An Occurrence of Stomach Impaction in Ostriches (Struthio camelus) on a Farm in Zambia Associated with High Mortality

Yoshikiko SATO1, Jun YASUDA1, Henry SINSUNGEWE1, Henry CHIMANA1, and Gibi SATO1
Nagano Livestock Hygiene Service Center, 1993 Amori, Nagano 380, Japan and 2Department of Disease Control, School of Veterinary Medicine, University of Zambia, P. O. Box 32379, Lusaka, Zambia
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ABSTRACT. Fifty-one ostriches (Struthio camelus), 6 weeks old, were imported from Namibia and introduced onto a farm in Zambia. Soon after introduction, most of the birds manifested clinical symptoms such as anorexia and diarrhea and 19 birds died within 1 week. The proventriculus and gizzard in the 4 dead birds were full of solid masses of lucerne hay mixed with maize and consequently the gizzard was extremely impacted by them. Neither pathogenic bacteria nor parasites were detected from the autopsied birds and 8 fecal samples. After diagnosis, the ostrich feed was improved and a demulcent was given immediately; then all ostriches that remained on the farm recovered. In conclusion, these data confirmed that the present case was stomach impaction in ostriches.—KEY WORDS: impaction, ostrich, Zambia.

The ostrich (Struthio camelus) is one of the biggest birds in the world and is naturally distributed in some African countries. Recently, many ostrich farms have been established in the southern area of Africa because of huge international demand for ostrich products such as fine hide, low-cholesterol meat, large eggs, and beautiful feathers [10]. In Zambia, 4 commercial ostrich farms have been established since 1990. In spite of the rapid expansion of ostrich farms, there are few reports concerning diseases of the birds [10]. The authors encountered an occurrence of stomach impaction in ostriches associated with high mortality, that occurred on a newly established ostrich farm in Zambia.

The farm involved was in Lusaka and imported 51 ostriches, 6 weeks old, from Namibia for breeding in 1991. Soon after arrival, these birds were introduced into a pen with a small open paddock on the farm, and they were fed on a mixture of lucerne hay and uncracked yellow maize. However, most of the birds manifested clinical symptoms such as loss of appetite, diarrhea, ruffled feathers, and general weakness, and 19 of the 51 birds died within 1 week after arrival.

Four female dead birds, 7 weeks old and around 6 kg in body weight, were submitted to the University of Zambia for diagnosis. The autopsy revealed conspicuous dilation of the proventriculus (Fig. 1), which was twice the normal size [2, 3]. The proventriculus and gizzard were completely full of solid masses of interwoven lucerne hay and full-sized yellow maize (Fig. 2), and consequently the pylorus of the gizzard was extremely impacted by them.

Fig. 1. Conspicuous dilation of the proventriculus (P) seen in an autopsied bird. G: gizzard. E: esophagus. D: duodenum. L: liver.

Fig. 2. The proventriculus (P) and gizzard (G) were full of solid masses of interwoven lucerne hay and maize.
Furthermore, the intestinal contents were severely watery because of the impaction. No other specific lesions were seen.

Pieces of the heart, liver, spleen and cerebrum from the 4 autopsied birds were cultured on plates of blood agar, MacConkey agar, and heart-infusion agar, and incubated at 37°C for 24 hr. The intestinal contents of the 4 autopsied birds and 8 fecal samples obtained from birds remaining on the farm were also cultured into selenite broth. Subcultures from the incubated selenite broth cultures were made on MacConkey agar plates. No pathogenic bacteria, including Salmonella, were isolated from any postmortem materials or fecal samples examined.

Intestinal contents of the postmortem materials and the 8 fecal samples were examined parasitologically by the flotation method. Neither parasitic ova nor coccidial oocysts were detected from any samples examined.

As the birds manifested severe diarrhea in the present case, salmonellosis or coccidiosis could be suspected. However, neither pathogenic bacteria nor parasites were detected as mentioned above. Therefore it seems that diarrhea was caused by mechanical blockage of the feeds in the stomach, except water which was seen in the intestines.

Through the above findings and examinations, the present case was tentatively diagnosed as stomach impaction. Soon after diagnosis, the feed was improved, properly replacing lucerne hay with fresh lucerne leaves. Furthermore, mineral oil as a demulcent [1] was given immediately to the remaining ostriches to induce smooth movement of the blockage in the stomach. After this, clinical symptoms seen among the birds that remained on the farm were gradually reduced and all birds recovered within 2 weeks. These data confirmed that the birds died of stomach impaction.

For rearing ostriches, it is reported that special attention must be given to the young ostrich bedding, because they will eat any kind of debris on the floor, which will block the proventriculus and gizzard and consequently kill them [1, 4]. In young turkey flocks as well, gizzard impaction can cause high mortality during the first 3 weeks of life, because they tend to eat litter [9]. As the case described above occurred among young ostriches on a newly established farm, the owner had no experience in rearing ostriches. Therefore, the birds were fed an inadequate feed including stalks of lucerne hay for a week, which caused gizzard impaction.

Conspicuous dilation of the proventriculus was also seen in the present case. There are some studies concerning dilation of the proventriculus in chicks fed on a finely ground diet lacking in fiber [7–9]. According to these reports, the gizzards were poorly developed due to the diet and were unable to handle the feed, so that the proventriculus was dilated considerably by the feed. However, the gizzard in the present case was properly developed macroscopically, thus the sick birds remaining on the farm recovered after treatment and improvement of the feed. Therefore, it seems that the gizzard impaction initially occurred due to the inadequate feed as mentioned above, and that subsequent dilation of the proventriculus occurred because of mechanical blockage by the feed.

There are some reports concerning stomach impaction in ostriches [5, 6]. Honnas et al. [5] reported 7 cases of the disease seen on the same farm and mentioned that stress such as transport appears to play an important role in indiscriminate eating of foreign materials. As the present case was seen soon after transport, the birds showed indiscriminate eating of lucerne hay and maize because of stress, though they are not foreign materials. Therefore, it seems that stress is one of the most important reasons why the present case was associated with high mortality.

REFERENCES