Veterinary Work with Ostriches: an African Perspective

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Summary

The ostrich (*Struthio camelus*) is not only indigenous to much of East Africa but is also increasingly being kept in captivity there, for both commercial and display purposes. An understanding of the normal biology and diseases of the species in its countries of origin can be important when dealing with ostriches and other ratites in different parts of the world.

Remarkably little has been published on causes of morbidity and mortality in free-living East African ostriches but data exist on their basic biology. Diseases of captive ostriches in Kenya and Tanzania are essentially similar to those reported elsewhere but some conditions may be novel and warrant greater investigation. There is a constant danger of spread of macro- and microparasites between captive and free-living ostriches, domestic livestock and free-living birds. Zoonoses are an additional important consideration.

Introduction

The ostrich is a ratite bird which, although originally widely distributed in Africa and Arabia, is now confined to the former continent and in many areas is declining.[1] Over 200 years ago success in keeping, and probably breeding, the ostrich took place in Darfur, Western Sudan[2] and pre-dates the much vaunted work of the South Africans during the last century.[3] Africa is, therefore, not only the ancestral home of this species in the wild but also the place where most research on ostriches in captivity has been carried out - much of it over a surprisingly long period of time.

In recent years there has been an upsurge of interest in ostriches and their management in captivity and “ostrich farming” has become popular in North America, Europe, Australia and other parts of the world. A substantial amount of information has been published, both in scientific and lay journals and knowledge and understanding of the veterinary aspects of the species have increased enormously.[4] However, little of the research to date has been linked with field studies of free-living ostriches in Africa, nor with accumulated knowledge and experience of their maintenance in captivity on that continent. This is surprising since much can be learned about the basic biology and causes of morbidity and mortality of a species by studying it in its natural environment.

During the course of two years working in Tanzania, and subsequently (following evacuation from the war in Rwanda) periods in Kenya, the author was able to gain experience of captive ostriches and to collate information about the status and important biological features of the species in the wild. In this paper some of the findings are presented and discussed.

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Ostriches in captivity in East Africa

The keeping of ostriches in captivity for commercial purposes is a relatively new development in East Africa although, as mentioned earlier, the species was kept in the Sudan, which lies to the north west of Kenya, at least two centuries ago. Ostrich “farming” has to date proved particularly popular in Kenya and is only attempted to a lesser extent in Tanzania. Many of the enterprises involved still collect eggs from the wild under licence (and thus, strictly, "ranch" rather than "farm") but there have also been successes in captive propagation. Technical problems have often arisen over management and welfare, including for example, inadequate diets[5] and the optimum and most humane methods for the slaughter of birds. There has been public criticism, both within the East African countries themselves and from outside, about the impact that the taking of eggs for ostrich “farming” may be having on wild populations. Other concerns are voiced over standards of husbandry and what appears to be a lack of skilled veterinary care.

Veterinary aspects of captive and free-living ostriches

Many of the veterinary problems that are encountered in captive ostriches in East Africa are related to management - for example, long bone diseases, malnutrition, traumatic injuries and the ingestion of foreign bodies.[6] Low hatchability of eggs and poor survival of ostrich chicks are also frequent. Other diseases reported in captive East African ostriches are similar to those seen elsewhere (Table 1), but there are many instances of morbidity and mortality when either no detailed investigations have been carried out or the results have proved inconclusive. These warrant further study and research.

Some indication of the spectrum of conditions seen by the author is given in Table 2 - diagnoses and findings over nine months at one establishment in Tanzania. There is a clear need for a greater input by the veterinary profession and for closer collaboration between veterinarians and those who keep and manage ostriches.

A certain amount of research has been carried out in East Africa on the biology of the free-living ostrich.[7,8] This provides useful background data for those who are working with the species in captivity. Surprisingly, there is little comparable published information on diseases and causes of morbidity and mortality of the species in that region. Unpublished veterinary data, some from the early 1970’s by the author (JEC) working with Hurxthal[9] and others, provides limited information on *post-mortem* and pathological findings. There have also been parasitological surveys. Most research in East and Central Africa has been related to the possible role of the ostrich as a reservoir for diseases of domestic livestock or humans.[10,11,12] Some organisms and diseases of the ostrich have been the subject of interest in Africa for many years - for example, protozoan and metazoan parasites.[13,14,15]

Future needs

The keeping of ostriches in captivity in East Africa for commercial reasons is a very recent development and, inevitably, problems arise. Higher standards of management are essential and the provision of veterinary advice needs to be expanded.

The opportunities for more research on diseases of free-living ostriches in the region are substantial. The species thrives in many national parks and remains relatively common in some other localities. Veterinarians and others should capitalise on this and establish a database on health and diseases. The proximity of many free-living ostriches to humans and to domesticated mammals and birds means that there is a constant risk of transmission of disease. The greatest danger is probably that of spread of infectious agents, e.g. Newcastle

disease virus, from poultry to ostriches. Restrictions on the keeping of domestic stock in localities where free-living ostriches and other wild birds are found have been recommended.[16] The risk of transmission of “exotic” micro or macroparasites to other parts of the world has already been demonstrated.[17]

Other important needs relate to the conservation of free-living ostriches[18] and the welfare of captive birds. Codes of practice have been introduced for captive ostriches in the UK and elsewhere in Western Europe and some might usefully be adapted to the species in East Africa.

Conclusions

Much remains to be learned about the normal biology, the diseases and the pathology of the ostrich. Some of this is being acquired as a result of research in North America, Europe and elsewhere. However, the continent of Africa, which still harbours large numbers of free-living ostriches and where ranching and farming of the species undoubtedly originated, provides an important and potentially fertile ground for study.

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Table 1: Diseases and causes of death of captive ostriches reported in Kenya and Tanzania (mainly unpublished, sometimes not confirmed by laboratory tests)

Endoparasitism - nematodes, probably *Libyostrongylus douglassi*
- cestodes, probably *Houttuynia struthionis*

Ectoparasitism - ticks, mites and lice

Respiration infections - pneumonia, air sacculitis, sinusitis

Bacterial enteritis and septicaemia, mainly of young birds

Fading chick syndrome, sometimes associated with diarrhoea and dehydration

Omphalitis (yolksac infection)

Infertility

Failure of eggs to hatch - sometimes associated with bacterial and fungal

(? *Aspergillus*) infection, often probably environmental

Fractures and other traumatic lesions

Locomotor disorders - probably nutritional

Gastric foreign bodies and impaction

Capture myopathy

Predation - humans, hyaenas, dogs, cats, occasionally birds of prey

Table 2: Diagnoses and findings in live and dead ostriches over a nine month period at one establishment in Tanzania

Finding	Comments
Locomotor disturbances: inability to walk, staggering gait	A major problem initially in growing birds. Diagnosed as a nutritional deficiency. Further cases did not occur following improvement of diet including calcium supplementation.
Fractures - apparently spontaneous	Probably secondary to calcium deficiency (above).
Other traumatic lesions - abrasions, pressure sores, lacerations, contusion	Some secondary to recumbency due to calcium deficiency (above), others due to kicks, falls etc.
Penile haemorrhage	One case only, cause unclear: healed spontaneously.
Foreign bodies in stomach	An incidental finding *post mortem*. Some cases of impaction. One case of proventricular perforation leading to death.
Helminth eggs in routine faecal samples	Significance unclear. Adult parasites not located.
Caecal cores - necrotic material	One case only (*post mortem*) Histopathological and bacteriological investigation failed to elucidate cause.
Mononuclear cell infection of kidney	An incidental finding in two birds. Significance unclear.
Anaemia-low rbc, pvc and Hb values.	A consistent feature in birds with calcium deficiency (above), possibly some others.

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