

SOME MORPHOLOGICAL STUDIES ON THE KIDNEY OF SHEEPS WITH SPECIAL TECHNIQUE TO IT'S ARTERIAL SEGMENTATION

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ABSTRACT

The study was carried out on (30) kidneys of fifteen adult clinically healthy sheep. The gross study of kidneys, latex casts and corrosive casts of renal arteries were performed as well as corrosive casts of ureter.

The study showed that the normal sheep kidney had a bean-shaped appearance covered by transparent capsule . the casts preparation mapped the division of renal arteries , within the renal hilus which divided into dorsal and ventral artery , each of them were bifurcated into cranial and caudal artery , the cranial Artery divided into three inter lobar arteries , while the caudal artery divided into four inter lobar artery, each one bifurcated into arcuate arteries from which multiple inter-l.obular arteries were detached.

INTRODUCTION

The kidney plays main role in the fluid and electrolytes balances as well as regulate the blood pressure . The anatomical studies of complex regulation of tubules facilitated the knowlegde of kidney's structure and function (1).

Kidney's disease are of the most common illness affecting animals, succesfull management of these disease ; depending in part, on studying the normal structure and vasculature of kidney as well as with modern technique (2,3)

Renal scintigraphy help in studying the anatomical and physiological condition of the kidney which facilitates the diagnosis of certain renal diseases (4)

The objective of the present study was to investigat the renal appearance of the kidneys as well as imaging the normal anatomical pattern of distribution of the intra renal arteries and distribution of major and minor calyx.

MATERIAL AND METHODS

The current study was performed on thirty kidneys related to fifteen adult clinically healthy male sheep, ranging from (1 - 1½) years and (25 – 30)Kg body weight.

The kidneys were collected from Basrah slauglater as (15 Right kidneys + 15 Left kidneys) all kidneys were subjected to gross features regarding to the shap , color as well the length and width The same (30) kidney were divided into four groups.

- A. The first groups (6R+6L) in which the thickness of cortex and medulla were measured using vernier's caliper.
- B. The second group (3R +3L) were subjected to latex casts preparation by flushing of renal arteries with worm saline and injected with . Gum milk latex colored with violet stain , the specimens were then dissected after fixation in 10% formalin for two day's .
- C. The third group (3R+3L) were subjected to plastic (corrosive) casts, the renalarteries were injected with plastic material named cold cure (5).
- D. The fourth group (3R+3L) were subjected to plastic corrosive casts of ureter and its segmentation in the kidneys by inject with cold cure and refrigerator for 48 hours then macerated in 20% Na OH (5), the segmentation and branching pattern of renal arteries and calyxes were studied .

RESULTS

The present study showed that the kidney of sheep was light brown color with a bean – shaped , covered by transparent capsule. The right kidney was slightly small than left one as measurements physically with little statistical different ces in between their mean values at $P > 0.05$.

Table(1) showing the Length , Width of kidney and thickness of cortex and medulla / m .m (mean)

	Length of kidney	Width of kidney	Thickness of cortex	Thickness of medulla
Right kidney	55.8	30.1	5.9	8.9
Left kidney	37	20.7	3.9	5.7

The latex casts and corrosive casts of renal arteries were observed the renal arteries was branched within the hilus into dorsal and ventral artery , each of them divided into cranial and caudal segmental artery , the cranial artery supplied the cranial part of kidney via ramifying into three inter – Lobar arteries , while the caudal arteries divided into four inter Lobar arteries , the inter Lobar arteries divided into arcuate arteries from which multiple inter lobular arteries were detached (fig, 2).

The cast of ureter and its segmentation inter kidney showed that there were five minor calyces attached together forming the major calyx which connected with renal pelvis (fig 3)

DISCUSSION

This study was guide in description of special technique to arterial segmentation of kidney.

The anatomical study revealed that kidneys of adult sheep were a bean – shaped . On the same line (5) in the rabbit and (6) in the domestic animals described the bean shaped of kidney.

The present gross and casts studies of renal arteries revealed that it was divided in side the renal hilus into dorsal and ventral artery which each of them bifurcated into cranial and caudal artery , the cranial artery was divided into three inter lobar arteries while the caudal artery was divided into four inter lobar arteries . Similar observation were recorded by (7) in the rat as well as by (8) in alpine rabbits except they did not described the dorsal and ventral artery .

The branching pattern of interlobar arteries revealed in the present study was agree with that observed by willens and munster (1979) in Ruminant. Concerning of the ureter of the sheep in the present study had revealed that it was slightly large as well urine could normally seen in the renal pelvis , this result was different from results recorded by (5) and from cat recorded by (11). Who revealed that the urine could not normally seen in the renal pelvis because of the small size of ureter in rabbits and cats.



Fig . 1 : photographic representation of a corrosive cast of right renal artery show it's branches in adult sheep .

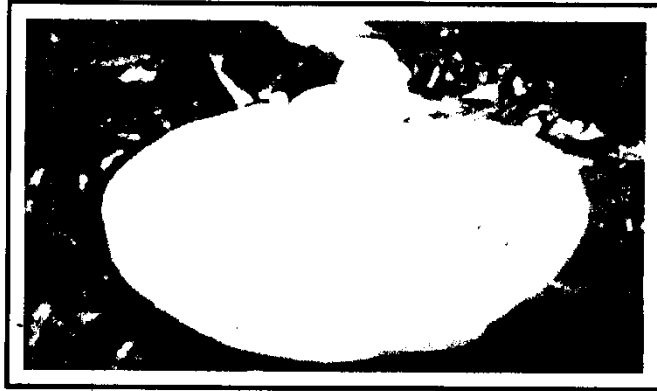


Fig . 2 : gross saqittal section of adult sheep left kidney ., injected with colored Latex , showing the inter renal arteries

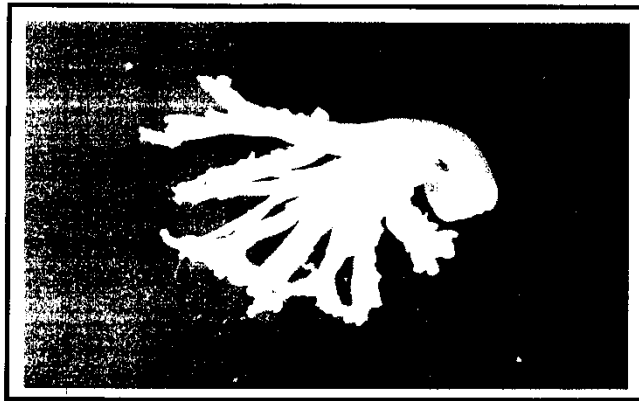


Fig . 3 : photographic representation of a corrosive cast of regent ureter in the kidney show it's branching in adult sheep.

بعض الدراسات التشريحية للمدد الشرياني للكلية في الاغنام باستخدام تقنية خاصة

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الخلاصة

استخدمت في هذه الدراسة ثلاثون كلية جمعت من خمسة عشر رأس اغنام خالية سريريا من الأمراض، استخدمت تقنية قالب اللاتكس لدراسة المدد الشرياني للكلية في الاغنام . اشارت الدراسة أن شكل الكلية يشبه حبة الفاصولياء، وتكون مغلقة بمحفظة شفافة يتفرع الشريان الكلوي عند دخوله إلى منطقة السره إلى الشريان الكلوي الظهري والشريان الكلوي البطني، ويتفرع كل شريان بدوره إلى شريان أمامي وآخر خلفي. يتفرع الشريان الكلوي الأمامي إلى ثلاث شرايين فصية داخلية، بينما يتفرع الشريان الكلوي الخلفي إلى أربعة شرايين فصية داخلية، كل من هذه الشرايين تتفرع إلى شرايين مفردة تنقسم لتكوين الشرايين الفصيصية الداخلية.

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