

PARATHYROID GLAND OF THE FROG *RANA TIGRINA*

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RESUMO: A glândula paratiróide de *Rana tigrina* é composta por células epiteliais densamente agrupadas que são distribuídas em círculos. A diferença na densidade das células paratiróideais já foi registrada. As células no centro da glândula são compactamente agrupadas possuindo núcleos alongados e citoplasma denso. As células da periferia da glândula são distribuídas frouxamente, tendo citoplasma claramente corado e núcleos esféricos grandes.

ABSTRACT: The parathyroid gland of *Rana tigrina* is composed of closely packed epithelial cells which are arranged in whorls. A difference in the density of the parathyroidal cells has been noticed. Cells in the center of the gland are packed compactly possessing elongated nuclei and denser cytoplasm. The cells at periphery of the gland are loosely arranged having lightly stained cytoplasm and large spherical nuclei.

INTRODUCTION

Several studies describe the morphology of anuran parathyroid gland (ROMEIS, 1926; WAGGENER, 1929; CORTELYOU *et al.*, 1960; BOSCHWITZ, 1961, 1965; VON BREHM, 1963, 1964; SASAYAMA and OGURO, 1974; AKBARSHA and MOHIDEEN, 1982; KRISHNA and SWARUP, 1985) but no detailed account for the histological structure of the parathyroid gland of *Rana tigrina* has been provided. Hence, this investigation was undertaken.

MATERIALS AND METHODS

Twenty five adult *Rana tigrina* (body wt. 55-70 g) were procured locally. Their glottis together with a small piece of surrounding tissue were extirpated and fixed in aqueous Bouin's solution. The materials thus fixed were routinely dehydrated in graded series of alcohols, cleared in xylene and embedded in paraffin. Serial sections were cut at 6 μ m and stained with hematoxylin-eosin

OBSERVATIONS

In *R. tigrina* two parathyroid glands are located on each side of the pre-cardial region near the ventral branchial body and carotid artery. They are round or ovoid in shape and composed of closely packed epithelial cells which are surrounded by a connective tissue capsule (Fig. 1). The connective tissue capsule is richly supplied with blood capillaries. The connective tissue and blood capillaries are not observed inside the gland (Fi. 1) but intercellular channels are noticed within the gland (Fig. 2).

The epithelial cells of the parathyroid glands are arranged in whorls. A difference in the density of the parathyroidal cells has been noticed (Fig. 1). Cells in the center of the gland are packed compactly having more elongated nuclei and a denser cytoplasm (Fig. 3). The cells at periphery of the gland are loose containing lightly staining cytoplasm and large spherical nuclei (Fig. 3).

DISCUSSION

The parathyroid gland in *R. tigrina* lies in the precardial region near the ventral branchial body and carotid artery. Corresponding observations have been reported from different anuran species (ROMEIS, 1926; VON BREHM, 1963; SASAYAMA and OGURO, 1974). In *R. tigrina* the gland is enveloped by a connective tissue capsule which is richly supplied with blood capillaries. Blood capillaries are not observed inside the gland. Similar observations have been made earlier from certain anurans by BOSCHWITZ (1961); LANGE and VON BREHM (1965), COLEMAN (1969) and SASAYAMA and OGURO (1974). However, in few anuran species blood vessels have been reported to pass into the parathyroid gland (WAGGENER, 1929; VON BREHM, 1963; ROGERS, 1965).

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Intercellular channels have been noticed in *R. tigrina*. Similar observations have been made in the past from other anurans (HARA *et al.*, 1959; ISONO, 1960; LANGE and VON BREHM, 1965; CORELYOU and MCWHINNIE, 1967; COLEMAN, 1969). The intercellular channels have been described as the means by which the cells receive their nutrition and also as the route by which the parathyroid hormone is transported to the periphery (CLARK *et al.*, 1986)

In *R. tigrina* the parathyroid gland is composed of compactly packed chief cells having two variants - small chief cells with elongated nuclei (central parathyroid cells) and large chief cells with round nuclei (peripheral parathyroid cells). Similar variants of the chief cells have also been reported by LANGE and VON BREHM (1965), SASAYAMA and OGURO (1974), ISONO *et al.*, (1976, 1978), AKBARSHA (1981) and AKBARSHA and MOHIDEEN (1982). However, a single type of chief cells has been noticed in the parathyroid gland of certain anurans (CORTELYOU *et al.*, 1960; MONTSKO *et al.*, 1963). LANGE and VON BREHM (1965) have suggested that the central and peripheral cells in avascular anuran parathyroids are in different nutritional states, owing to their differential distance from the blood supply.

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- Fig. 1. Parathyroid gland of *R. tigrina* surrounded by connective tissue (CT). Note the absence of connective tissue and blood capillaries inside the gland. Also mark the compactly packed central cells (C) and loosely arranged peripheral cells (P). Hematoxylin-eosin x 100.
- Fig. 2. Parathyroid gland of *R. tigrina* displaying intercellular channels (I) within the gland. Hematoxylin-eosin x 400
- Fig. 3. A higher magnification of Fig. 1 exhibiting compactly packed central cells (C) with elongated nuclei and loosely arranged peripheral cells (P) possessing spherical nuclei. Hematoxylin-eosin x 400

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