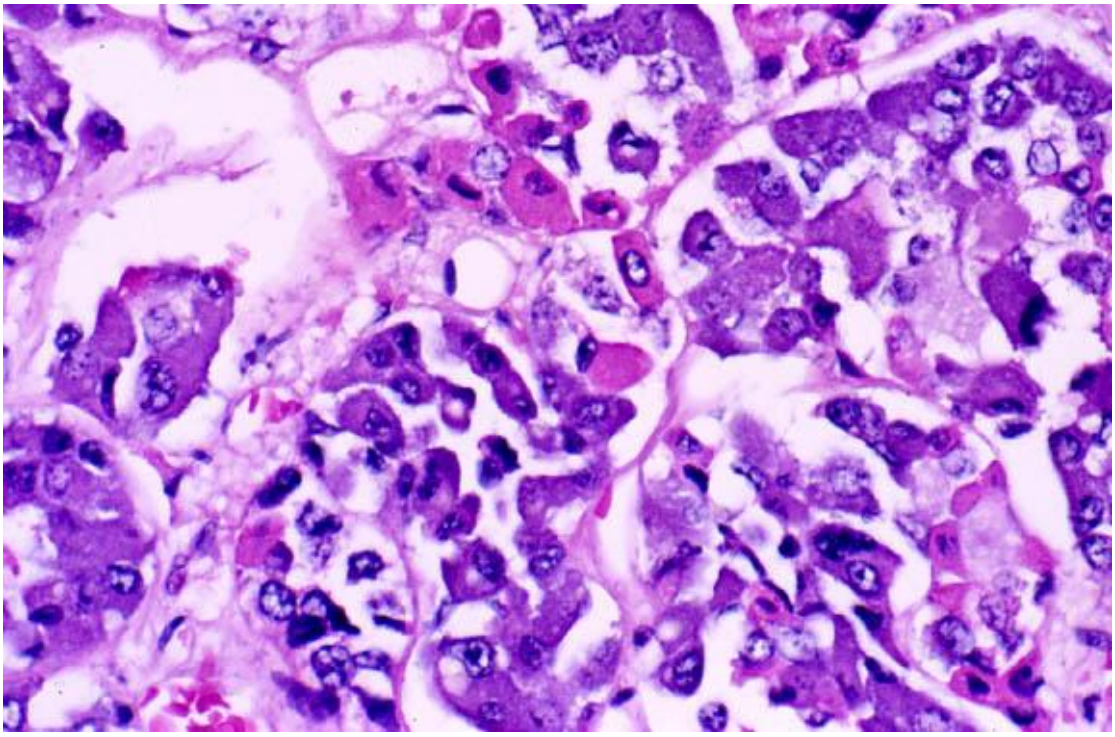

Fig1:Adenohypophysis of Pituitary gland in guinea pigs A-Acidophilic cells
Basophilic cells C-Chromatophobes cells

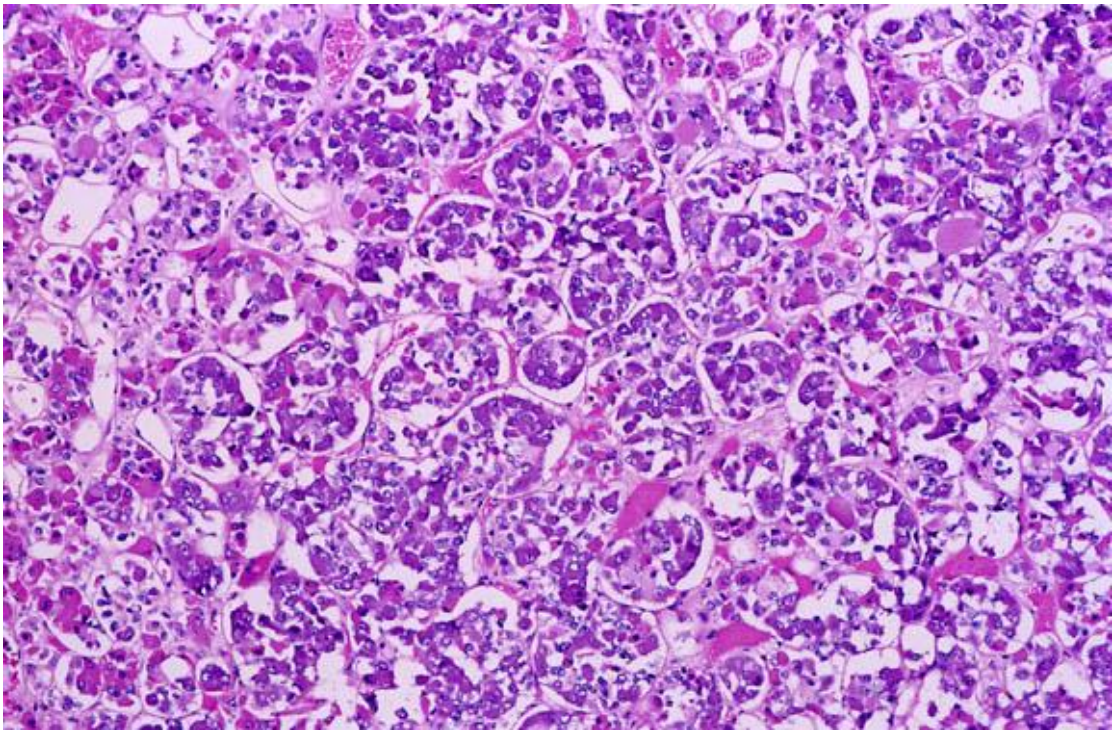

Fig 2:Anterior part of pituitary gland in guinea pig

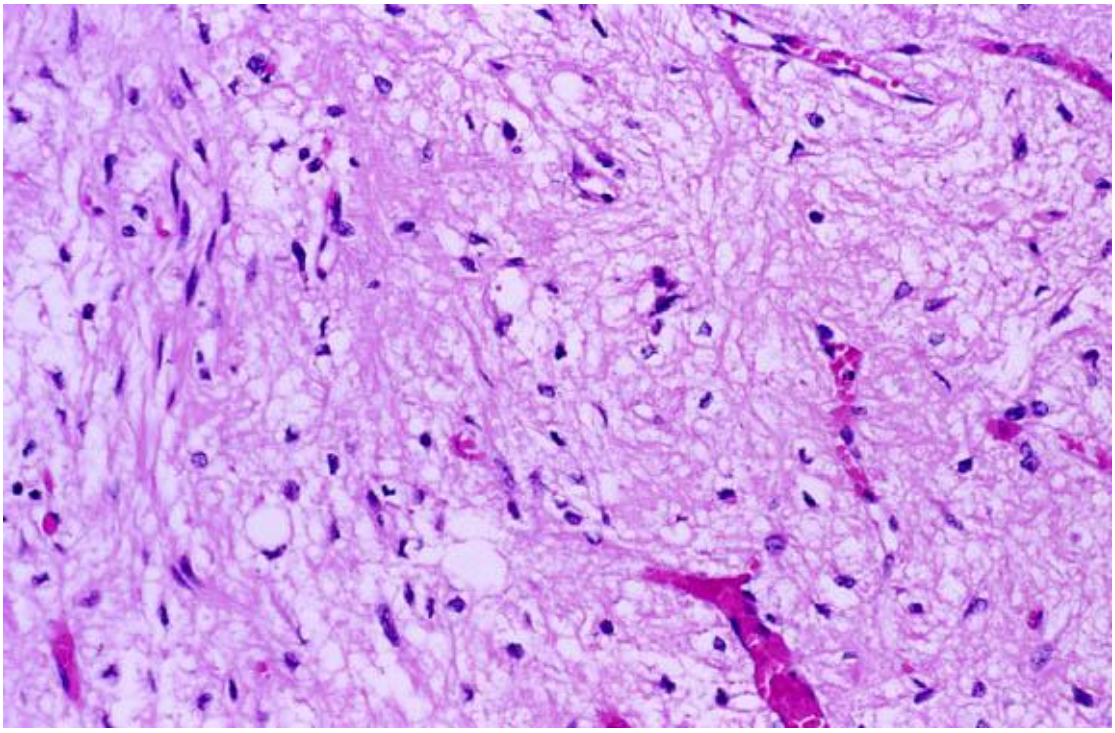

Fig3:Neurohypophysis of pituitary gland in guinea pig A-unmylinated nerve fibers B-Capillaries C-pituicytes

بعض الرؤى العيانية والمجهرية للغدة النخامية في خنزير غينيا

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الخلاصة

يتضمن هذا البحث رؤى عيانية ومجهرية للغدة النخامية في خنزير غينيا .تعد الغدة النخامية ، غدة صماء معقدة التركيب تقع في قاعدة الدماغ تضطجع على السرج . Sphnoid bone والذي يمثل انخفاض صغير في العظم الاسفنجي Sella tursicaالتركي وترتبط النخامية مع منطقة تحت المهاد بواسطة ساق نحيفة . تزن الغدة حوالي20 مليغرام. وجزء عصبي Adenohypophysisتتكون الغدة مجهريا من جزء ظهاري .يتكون متن الجزء القاصي من خلايا محبة وخلايا كارهة .Neurohypophysis . يتكون الجزء الوسطي من خلايا كارهة وخلايا قعدية . يحتوي الجزء العصبي على خلايا تتخللها الياف عصبية .Pituicytesنخامية

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