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PATHOLOGY OF ZOO ANIMALS AT THE UNIVERSITY OF IBADAN ZOOLOGICAL GARDEN

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SUMMARY

A retrospective examination of post mortem records (1969 - 1990) revealed that 132 cases of zoo animals were presented for post-mortem. The common conditions diagnosed include gastroenteritis, respiratory disease and malnutrition/starvation which accounted for 70% of cases encountered. Other conditions were tumours, chemical poisoning, anthrax and actinomycosis.

KEY WORDS: Pathology, Zoo Animals, Zoological Garden.

INRODUCTION

Keymer (1974) reported that information on the pathology of zoo animals was very scanty. Until recently, little work has been done to find out the types of parasites found in these animals (Crockett, 1983). Work done on wildlife diseases has been initiated because the problem under investigation was of zoonotic importance or is related to the health of domestic animals (Jones, 1982).

A few conditions, anthrax, verminous penumonia and neoplasia have been reported at the Ibadan zoological Gardens (Idowu *et al*_1975; Ikede *et al*., 1976 and Akinyemi and Ikede, 1982). It is also known that although most primates in the zoo are mainly vegetarians, they require a certain amount of animal protein. Therefore, their diet should vary, and growing and breeding animals should be supplemented with vitamins and minerals (New, 1966).

In this report, we highlight the various conditions diagnosed in zoo/wild animals using both gross and histopathological studies.

MATERIALS AND METHODS

Animals

Animals used for this study were those kept at the University of Ibadan Zoological Garden.

Records of postmortem performed on zoo/wild animals kept at the department of veterinary pathology, University of Ibadan between 1969 and 1990 were also used.

Housing

The animals at the zoo are kept in various types of enclosures and the carnivorous ones are fed on slaughtered small ruminants and cattle meat, the herbivores on grasses and shrubs while the omnivorous animals feed on fruits.

Pathology

At post mortem, tissues were fixed in 10% buffered formalin, processed routinely for histopathology and stained with haematoxylin and eosin (H and E.). Special staining was done using Martius Scarlet Blue (MSB), Periodic Acid Schiff (PAS.)

RESULTS

The results of the pathological conditions observed in zoo animals at post mortem are shown in Tables I - VI.

Many of the animals examined were observed to have died of pneumonia, gastroenteritis, malnutrition and septicaemic conditions, although few had neoplastic conditions, while others died of poisoning or toxaemia. In rare cases trauma due to bullet wounds and heart water/hepatitis were diagnosed.

DISCUSSION

During this study period (1969 - 1990) various pathological conditions were diagnosed in the animals kept at the University of Ibadan Zoological Garden. Gastroenteritis was the most common lesion observed. The common occurrence of this lesion was associated with intestinal parasites and the interplay between factors such as change in diet and unsuitable diets. One of the most important effects of this lesion which is malabsorption has been previously reported (Keymer, 1974).

The next commonly encountered lesion in this study was pneumonia. The occurrence of this condition was attributed to various infectious agents (parasitic, bacterial, mycotic and viral agents). Petrak (1982) reiterated that inclement weather can play a role in the development of pneumonia as been reported for non-caged domestic animals. Malnutrition and starvation were also seen in several animals. These conditions were attributed to poor management and feeding as there was no record of supplementation of the diets of the animals in the zoo with any vitamins or minerals. Septicaemic of supple conditions like anthrax were observed. In the case of anthrax 2 genets died and infection was associated with beef obtained from the abattoir that was fed to the animals (Ikede *et al.* 1976).

Trauma caused by bullets was not common, but two cases, one in an antelope and another in a mangabay were diagnosed. It is noteworthy that animals that cause injuries to others are usually eliminated by shooting. Also, not common was heart water , which was diagnosed in one deer once.

Although tumours were infrequent, two cases of fibroma were observed in reptiles (Idowu *et al.*, 1975).

Gout was a frequent finding in birds in the collection. The condition is usually

associated with excessive protein consumption or insufficient intake of water (Petrak, 1982).

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TABLE I: Pathological conditions in ruminants

Animals	No. of Cases Examined	Diagnosis		Number (%)
Maxwell Diukers	21	(i)	Necrotic abomasitis	1 (4.76)
		(ii)	Pneumonia	2 (9.52)
		(iii)	Shock	2 (9.52)
		(iv)	Purulent adenitis (Actinomycosis)	1 (4.76)
		(v)	Fibrinous pericarditis/Pleurisy	3 (14.28)
		(vi)	Chemical poisoning	4 (19.0)
		(vii)	Starvation	1 (4.76)
		(viii)	Gangrenous Stomatitis	1 (4.76)
		(ix)	Pulmonary Congestion	1 (4.76)
		(x)	None	6 (28.52)
Antelopes	2	(i)	Pasteurellosis/Enterotoxaemia	1 (50)
		(ii)	Gun shot wound	1 (50)
Bush bucks	3	(i)	Anaemia/Haemorrhagic enteritis	1 (33.3)
		(ii)	None	2 (66.67)
Elephants	5	(i)	Gastroenteritis	3 (60.0)
		(ii)	Toxaemia	1 (20.0)
		(iii)	Intravascular haemolysis	1 (20.0)
		(iv)	Helminthiasis (strongylosis)	1 (20.0)
Deers	3	(i)	Heart water/Hepatitis	1 (33.33)
		(ii)	None	2 (66.67)
Hippopotamus	2	(i)	Haemorrhagic enteritis/Pulmonary Congestion	1 (50.0)
		(ii)	None	1 (50.0)

TABLE II: Pathological conditions in carnivores

Animals	No. of Cases Examined		Diagnosis	Number (%)
Civet cats	2	(i)	Salmonella enteritis	1 (50.00)
		(ii)	None	1 (50.00)
Australian skunks	1	(i)	Cannibalism	1 (100.00)
Mangoose		(i)	Cannibalism	1 (20.00)
Lemurs	5	(ii)	Ulcerative haemorrhagic enteritis	1 (20.00)
		(iii)	Skin tumour	1 (20.00)
		(iv)	None	1 (20.00)
Caracals	1	(i)	Septicaemia	1 (100.00)
Genets	2	(i)	Anthrax	2 (100.00)
Hyaenas	2	(i)	Malnutrition	1 (50.0)
		(ii)	Euthanasia	1 (50.0)
Lions	2	(i)	Malnutrition	1 (50.00)
		(ii)	Granulomatous bronchopneumonia	1 (50.00)
Red River Hog	2	(i)	Interstitial pneumonia/ acute balanoposthitis	1 (50.00)
		(ii)	Haemorrhagic diathesis	1 (50.00)

TABLE III: Pathological conditions in primates

Animals	No. of Cases Examined		Diagnosis	Number (%)
		(i)	Helminthosis (Trichuriasis)	5 (26.32)
		(ii)	Metatarsal fracture with exostosis	1 (5.26)
		(iii)	Encephalitis	1(5.26)
		(iv)	Ulcerative oesophagitis	1(5.26)
Monkeys	18	(v)	Fibrinous pleuritis	1(5.26)
		(vi)	Bacterial septicaemia	2(10.52)
		(vii)	Ruptured diaphragm	1(5.26)
		(viii)	Haemorrhagic tracheobronchitis/fatty liver	1(5.26)
		(ix)	Lung worms/head trauma	1(5.26)
		(x)	None	4(21.05)
		(i)	Haemorrhagic tracheobronchitis	1(50.00)
Mangabays	2	(ii)	Gun shot wound	1(50.00)
Baboon	1	(i)	Haemorrohagic bronchopneumonia	1(100.00)
		(i)	Oesteodystrophia fibrosa.	1(20.00)
		(ii)	Toxaemia/nutritional deficiency	1(20.00)
Pottos	5	(iii)	Simian bone disease	1(20.00)
		(iv)	Haemorrhagic enterocolitis	1(20.00)
		(v)	None	1(20.00)
		(i)	Patent foramen ovale	1 (50.00)
Chimpanzees	2	(ii)	None	1 (50.00)
		(i)	Cerebral haemorrhage (fracture of the skull)	1 (50.00)
Simians	2	(ii)	Haemorrhagic tracheobronchitis/fatty liver	1 (50.00)
		(i)	Starvation/pulmonary congestion and oedema	1 (25.00)
		(ii)	Haemorrhagic enteritis	1 (25.00)
Others	4	(iii)	Helminthiosis (Trichuriasis)/non-suppurative encephalitis	1(25.00)
		(iv)	None	1(25.00)

TABLE: IV: Pathological conditions in reptiles

Animals	No. of Cases Examined	Diagnosis		Number (%)
Pythons	7	(i)	Granulomatous myositis	1(16.67)
		(ii)	Fibroma	
		(iii)	Cornifying epithelioma	1(16.67)
		(iv)	Ulcerative enteritis /Pulmonary congestion	1(16.67)
		(v)	Helminthiasis	1(16.67)
		(vi)	Rectal hair ball	1(16.67)
Viper	1	(i)	Verminous pneumonia	1(100.00)
Tortoise	2	(i)	Instestinal torsion with peritonitis and Toxaemia	1(50.00)
		(ii)	Necrotizing enteritis	1 (50.00)
Boa Constrictors	2	(i)	Hepatoma/pneumonia	1(50.00)
		(ii)	Hepatitis	1(50.00)
Rattle Snake	1	(i)	Purulent Peumonia/catarrhal entreritis	1(100.00)
Others	2	(i)	Gangrenous dermatitis	1 (50.00)
		(ii)	Ulcerated fibroma	1 (50.00)

TABLE V: Pathological conditions in avian

Animals	No. of Cases Examined	Diagnosis		Number (%)
Parrots	6	(i)	Haemorrhagic gastroenteritis	2 (33.34)
		(ii)	Candidiasis	1 (16.67)
		(iii)	Asphyxation	1 (16.670)
		(iv)	None	2 (33.34)
Peacocks	2	(i)	Haemorrhagic enteritis	2 (100.00)
Bush Fowls	2	(i)	Parasitic enteritis	2 (100.00)
Ostriches	2	(i)	Haemorrhagic gastroenteritis	2 (100)
		(ii)	Mycotic pneumonia (*Aspergillus fumigatus*)	1 (50.00)
Flamingoes	3	(i)	Gout	1 (33.40)
		(ii)	None	22 (66.67)
Pelicans	2	(i)	Fracture of the skull (parietal bone)	1 (50.00)
Pigeon	1	(i)	Autolysis	1 (100.00)
Mynal bird	1	(i)	Unilateral suppurative ophthalmitis	1 (100.00)
Rock Hyrax	1	(i)	Acute peritonitis	1 (100.00)
Others	6	(i)	Gout	3 (50.00)
		(ii)	Organophosphorus poisoning	1 (16.33)
		(iii)	Air Sacculitis/ascarjasis	1 (16.33)
		(iv)	Capillaria infection.	1 (16.33)

TABLE VI: Pathological conditions in other animals

Animals	No. of Cases Examined		Diagnosis	Number (%)
		(i)	Viral Hepatitis	1 (50.00)
Cotimudi	2	(ii)	None	1 (50.00)
Sitatunga	1	(i)	Asphyxation	1 (0.00)
		(i)	Gastroenteritis	1 (50.00)
Murines	2	(ii)	Interstitial pneumonia	1 (50.00)