دراسة عن الحصبة الكلبية في محافظة أسيوط

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أجري البحث على عدد ثلاثين واربعون كلباً، ضالعاً في محافظة أسيوط. أخذت عينات من عينات الدم منها وأجريت عليها الفحوص الأكلينيكية، وكذلك افلام دموية على شرائح زجاجية تم صياغتها بعدد من الصبغات وفحصت جيداً. أخذت عينات من جميع أعضاء هذه الحيوانات بعد قتلها بالصيد من الكهربائية مباشرة، ثم نقصتها بعد تمريرها وسمعتها بعدد من الصبغات.

أسفرت النتائج عن وجود أجسام ضمائية سيتوللام كرات الدم السبعة في عدّة عشرة كلاب، وكذلك وجود هذه الأجسام في سيتوللام الخلايا الطالبية المطبخة لجدر المعدة والمثانة البولية في بعض الكلاب. ولقد دست خصائص هذه الأجسام الضمائية، وكذلك التغيرات الباثولوجية الموجودة بعد دراسة الأعراض الأكلينيكية، وقد كانت واضحة على ستة عشرة كلباً. وتواصلت النتائج وأمكن تشخيص مرض الحصبة الكلبية، وذلك بالاعتماد على وجود الأجسام الضمائية، وكذلك التغيرات الباثولوجية والأكلينيكية.
STUDIES ON CANINE DISTEMPER AMONG STRAY DOGS
IN ASSIUT GOVERNORATE
(With 2 Tables & 6 Figs.)

BY
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SUMMARY

Canine distemper was diagnosed in stray dogs obtained from different localities in Assiut Governorate. Diagnosis of the cases was based on the clinical symptoms observed, confirmed by the demonstration of inclusion bodies in mononuclear and polymorphonuclear circulating leucocytes, histopathological and haematological findings.

INTRODUCTION

Canine distemper is one of the serious fatal viral disease even in germfree dog, McCULLOUGH; KRAKOWKA and KOESTNER (1974). GORHAM, (1960) proved that in addition to the virus infection, bacterial and mycotic pathogens contribute significantly to mortality rate.

KRAKOWKA; HIGGINS and KOESTNER (1975) mentioned that the viraemic stage in canine distemper infection is usually associated with a leucocytic changes which mainly lymphopenia of both B and T cells. These may persist in the convalescence stage. Variability in the range and severity of the symptoms of the disease has been emphasized by many laboratory workers and clinicians and were assumed to secondary bacterial infection, CORNWELL et al. (1965), SCHALM (1961) found that absolute lymphopenia was a characteristic feature in the naturally infected cases with the disease. Many accounts have been given on the pathologic alterations of natural distemper among canines, LAUDER et al. (1954), CAMPBELL (1957) and PITEL and BINDRICH (1958). CORNWELL et al. (1965), SMITH, JONES and HUNT (1974) stated that in experimental studies of distemper as in the natural diseased cases, the most prominent structural changes occur in the lungs, reticuloendothelial centres, central nervous system, integument and lymphoid tissues. Characteristic intracytoplasmic and intranuclear inclusions were demonstrated in the epithelial cells of various tissues as well as in microglia cells. HUNT et al. (1963) proved that the inclusion bodies could be histochemically differentiated from those of infectious canine hepatitis by their negative results for deoxynucleic acid reaction, while CORNWELL et al. (1965) mentioned that inclusion bodies in circulating leucocytes were evolved as a diagnostic technique for the disease. SCHALM and GRIFFLE (1974); SCHALM; JAIN and CORROLL (1975), ARCHER and JEFFCOTT (1977) demonstrated intrazythrocyte inclusion bodies. The scope of the present study is 1. to throw some light upon the incidence of canine distemper among stray dogs at Assiut province. Secondly, to register the most prominent clinical, haematological and morphological findings in natural cases. Moreover the inclusion bodies in the circulating blood cells were studied to determine their possible significance in diagnosis of the disease in natural cases.

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MATERIAL and METHODS

The present study was carried out on forty-three stray dogs collected alive from different localities at Assiut province, EL-Weliedia, Abnub and Assiut, to the department of surgery, faculty of veterinary medicine, Assiut University. Sex, age and weight of these dogs were recorded. The animals were put under clinical observation daily for a week. The sixteen animals which showed symptoms could be probably related to canine distemper were isolated, blood smear preparations from these suspected dogs were fixed in ethyl alcohol-ether, stained with haematoxylin and eosin Giemsa. Methylene blue and Maximow haematoxylin Azur-Il-eosin and examined for inclusion bodies.

Differential leucocytic count was performed. Anticoagulated blood samples were collected from the jugular vein was used for haematological studies. Total erythrocytes, total leucocytes, packed cell volume were estimated. Smears from the anticoagulated blood samples were stained for bile, haemossedrin and desoxyribonucleic acid, BANCROFT (1967).

Samples of tissues for light microscopy were taken from lung, stomach, intestine, lymph nodes, spleen, liver, kidney, urinary bladder and brain within half hour after killing by electric-shock were collected. The samples were fixed in 10% buffered formalin solution, paraffin blocks were made and 6-8 sections were stained and examined.

RESULTS

I- Clinical findings:

Sixteen out from forty-three stray dogs obtained were clinically isolated. Sex, age and weight as well as the most prominent clinical features of suspected distemper infection were shown (Table I). Although dyspnea was noticed in all animals, coughing and nasal discharge were observed in ten dogs. Diarrhea was seen in eleven animals. Thirteen dogs showed various degrees of foot pad hyperkeratosis. Nervous manifestations could not be observed in any of the animals in addition no significant deviation from the normal body tempreature could be detected.

II- Haematological findings:

The findings were shown in table I, II. The findings pointed out that anaemia, leucopenia, neutropenia and lymphopenia, with mean values of 4.2, 3.31%, 35.7% and 7.0, were prominent and constant in ten animals. The packed cell volume was under the normal theshold in all the sixteen cases. Leucocytesis was seen in some dogs and lymphocytosis in others. In six animals eosinophilia was pronounced. but the monocytic count in all the animals was fluctuating within the normal number of canine monocytes.

III- Microscopic findings:

Intracytoplasmic acidophilic inclusion bodies had been detected in the peripheral blood leucocytes of ten animals from the sixteen clinically suspected cases. The inclusion were rounded at oval and their sizes ranged from 3.1-9.9 m. The majority of them were found in the peripheral rim of the cytoplasm. They were found in the cytoplasm of the neutrophilic cells (Fig. 1 a,b) as well as in the monocytes (Fig. 2). They were usually homogenous, sharply demarcated, singly located and occasionally surrounded by hallow zone. These inclusion bodies were feulgen reaction negative and showed also negative results when specific stains for bile and haemosedrin were used. But positive results with specific inclusion stain as Giemsa. Methylene blue and Maximow haematoxylin azur-Il-eosin were obtained.

The lungs of thirteen clinically suspected cases showed varied degrees of pneumonia (Fig. 3), in addition to that three dogs showed suppurative bronchopneumonia.

Examination of the stomach revealed catarrhal gastritis in five animals, however intracytoplasmic acidoophilic inclusions could be seen in the glandular epithelium of one case (Fig. 4).

Examination of the intestine revealed catarrhal enteritis in all cases. Six dogs showed parasitic enteritis with prominent submucosal eosinophilic cell infiltrations.

The urinary bladder showed variable degree of inflammatory process in all cases examined. The alterations consisted of congestion, oedema and lymphohocytic infiltration. In two cases intraepithelial intracytoplasmic acidoophilic inclusion bodies were detected (Fig. 5). They were mostly oval, homogenous and surrounded by clear hallow zone. In addition to that the transitional epithelium showed hydric degeneration.

In the lymph nodes and spleen, moderate degree of lymphoid exuption was constant finding. In addition some cases showed prominent plasma cell population.

In the liver, congestion and necrobiotic changes were marked in six dogs. However neither intracytoplasmic nor intranuclear inclusions could be detected.

Examination of the kidney revealed prominent focal interstitial nephritis (Fig. 6) in eight cases.

Microscopical examination of the brain revealed no pathological changes. Table II summarize the results of the clinical, haemato logical and morphological findings for each dog.

DISCUSSION

In the present work, clinical symptoms could be probably related to canine distemper were observed in sixteen dogs from forty three dogs examined. The clinical signs included dyspnea, footpad hyperkeratosis, depression, diarrhea, cough, nasal discharge, ocular discharge and vomiting. However neither dermal nor nervous manifestations were observed. Table II showed variability in the range and severity of the clinical symptoms observed. Such variations could be contributed to the individual susceptibility, genetic factors, strain of the virus and secondary pathogens. CORNWELL et al. (1965). Absence of fever in our animals could be attributed to the fact that the animals may be probably in the post-viraemic stage. In our haematological findings, Table II, anaemia, leucopenia and lymphopenia were detected in ten animals. These haematological findings correspond with those given by SCHALM (1961), SCHALM, JAIN and CORRELL (1975). The lymphopenia observed in our findings is probably explained by the lymphoid exuption noticed in the lymphoreticular tissues. In six dogs eosinophilia was observed. This could be related to the parasitic enteritis could be diagnosed microscopically in these dogs. The neutrophilia observed in three dogs are blamed on the activities of secondary bacterial infection.

On microscopic examination, intracytoplasmic inclusion bodies could be seen in thirteen animals from the sixteen distemper suspected dogs. The inclusions either seen in the blood cells or the transitional epithelium of the urinary bladder or in the glandular epithelium of the stomach have the same staining properties. All of them were round to oval in shape, intracytoplasmic in location and surrounded by hallow zones. In our present work and of particular interest, intracytoplasmic leucocytic inclusions were seen in ten animals. ARCHER and GEFCCOTT (1977), SCHALM and GRIEBLE (1974) and SMITH et al. (1974) stated that such inclusions in leucocytes is a good evidence that the virus is present, but their absence is of little value in determining the absence
of the virus. Taking in consideration the concept of the previous authors, our results indicated that an accurate diagnosis of ten animals from the sixteen suspected cases basing upon the demonstration of intracytoplasmic inclusions in their peripheral blood leucocytes. These intracytoplasmic inclusions in the adult leucocytes suggests its viral origin and probably related to an leucocytic viraemia as reported by CHEVILLE (1976.), KRAKOWKA; HIGGINS and KOESTNER (1979). The appearance of inclusion bodies in the stomach and urinary bladder of three animals probably related to the predilection site for this viscerotrophic virus. But the microscopic absence of both blood and tissue inclusions in three dogs may correspond with the previous claim that their disappearance occurs at any stage of the disease, LAUNDER et al. (1954). Neither intracytoplasmic nor intranuclear inclusion bodies could be observed in the hepatocytes of all dogs examined. Moreover the inclusions detected in the leucocytes or epithelium had the same staining characters of distemper inclusion described by HUNT et al. (1963) and ZHANOW (1975).

Lung inflammation with or without involvement of the bronchi appeared in all clinically suspected cases. This fact was in harmony with the concept UBB and KENNY (1970), who stated that, proliferative and or exudative pneumonia, unassociated with canine distemper, seldom occur in dogs. Varied degree of interstitial pneumonia was seen in most of the cases and this could be considered as an universal reaction in viral infections. The bronchopneumonia seen in three dogs could be related to secondary bacterial infections. As reported in our findings varied degrees of catarrhal gastroenteritis, cystitis, focal interstitial nephritis and lymphoid depletion were described by LAUNDER et al. (1954), CAMPELL (1957), PITE and BINDRICH, 1958, CORNWELL et al. 1965, JUBB and KENNY, 1970 and SMITH; JONES and HUNT, 1974.

Gross or hisopathological changes were not observed in the brain. This may be due to the strain of the virus. SMITH et al. (1974) stated that variants of the virus have been suggested as the causative agent in infection of the central nervous system or even nervous manifestation occur at the later stage of the disease.

From our results we can conclude that, the demonstration of inclusions in blood leucocytes could be used for accurate diagnosis of canine distemper in ten dogs form the sixteen suspected cases. In the rest of cases the diagnosis could be based upon the finding of inclusion in tissues, clinical, haematological and histopathological findings. The latter could be used to confirm the diagnosis. WATSON and WRIGHT (1974), The absence of inclusions does not preclude the diagnosis and the demonstration of the virus in tissues and smears in such cases require the florescence antibody technique.

REFERENCES


Campbell, R.S.E. (1957): Cited by Cornwell et al. (1965).


**CANINE DISTEMPER**


**DESCRIPTION OF FIGURES**

Fig. (1 a,b): Showing leukocytic inclusion. H.E. & X 1250

Fig. (2): Showing mononuclear inclusions. H.E. & X 1250

Fig. (3): Lung showing septal thickening. H.E. & X 322.5

Fig. (4): Showing epithelial inclusions in stomach. H.E. & X 322.5

Fig. (5): Showing epithelial inclusions in urinary bladder. H.E. & X 322.5

Fig. (6): Kidney showing interstitial nephritis. H.E. & X 322.5

Table (1)
Showing the results of the haematological parameters

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