HISTOMORPHOLGICAL STUDY OF CILIARY BODY AND CILIARY PROCESS IN ONE HUMPED CAMEL (CAMELUS DROMEDARIUS)

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ABSTRACT

Ten eyes (5 right + 5 left) of five healthy one humped camels (3 male +2 females) aged between (8-12) years old, brought from Shulla slaughter house at Baghdad governorate -Iraq. The study showed that the ciliary body located at the base of iris inside the eye ball (Topographically at limbus) in histological section of eye ball appeared as triangular area. The microscopical examination observed the ora ciliaris retinae (line of ending Retinae and choroid) this site represent limits and indicate the area of gradually changed choroid to ciliary body, which posses (111-115) ciliary prosses act as site of zonulary ligament attachment. That important in modification of eye lens during vision.

INTRODUCTION

The ciliary body represent the continuation of the retina to the choroid (1,2,3). The ciliary body play a big role in the aqueous production. Ciliary body had numerous uniform ridges which are called ciliary process that represent a ring-like projections which anchored the zonular ligament (2,5). The structure of ciliary body naturally has some affinity with the choroid and its outermost part, next to the sclera, is called the lamina fusca which contains the ciliary muscles. These muscles are encircle the eye within the ciliary body (6). The ciliary processes are mainly composed of veins continuous with vein in vascular tunica (7,8). The number of ciliary processes are irregular and unequal in size, numbering about 100 in horse. There are 90 to 110 large ciliary processes each from 3-5 mm long and varying in widths with smaller processes between them in ox (1,4). There are approximately 79 main ciliary processes in sheep, and there are approximately 90 main ciliary processes in goat (1). The canal of schlemm lies in the stroma of sclera near the posterior surface, and the trabecular system describes the meshwork of fibrous tissue which connects the filtration angle with the canal, but not all domestic animals possess a canal of schlemm (8,9). In bovine there is definitely scleral venous plexus. This is not as extensive as in some other animals, and one large blood vessels close to the very fine

trabeculus appears to have the characteristic of a true canal of schlemm (10,11,12). The aims of the present research is to provide histological description of ciliary body. Ciliary process, and schlemm canal in one humped camel (*Camelus dromedarius*).

MATERIALS AND METHODS

Ten eyes (5 right & 5 left eye) of fife healthy one humped camel (3male , 2female) brought from the slaughter house of shulla, Baghdad governorate ,Iraq. The camel aged between (8-12) years old . The eyes were sinked in 8% paraformaldehyde solution for 72 hours . Routine histological technique were performed by washing the specimens , dehydration by subsequent processes of upgrading alcohol 50%,60%,70%,80%,90%,100% ,then clearing in zyline followed by infiltration in melted paraffin 58C then embedded and blocked all specimens in paraffin and sectioned by routary microtome in to 5-7 μ in thickness . These sections subjective for staining technique according to luna (12) by using the following stain :

1-Harris Heamatxyline and Eosine for general histological investigation

2-PAS (periodic acid schiff reagent). For basement membrane and mucopolysachrid and glycoprotines .

3-Masson,s Trichrome stain . For collagen and smooth muscle.

RESULTS

The study revealed that the ciliary body located at the base of iris inside the eye ball and appeared as triangular area in histological sections of whole eye ball (fig.1). The histological sections showed the ora ciliaris retinae (line of attachment of Retinae to the choroid) which represent the ciliary body limits and indicate the area of transition choroid to ciliary body . (fig.2). The ciliary process appeared as numerous projections with different size which is long or small process and brightness so the pigmentation of these ridges is usually lighter than in the trouphs. But smaller process which are set within the trough are darker .(fig.3). It is on these ciliary process that the fine suspensory or zonular ligaments which hold the crystalline lens have their attachment with lens capsule. The number of ciliary body in camel is between (111-115) in number. The ciliary body in the eye of camel comprise of two zone, the first one is anterior zone (pars picata) which is broad and narrow than posterior zone (pars plana) (fig.4). Each ciliary process possesses a central core of stroma and blood vessels covered by double layer epithelium. This epithelium consists of an inner pigmented layer and an outer non pigmented layer, which highly attached together and form the blood-aqueous barrier essential for a clear medium to transmit light

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during vision. Also these ciliary processe composed from ciliary muscles and melanocytes. The sections showed the canal of schlemm which represents the angular aqueous sinus. The canal continuous with vortex venous system posteriorly and subconjunctival venous system anteriorly. The canal of schlemm play a big role in drainage of aqueous humor.(fig.4). The angular aqueous plexus very clear in the histological sections specially in the iridocorneal angle (fig.5).



Fig. 1: Sagital Section of the eye of adult camel showing : A. anterior chamber B.fenestrated vein C.venous sinus D. pectinate ligament. E.venous plexus. Massons Trichrome stain (40X).



Fig.2: Sagital Section of the eye of adult camel showing: A. pigmented epithelium B.venous plexus C. fenestrated vein. Massons Trichrome stain (40X).



Fig.3: Sagital Section of the eye of adult camel showing: A. non pigmented epithelium B. pigmented epithelium C. venous sinus. Massons Trichrome stain (40X).



Fig.4: Sagital Section of the eye of adult camel showing: A. non pigmented epithelium B. pigmented epithelium C.fenestrate blood vessel D. schlemm canal . Massons Trichrome stain (40X).



Fig.5: Sagital Section of the eye of adult camel showing: A. venous sinus B.venous plexus C.schlemm canal D.zonular ligament attachment. Harris Heamatoxylin&Eosin stain (10X).



Fig.6:Sagital Section of the eye of adult camel showing: A.zonular ligament attachment B.venous sinus (40X). Harris eamatoxylin&Eosin



Fig.7: Cross Section of the eye of adult camel showing : PAS stain(40X) A. venous sinus B.zonular ligament.



Fig.8: Sagital Section of the eye of adult camel showing :A.ciliary muscleB.ciliary process.PASstain (40X)

DISCUSSION

The examination of microscopic sections showing that the ciliary body is characterized by presence of ciliary process which contain veins that formed venous sinus. The ciliary process also possess pigmented and non pigmented simple cuboidal epithelium. The outer layer is non pigmented layer and the inner layer is pigmented . These results constant with the result of (6,8) while the (10) who that mentioned the inner layer is non pigmented epithelium and consist of cuboidal or columnar cells with a basal lamina that separates it from the posterior chamber in other domestic animals. The schlemm canal is very clear in its situation in the stroma of angular aqueous sinus which represent the continuation of the vortex venous system. These results were in agree with the results of (1,7) in other domestic animals. The ciliary process of camel (*Camelus dromodains*) mainly composed of fenestrated veins which continuous with these in the choroidal layer of the blood vessels (venous plexus). These results share with a results of (6.7). These ciliary processes are irregular and un equal in size and its number ranged from (111-115) in number and these results are the same as in horse which reported by (1). The study revealed the central core of stroma with venous blood vessels covered by double layers of epithelium.

دراسة مظهريه نسجية للجسم والنتوع الهدبي في الجمل وحيد السنام شاكر محمود مرهش رزاق جاسم صلاح حسن المالكي فرع التشريح كلية الطب البيطري جامعة بغداد و بغداد للعراق.

الخلاصة

عشرة عيون (5 يمنى + 5 يسرى) لخمسة جمال وحيدة السنام سليمة (3 ذكور +2 إناث) تراوحت أعمار ها بين (8-12) سنة جلبت من مجزرة الشعلة في محافظة بغداد- العراق وضحت الدراسة آن الجسم ألهدبي يقع بقاعدة القزحية داخل مقلة العين (طوبو غرافيا تحت صبي العين) وفي المقاطع النسيجية لمقلة العين ظهر الجسم ألهدبي كمنطقة مثلثة بالفحص تحت المجهر الضوئي. وهذه المنطقة تمثل نهايات المشيمة والشبكية للعين وهذا المكان أيضا يحدد ويدلل على التغير التدريجي للمشيمة إلى الجسم ألهدبي والذي يمتلك بروزات هدبية تتراوح من (11-111) كمعدل وتعمل كمناطق ارتباط أوتار عدسة العين المهمة في تحوير العدسة خلال الرؤيا.

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