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رئيس القسم : أ.د. / حمدى عبدالعزيز سالم .

أجسام ضمينيه بلوريه داخل نويات الخلايا الكلوية للكلاب

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اجرى البحث على عدد ٥ كلبا ضالا من محافظة أسيوط ، أخذت عينات من كل هذه الحيوانات بعد قتلها بالصدمة الكهربائية وتم فحصها بعد تمريرها وصبغها بعدئذ من الصبغات .

ولقد وجدت أجسام ضمينيه مشابهة للبلورات في أنوية الخلايا المبطنه للأثابيب الملتفة للكلى في ٤٠٪ من الحالات وتم دراسة مواقع وأشكال وخصائص هذه الأجسام الضمينية وكذلك التغيرات الباثولوجية المصاحبة في الكلى .

نوقشت النتائج ورجح اعزاء هذه التغيرات للأصابة بمرض فيروسى في الكلاب .

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CRYSTALLINE INTRANUCLEAR INCLUSIONS IN THE RENAL TUBULAR EPITHELIUM OF DOGS

(With 7 Figs.)

By

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SUMMARY

Intranuclear inclusion bodies with characteristic shape were found in renal tubular epithelium of dogs. These inclusions were found in 20 out of 50 animals postmortally examined in faculty of Vet. Med. Assiut University. The nature of these inclusions were studied and suggested to be a result of permanent cell injury after viral infection.

INTRODUCTION

Various type of inclusions were seen in the nuclei of the convoluted tubules of dogs. Intranuclear crystalline inclusions beside those related to viral infection such as canine hepatitis (MORISON, *et al.* 1975) and canine distemper (JONES and HUNT, 1983) were described in kidney of dogs. Moreover intranuclear crystals have reported to occur in the epithelial cells of the convoluted tubules of the kidney and has been suggested to be indication of latent viral infection (GIVAN and JEZEQUEL, 1969). The toxicity of lead was found to be associated with intranuclear inclusion in the renal epithelium of dogs. (JUBB and KENNEDY, 1985). BAYOUMI, *et al.* (1983) reported similar inclusions in the hepatocytes of dogs.

In the kidney of dogs postmortally examined in the faculty of Vet. Med. Assiut University intranuclear inclusions of characteristic appearance were incidently found microscopically. Since inclusion bodies are considered a pathognomic lesion of many viral disease. The aim of the present work is to throw some light on the nature of these bodies and to study their relation to the associated glomerulonephritis.

MATERIAL and METHODS

The material consisted of fifty dogs collected from different localities of Assiut governorate and sent to the faculty of Vet. Med. for post-mortem examination. The animals were killed by electric current shock and dissected within 1/2 hour. The kidney and other organs were fixed in 10% neutral buffer formalin solution and processed for paraffin embedding. Sections of 6 micron thickness were stained with haematoxylin and eosin, Maximow haematoxylin - azur II eosin for inclusion bodies. Benzidine method for hemoglobin (GLICK, 1949). Iodine stain for bile pigment (GLICK, 1949) Prussian blue reaction for hemosiderin (GOMERI, 1936) and feulgen reaction for D N A.

RESULTS

1- Macroscopic findings:

The kidney is small in size, firm in consistency and the capsule is not easily detached.

2- Microscopic findings:

The convoluted tubules of the kidney revealed the presence of intranuclear inclusion bodies in sections stained with H & E. The nucleus of the affected cells showed the presence of homogeneous eosinophilic bodies of sharp cut ends. These intranuclear inclusion bodies were found only single in the cells (Fig. 1). They were either cubic or rectangular in shape. The bodies are large to the extent that the nuclear membrane was tightly stretched around it (Fig. 2). A clear unstained narrow rim always lie between the material of the body and the nuclear membrane. The chromatin particles were mostly absent in the nuclei having large bodies inside, while they were basophilic and condensed along the nuclear membrane in most cells. Similar bodies were not found outside the nucleus. Degenerative change in the form of cloudy swelling or hydropic degeneration were observed in the convoluted tubules. These bodies showed positive reaction for D.N.A. Moreover it showed negative reaction for hemoglobin. Kidney of the affected animal did not reveal feature of haemorrhage or abnormal accumulation of bile pigments as indicated by prussian blue reaction and iodine stain. Characteristically; these bodies were intensely stained with maximow hematoxylin azur II eosin appearing purplish red in contrast to the blue colour of the nucleus. Intranuclear inclusions were observed in 40% of dogs examined. The presence of inclusion bodies in the convoluted tubules were accompanied by a prominent lesions in the glomeruli and interstitial tissues of the kidney. Lesions of the glomeruli consists of atrophy and shrinking of the glomerular tuft. Accumulation of considerable amount of serous fluid in the Bowman's space and prominent pericapsular fibrosis of the glomeruli (Fig. 3). Focal areas of fibrosis lymphoid and macrophages cells reaction were seen in the interstitial tissue.

DISCUSSION

As shown in the present study, the intranuclear inclusion bodies found in the renal epithelium of dogs were not composed of hemoglobin and or lipids. These results are in parallel to THOMPSON, *et al.* (1959 a). THOMPSON, *et al.* (1959 b) who indicated that these inclusions contain reactive groups normally associated with the presence of protein. Our result revealed that, morphologically, these intranuclear inclusions were different from that bodies found in lead toxicity and described in the liver (GUEFT and MOLNER, 1961). Intranuclear crystal formation was seen in quite variety of viral infection. It is not clear whether the crystalline protein is host or viral protein, but it has been suggested that excessive protein production probably occurs in the nucleus, and when a critical concentration is reached crystallization happens (CHADILLY, 1975). Infectious canine hepatitis and canine distemper are known to be associated with inclusion bodies in the kidney. The inclusion bodies related to canine hepatitis are feulgen positive while those related to canine distemper are feulgen negative. In experimental work (MORRISON, *et al.* 1975) reported that an immune complex glomerulonephritis develop in association with canine adeno virus type A infection moreover they reported the presence of intranuclear inclusion in the epithelial cells of tubules. In the present study the intranuclear crystalline inclusions are highly positive to hematoxyline azur II eosin stain. This stain is a specific for demonstration of inclusion bodies of diseases such as rabies and pox. Moreover the lesion of glomerulonephritis in the present study associated with the presence of these crystalline bodies suggested that these inclusions are related permanent cell injury after viral infection.

INTRANUCLEAR INCLUSIONS IN THE KIDNEY

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DESCRIPTION OF FIGURES

- Fig. (1 a,b,c,d):** Large abnormal crystalloid intranuclear inclusions within the epithelium of convoluted tubules of the kidney (H & E x 40).
- Fig. (2):** Large crystalline intranuclear inclusion body in which the nuclear Membrane is stretched around the body. (Maximow hematoxylin azur II eosin x 40).
- Fig. (3 a & b):** Kidney showing glomerulonephritis with atrophy and shrinkage of the glomerular tuft and presence of serous fluid in Bowman's space. (H & E x 16.5 and x 40).



Fig. (1 a)

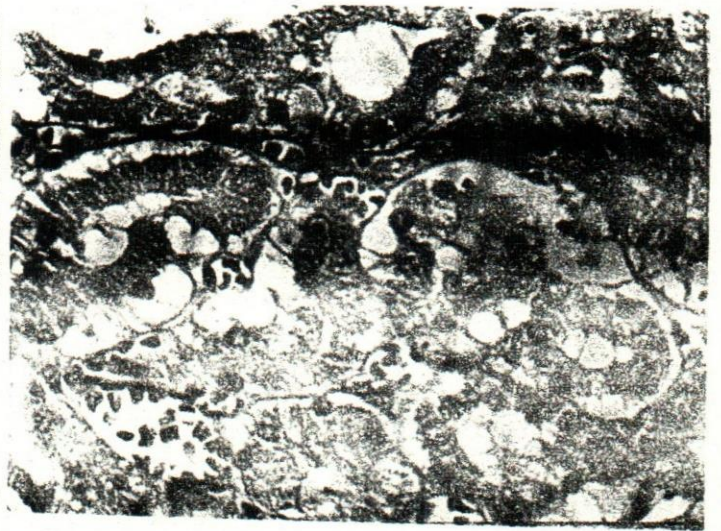


Fig. (1 b)



Fig. (1 c)

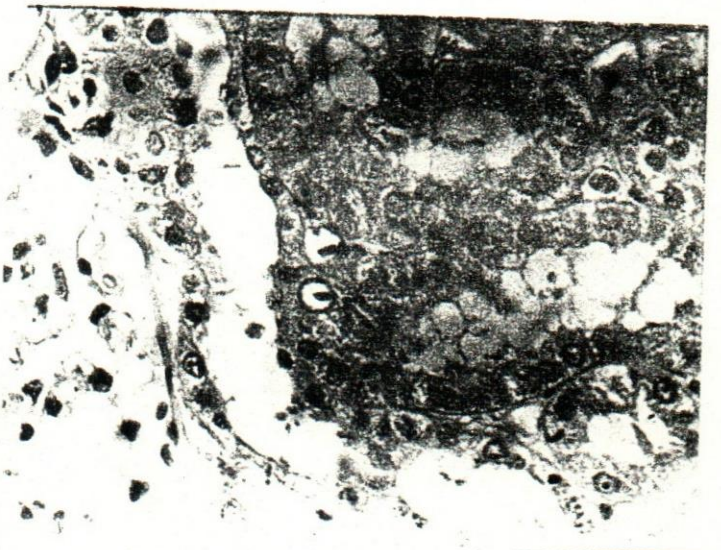


Fig. (1 d)

СРЕДНЕГО РАССЕЯНИЯ

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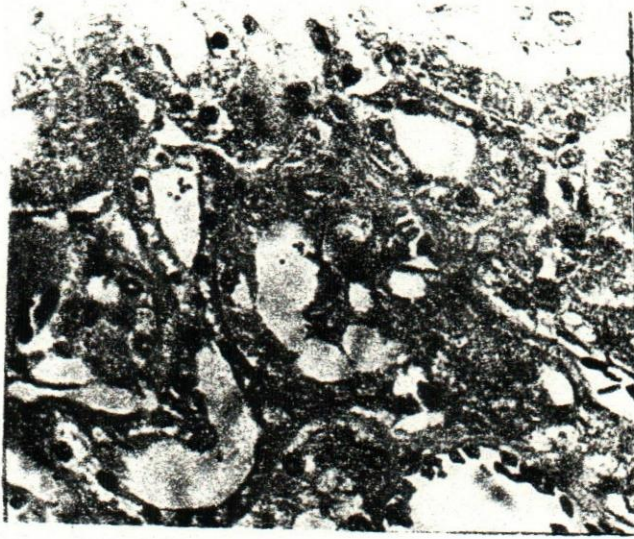


Fig. (2)

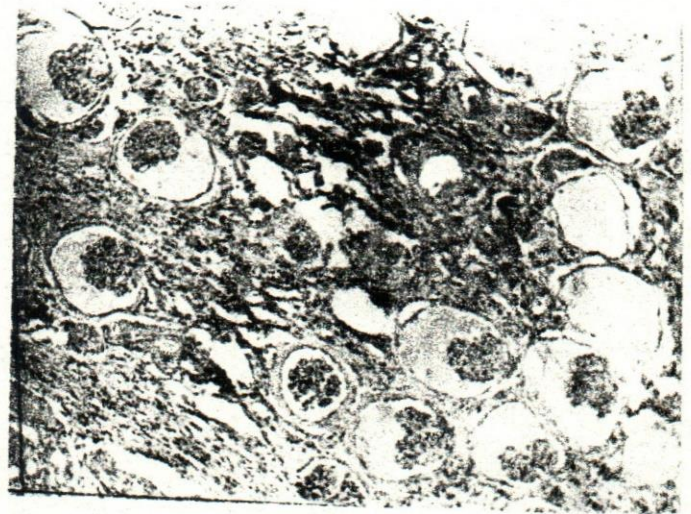


Fig. (3 a)



Fig. (3 b)