The Iraqi J. Vet. Med., 11 (1987)

HISTOMORPHOLGICAL STUDY OF THE PARATHYROID GLAND OF ONE-HUMPED CAMEL (CAMELUS DROMEDARIUM)

N.S. Al-Samaraee, W.A. Khamas and J.Y. Dakeel, Department of Vet. Anatomy & Histology, College of Vet. Medicine, Baghdad University, Baghdad, Iraq.

SUMMARY

Parathyroid gland of ten adult one-humped camel has been collected from the slaughter house. Glands have been fixed sectioned and stained by several procedures. The gland measured 1.2 cm in length, 0.4 cm in width and 0.25 cm thick. It differs in position from left to right side due to displacement of thyroid gland. The gland consisted of aggregate of cells arranged as solid masses, clusters, cords or strands. The parenchyma of the gland appeared with different cell density. Four cell type has been distinguished, viz., light as well as dark chief cells, oxyphils and syncytial cells.

INTRODUCTION

Gross, light as well as electron microscopic study of parathyroid gland of different animals have been investigated, viz., chick embryos (Narbaitz; 1972); laying hen (Nevalainem, 1969); pigeon (Hoyt *et al.*, 1973); mammals and birds adult rabbits (Rosenquist and Boquist, 1973); dog (Bensley, 1947) and mammals and birds (Stoecked and prote, 1971). Moreover, internal

parathyroid of the goat has been described by Ray *et al.*, (1984). Curtis (1930); Halsted and Evans (1907) and Weymonth and Sheridon (1966) have described the parathyroid gland of man and its blood supply.

Little information is known about the parathyroid gland of One-humped camel in the available literature. Therefore, this work has been suggested to describe the gross and light microscopy of the gland.

MATERIALS & METHODS

Ten parathyroid glands with the adjacent connective tissue, were collected from apparently healthy Camels after slaughtering. Glands cut into two to four peices and placed in 10% formalin solution for 24 hours, the routinely processed for paraffin sectioning. Blocks of paraffin were sectioned at 4-6 um thickness and stained with H.&E., Weigert's elastic and Masson's trichrome stains.

RESULTS AND DISCUSSION

The parathyroid gland was found to be situated at the cranial pole of the thyroid gland on a dorsolatersl positions. The gland measured 1.2 cm in length, 0.4 cm in width and 0.25 cm thick. It was situated on the first trachea ring embedded partly in the capsule of the thyroid gland. Sometimes, the gland was found close to the cricoid cartilage of the larynx or partly on the cartilage and partly on the first trachea due to the displacement of the thyroid gland on one side. The parathyroid gland was related dorsally to the recurrent laryngeal nerve and the esophagus and ventrally to the thyroid gland. It was closely related to the dorsal aspect of the distal branch of the cranial thyroid artery from which it took its blood supply.

The gland was divided into two parts, i.e., external and internal. The external part, described grossly above, was surrounded by thin connective tissue Capsule, while the internal one usually found enbedded in the caudal portion of the thyroid gland and deroid of capsule. Delicate connective tissue septae partially dividing the gland into poorly defined lobules and still finer septae tend to separate the parcnchyma into anastomosing cords and cell groups (Fig.1).

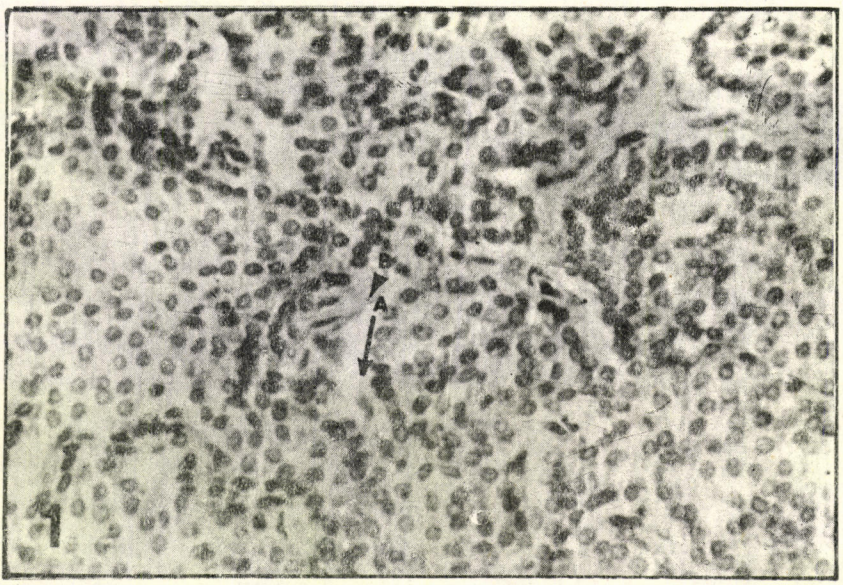

Fig.1. External parathyroid of one-humped camel showing different cell arrangements. H. & E. Stain. May.95X

A. cord-like arrangement of cells

B. Connective tissue sppta

Embryologically, the external parathyroid gland, which is also called parathyroid four or superior parathyroid, developed from the fourth pharyngeal pouch, while the internal one which is called parathyroid three or interior parathyroid, developed from the third pharyngeal pouch in conjunction with the thymus (Watterson and Sweeney, 1973). In this research, both external and internal parathyroid were present in the camel the internal one, though was found embedded in the cardal portion of the thyroid gland due to the migration of the gland in early life of development.

Principally, the parathyroid gland was composed of chief cells (light and dark) and oxyphil. The chief cells were of constant occurrence throughout the parenchyma, while the oxyphils which predominate at the periphery of the gland. The chief cells were polygonal, oval or elongated with the nucleus slightly oval or round in outline, where the chromatine was peripherally concentrated. The oxyphil cells were larger than the chief and usually have smaller and darker stained nuclear. Their cytoplasm stained well with eosin and contained fine granules (Fig.2).

Generally, no characteristic arrangement of cells were noticed in the gland. Cell aggregates besides from of cotds, islets or clusters between strands of connective tissue were observed. Connective tissue tend to be thick at the cranial pole of the gland and relatively thin at the caudal pole of the thyroid gland.

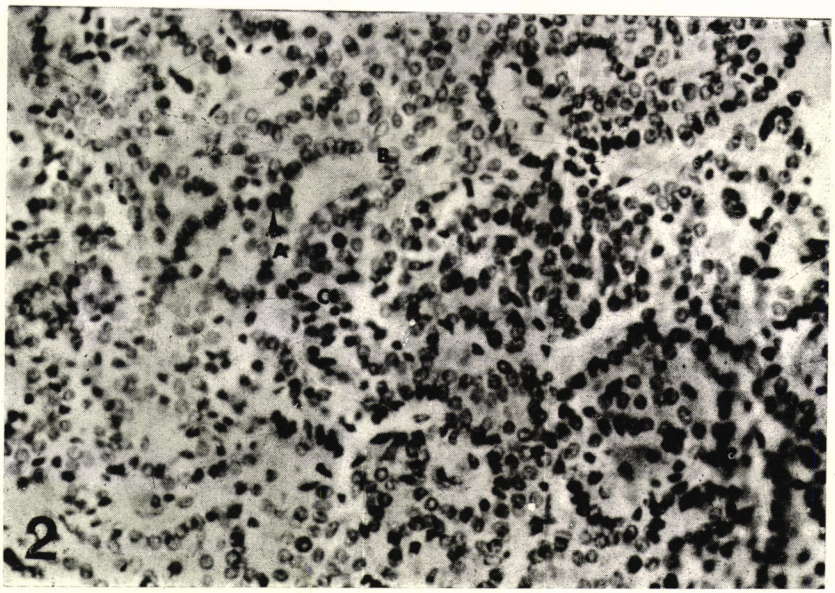

Fig.2. Internal parathyroid of one-humped camel showing the same characteristic arrangement of cells as the external one. Masson's trichrome stain. May.87X

A. oxyphil cell
B. chief cell (light)
C. chief cell (dark)

Regressive changes were noticeable with age in several animals as in goat (Roy *et al.*, 1984). No. such changes were delecated because age of animals were not taken into consideration. When the boundaries between cells disappeared syncytial cells appeared occasionally throughout the gland (Fig.3).

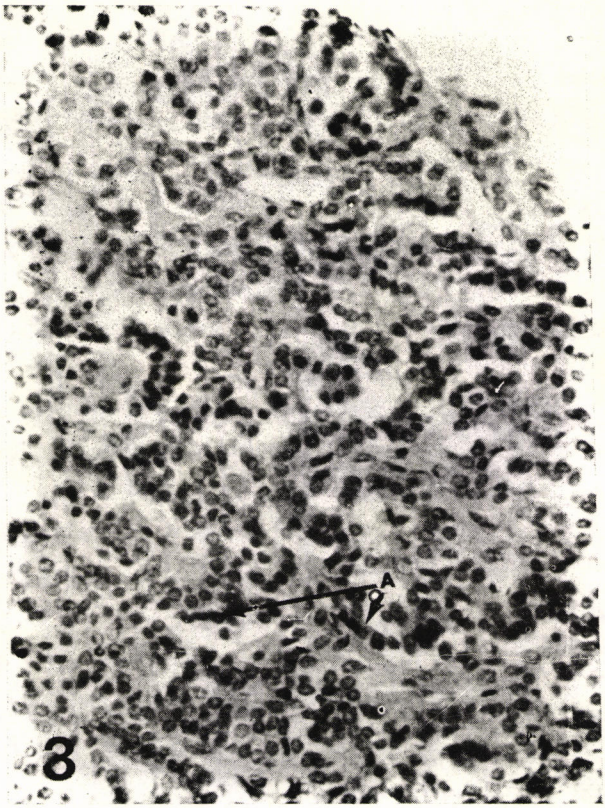

Fig.3. External parathyroid. H. & E. Stain. May.82X
A. syncytial cell

REFERENCES

Bensley, S.H. (1974). The normal mode of secretion in the parathyroid gland of the dog. Anat. Rec., 98;361-381.

Boquist, L. (1973). Follicles in human prathyroid glands. Lab. Invest., 28: 313-320.

Curtis, G.M. (1930). The blood supply of the human parathyroid. Surg. Gynecol. Obstet., 51: 805-809.

Halsted, W.S., and Evans, H.M. (1907). The parathyroid glandules. Their blood supply, and their preservation in operation upon the thyroid gland. Annuals Surg. 46: 489-506.

Munger, B.L. and Roth, S.I. (1963). The cytology of the normal parathyroid glands of man and Virginia deer. A light and electron microscopic study with morphologic evidence of secretory activity. J. cell Biol. 16: 379-400.

Narbaitz, . (1979). Submicroscopical aspects of thick embryo parathyroid glands. J. Comp. Endocr. 19: 253-258.

Nvalainen, T. (1969). Fine structure of the parathyroid of the laying hen (Gallus domestices). J. Comp. Endocr. 12: 561-567.

Rosenquist, J. and Boquist, L. (1973). I. Ejects of supply and withdrawal of fluoride, experimental study on growing and adult rabbits. II. parathyroid morphology and junction. Acta path. Microbiol. Scand. Section A. 81: 637-644.

Roy, K.S., Saigal, R.P., and Nanda, B.S. (1984). Histomorphological gland of the goat. Ind. J. Anim. Sci. 53(5): 465-468.

Stoecked, M. and porle, A. (1973). Observation ultrastructurales sur la parathyroid de Mammifere et d'oiseau dans les conditions normals et experimentales. Archs. d'Anat. Microscopique exp. 62: 55-88.

Watterson, R.L. and Sweeney, R.M. (1973). Laboratory studies of chick, pig and frog embryos. Third ed. Burgess publishing company, Minneapolis, Minnesota, U.S.A.

Weymouth, R.J. and Sheridan, M.N. (1966). Fine structure of human parathyroid glands-normal and pathological. Acta endocrinol., 53: 529-546.

دراسة شكلية نسجية للغدة جنيب الدرقية في الجمل ذو السنام الواحد

د. نعمان سلمان مهدي السامرائي، د. وائل عبد الحميد خماس،
د. جمال يعقوب دخيل، فرع التشريح والانسجة، كلية الطب البيطري

الخلاصة

الغدة جنيب الدرقية لعشرة جمال بالغة جمعت من المجزرة. الغدد ثبتت وقطعت باستخدام عدة طرق. وجدت الغدة بأنها ١ر٢ سم طولا و ٤ر٠ عرضا و ٢٥ر٠ سم سمكا. تختلف الغدة اليسرى عن اليمنى في موقعها وذلك لاختلاف الغدة الدرقية في الموقع.

الغدة متكونة من مجاميع من الخلايا المرتبة على شكل كتل صلدة او عناقيد او حبال. متن الغدة ظهر بأنه متكون من كثافة خلوية مختلفة. اربعة انواع من الخلايا تم تمييزها وهي خلايا رئيسية فاتحة وداكنة وخلايا حمضية واخرى مخلاوية.