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AN OUTBREAK OF PASTEURELLOSIS IN KANO ZOO

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Abstract: An outbreak of pasteurellosis caused by *Pasteurella multocida* is reported in which six elands (*Taurotragus oryx*), a gnu (*Connochaetes taurinus albojubatus*), a zebra (*Equus burchelli*), five kangaroos (*Macropus rufus*), an ostrich (*Struthio camelus camelus*) and a bateleur eagle (*Terathopius ecaudatus*) died in Kano Zoological Gardens toward the end of the rainy season of 1978. Confirmation was based on cultural isolation of *P. multocida*. Analysis of likely factors that could have contributed to the outbreak indicated that it may have been precipitated initially by climatic stress associated with changes in rainfall, relative humidity and temperature.

INTRODUCTION

Haemorrhagic septicaemia is prevalent in domestic cattle in Nigeria during the rainy season, especially in marsh-land and swampy places.^{1,4} Reports of pasteurellosis in captive and wild animals in Nigeria are rare; the only mention was a case report in a Nigerian wild buffalo.⁵

This paper describes an outbreak of the disease in some species of wild animals and birds held in captivity at the Kano Zoological Gardens.

MATERIALS AND METHODS

Case History: The outbreak involved six species of captive wild animals and birds which were acquired from both within the country and from East Africa and Australia. A description of the Zoological Gardens including housing, the number and variety of species of animals and birds in captivity was described earlier.⁶

During the outbreak 6 of 10 elands (*Taurotragus oryx*), one gnu (*Connochaetes taurinus albojubatus*), a zebra (*Equus burchelli*), five kangaroos (*Macropus rufus*), an ostrich (*Struthio camelus camelus*) and a bateleur eagle (*Terathopius ecaudatus*) died without premonitory signs between early

November and mid December, 1978. All the animals died suddenly and did not receive Veterinary attention at the time of terminal crisis. Their carcasses were submitted to our laboratory for post-mortem examination.

Necropsy: At post-mortem examination, tissue smears of lungs, liver, lymph nodes, spleen, heart as well as skeletal muscle were stained by Grams method and whole heart blood smears were stained with Giemsa.

Materials from the same infected tissues were sent to the Department of Veterinary Pathology and Microbiology, Faculty of Veterinary Medicine Ahmadu Bello University, Zaria, Nigeria where bacterial culture was performed as described by Carter.³ Other specimens were sent to the National Veterinary Research Institute, Vom, for bacteriologic examination.

Climatic information for the period was obtained from the Meteorological station, Ministry of Aviation, Kano Airport.

RESULTS

Elands: One carcass was emaciated; the others were in good condition. The carcasses had lesions suggestive of acute septicaemia. The post-mortem picture

was characterized by massive haemorrhages in the epicardium, endocardium, kidney, lungs, the serosa and mucosa of the gastro-intestinal tract, lymph nodes and skeletal muscles. The liver and spleen were acutely congested. Other gross lesions were bronchopneumonia, hydrothorax, pleuritis, pericarditis and adhesion of pericardium to thoracic wall. The trachea was frothy and congested. Peritonitis, yellowish and gray necrotic areas in the lobes of the liver were seen in one emaciated carcass.

Gnu: Necropsy findings in the gnu were subcutaneous haemorrhages extending into skeletal muscles and the blood was dark-red. The lungs and trachea were acutely congested and contained froth, while there were haemorrhages in the epicardium, endocardium and gastro-intestinal tract.

Burchell's zebra: Significant post-mortem findings were bronchopneumonia, hydrothorax, pericarditis and hydropericardium; other gross lesions were haemorrhages in the stomach, intestines and lymph nodes.

Kangaroos: Gross lesions were consistent in all the five carcasses examined. They included bronchopneumonia, acute congestion of the liver and spleen, and haemorrhages in the lymph nodes and gastro-intestinal tract.

Ostrich and Eagle: Both carcasses yielded nearly similar gross findings including congestion of trachea and lungs, petechial and ecchymotic haemorrhages on the epicardium, endocardium, kidneys and the intestines, and congestion of the liver, pancreas and spleen.

Positive *Pasteurella multocida* identification from the elands was based on the presence of gram-negative bipolar bacilli in the tissue smears, characteristic fine translucent non-haemolytic colonies on blood agar, absence of growth on MacConkey agar, positive indole reaction, negative urease

reaction and acid production with the sugars glucose, sucrose and mannose.

Similar positive identification of *P. multocida* from the gnu, zebra, kangaroo, ostrich and eagle specimens was carried out at the Diagnostic Laboratory, National Veterinary Research Institute, Vom.

DISCUSSION

The zebra, kangaroo and eland are not indigenous to Nigeria, and probably means that they are not reservoirs of infection for domestic cattle and other ruminants in Nigeria.

The virtually unlimited host range of *P. multocida* is indicated by reports of isolations from many wild animals and birds including an eagle and a kangaroo.^{2,7} The occurrence of fowl cholera or pasteurellosis in the ostrich and eagle in this outbreak is interesting as there appears to be no records of this disease in birds of prey nor in captive or free-living birds in this country. In other parts of the world, there are a few reports of pasteurellosis in both captive and free-living birds. Keymer⁵ did not encounter fowl cholera or pasteurellosis in a survey of diseases in birds of prey whereas the disease was suspected in a wild bald eagle, but the most interesting report² is perhaps that in which the infection spread from coots to waterfowl and small rodents, resulting in the death of fowls and marsh hawks.

It would appear that elands are highly susceptible to *P. multocida* infection as 6 of 10 elands kept in the Zoo died during the outbreak. It is advisable that elands kept in captivity be vaccinated against *P. multocida*. This would be necessary at the beginning of the rainy season and at the terminal stage of the rains prior to onset of the dry season. Adequate shelters should also be provided day and night so as to protect the animals from climatic stress which could predispose them to the disease.

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