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Medical and Surgical Treatment of Gastric Impaction in Juvenile Ostriches

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Abstract: Radiological diagnosis and medical and surgical treatment options of the constipation problem seen in ostrich chicks were investigated in this study. The study was performed in a farm that 60 ostrich chicks were kept that are between 8 and 12 weeks of age. Our clinic was applied to upon seeing loss of appetite, weight loss and sudden death in 2 animals in the farm. Fifteen sick ostrich chicks that gastric impaction problem was found with clinical and radiological examination were included in the study. In the ostrich chicks that were found to be sick in clinical examination, clinical symptoms were observed like loss of appetite, weakness, dehydration, reduced number of defecations, drooping wings, messiness of feathers and inability to stand. Medical treatment was applied to 7 animals that general health status was not severe and that obstruction was found to be not complete in radiological examination and proventriculotomy operation was performed in 8 animals that stomachs were found to be full with foreign materials in radiological examinations and with serious health condition and also in 2 ostrich chicks that did not respond to medical treatment. Five patients out of 7 that medical treatment was applied and 8 patients out of 10 that were treated surgically responded to the treatment and got well. In the autopsies of the animals that did not respond to the treatment and died, macroscopic edema, erosion and hemorrhagic ulcers were found in proventriculus and ventriculus mucosa and in addition, stomach was filled with stones, sand, pieces of wood, metal and glass, rough feed particles and clover fibers. It was concluded that radiological examination will determine the level of obstruction, make the treatment easier and will direct it. It was also, concluded that emergency surgical treatment in cases with complete obstruction not responding to medical treatment would be beneficial if performed with no time loss.

Key words: Ostrich chicks, operation, gastric impaction, treatment, clinical, radiological

INTRODUCTION

Ostrich is the biggest of the winged animals showing anatomical structure differences according to their habitats in America and Australia and are included in flightless bird class. These are animals with an average live weight between 140 and 151 kg, height reaching 2.5 m and have a beauty of their own with their small heads and long necks. Ostriches have a life period of about 70 years and their legs are rather strong and they can run with a speed of as fast as 50-70 km h^{-1} (Brunning and Dolensek, 1986; Anonim, 1987; Palomeque *et al*., 1991; Deeming, 1999; Yuksek *et al*., 2002).

Although, the main purpose of ostrich husbandry is meat production, other products are also, used in various sectors, since they are very valuable. Meat and egg are used as protein resources, feathers and eggshell are used as ornamental fixtures, retroperitoneal fat is used in the perfume industry as raw material and processed skin is used in the manufacturing of purses and belts. With all these listed features, ostrich husbandry has gained importance in our country, like in the entire world (Brunning and Dolensek, 1986; Anonim, 1987; Deeming, 1999; Alkan *et al*., 2001; Aslan *et al*., 2008).

It has been reported that ostriches, which easily adapts to all kinds of climates, are more resistant against other winged animals except for a few parasitary and infectious diseases. Together with this, foot problems, fractures and dislocations, genital organ diseases, respiratory system problems, obstruction and foreign materials in the gastrointestinal system and nutritional and behavioral disorders are the main problems noted in these animals (Deeming, 1999; Alkan *et al*., 2001; Yuksek *et al*., 2002; Aslan *et al*., 2008).

Partial or complete obstruction of the proventriculus or ventriculus related to eating materials that are not food

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is a frequent problem in ostriches and particularly in young animals (Speer, 1996; Komnenou *et al*., 2003). The reason for this is overeating materials like stones, sand, rubbles, pieces of wood, metal, glass, plastic material, or feed with rough fibers by the chicks because of some anatomic differences, disorders of nutrition or behavior and various stress factors (Honnas *et al*., 1991, 1993; Komnenou *et al*., 2003).

In this study, evaluation of radiological diagnosis of gastric impaction, which is frequently observed in ostrich chicks and causes great economic losses in establishments and medical and surgical treatment options were aimed at.

MATERIALS AND METHODS

This study was performed in Van Golu Ostrich Husbandry Farm keeping 60 ostrich chicks between 8 and 12 weeks of age. Farm applied to our clinic with loss of appetite, weight loss and sudden death in 2 ostrich chicks. Systematic clinical examination was performed in the husbandry farm on all the animals. Abdominal radiograms were taken from the animals with suspected gastric impaction. Radiological examinations were performed in the Radiology Unit of Surgery Department of Yuzuncu Yil University, Veterinary School.

Medical treatment was given to 7 animals that health statuses were not serious according to the clinical and radiological examinations and that partial obstruction was observed in radiograms and proventriculotomy procedure was performed on total 10 animals, out of which 8 had complete obstruction in radiograms in serious condition and 2 that did not respond to medical treatment.

Five percent dextrose and lactate Ringer solutions (Eczacibasi, Istanbul, Turkey) were intravenously administered to 7 ostrich chicks for 3 days in a dosage of 50 mL kg^{-1}. Liquid paraffin (Sokol®, Biofarma, Istanbul, Turkey) was orally administered as laxative twice a day in a dosage of 100-200cc for 3 days. In addition, 5 cc, B_1 and B_6 vitamin combination (Nervit®, Veta°, Istanbul, Turkey) was intramuscularly administered to stimulate appetite.

Xylazine HCI (1 mg kg^{-1}) and Ketamine HCI (20 mg kg^{-1}) was intramuscularly administered to put the ostrich chicks under general anesthesia for surgical treatment. Then, animals were prepared for operation and proventriculotomy operation was performed according to the technique applied by Shwaluk and Finley (1995). Fluid therapy, penicillin + streptomycin (Reptopen®S, DIF) b.i.d. for 5 days in a dosage of 20000 IU kg^{-1} and B_1 and B_6 vitamin combination (Nervit®, Veta°, Istanbul, Turkey) I.M. were given in the postoperative period.

RESULTS

Our clinic was applied to with the anamnesis of loss of appetite, weight loss and sudden death in 2 animals within a period of 2 weeks. In the history taken, it was found that the administration and employees of the farm did not have detailed knowledge of ostrich chick husbandry, they were in that business for the first time, ostrich chicks were not inured to the feed and sudden changes were made in the feed. It was observed in the husbandry farm that pens, feedboxes and quenches were inadequate and grounds in the farm was stony and bumpy and smaller ostrich chicks and bigger ones were kept within the same pen and they were under extreme stress.

Systematic clinical examinations were performed for all the animals in the husbandry farm. Clinical symptoms like loss of appetite, weakness, weight loss, dehydration, reducing of defecation, drooping wings, messed feathers, leaving the herd, reducing of movements and inability to stand were observed in the animals that were sick in the clinical examination.

It was found in the radiological examinations of the sick animals that proventriculus and ventriculus were partially or completely full with non-food materials (Fig. 1).

Medical treatment was given to 7 animals that health statuses were not serious according to the clinical and radiological examinations and that partial obstruction was observed in radiograms and proventriculotomy procedure was performed on total 10 animals, out of which 8 had complete obstruction in radiograms in serious condition and 2 that did not respond to medical treatment. Foreign material like stones, sand, pieces of wood, metal and glass, rough feed particles and an abundance of clover fibers were removed in the animals that underwent proventriculotomy operation. Five patients out of 7 that medical treatment was applied to and 8 patients out of 10 that were treated surgically responded to the treatment and got well. Ostrich chicks returned to normal within 10-12 days after postoperative care and treatment.

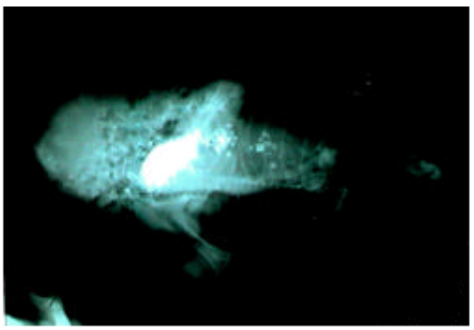

Fig. 1: The radiological examinations of the sick animals

Fig. 2: The autopsies of the animals that did not respond to the treatment and died

In the autopsies of the animals that did not respond to the treatment and died, macroscopic edema, erosion and hemorrhagic ulcers were found in proventriculus and ventriculus mucosa and in addition, stomach was filled with stones, sand, pieces of wood, metal and glass, rough feed particles and clover fibers (Fig. 2).

DISCUSSION

Partial or complete obstruction of proventriculus and ventriculus is a frequent problem seen particularly in young ostriches related to eating non-food materials (Speer, 1996; Komnenou *et al*., 2003). The reason for this is increase in the tendency of chicks to eat non-food materials like stones, sand, pieces of wood, metal and glass, rough feed particles and clover fibers because of some anatomic differences found in these animals, disorders of behavior, sudden changes in the feed, inadequate environmental and housing conditions, sudden climate changes and various stress factors like transport (Honnas *et al*., 1991; 1993; Speer, 1996; Deeming, 1999; Huchzermeyer, 1999; Yuksek *et al*., 2002; Komnenou *et al*., 2003).

In this study, it was found that ostrich chicks were not inured to the feed and suddeb changes of feed were made and the administration of the farm and employees did not have detailed knowledge about ostrich chick husbandry. In addition, it was observed in the visit to the husbandry farm that pens, feedboxes and quenches were inadequate and grounds in the farm was stony and bumpy and smaller ostrich chicks and bigger ones were kept within the same pen and they were under extreme stress. These findings support the findings of several investigators (Huchzermeyer, 1999; Yuksek *et al*., 2002; Komnenou *et al*., 2003).

It was reported, in studies on gastric impaction that contractions of proventrickulus and ventriculus come to a complete stop and the contents do not pass to the intestines related to the complete obstruction of proventriculus. It is also reported that inability to eat, dehydration and extreme weight loss occur consequently and deaths occur as a result of extreme lack of alimentation and dehydration (Huchzermeyer *et al*., 1993; Sato *et al*., 1994; Mushi *et al*., 1998; Huchzermeyer, 1999; Yuksek *et al*., 2002). In other studies, it has been reported for gastric impaction that reducing of movements of ostrich chicks, loss of appetite, reducing in number of defecations, inability to stand and death are seen (Honnas *et al*., 1991, 1993; Sato *et al*., 1994; Speer, 1996; Mushi *et al*., 1998; Deeming, 1999; Huchzermeyer, 1999; Yuksek *et al*., 2002; Komnenou *et al*., 2003). Observing clinical symptoms like loss of appetite, weakness, weight loss, dehydration, reducing in the number of defecations, drooping wings, messy feathers, leaving the herd, reducing in movement and inability to stand in the clinical examinations performed in this study on sick ostrich chicks overlap the findings of these investigators (Honnas *et al*., 1991, 1993; Sato *et al*., 1994; Speer, 1996; Mushi *et al*., 1998; Deeming, 1999; Huchzermeyer, 1999; Yuksek *et al*., 2002; Komnenou *et al*., 2003). In addition, sudden deaths within 8-12 weeks period without any signs of sickness and finding gastric impaction in the ostrich chicks in examinations also, support the opinions of these investigators.

Observation of proventriculus and ventriculus filled with stones, sand, pieces of wood, metal and glass, rough feed particles and rough feed materials like clover fibers with non-food properties in the autopsies of the ostrich chicks and macroscopic edema, erosion and hemorrhagic ulcers in proventriculus and ventriculus were considered to be similar to the reports in various studies (Honnas *et al*., 1991, 1993; Speer, 1996; Mushi *et al*., 1998; Yuksek *et al*., 2002).

It has been reported that positive responses are obtained in gastric impaction cases among ostrich chicks and that giving mineral oils to these animals as laxatives or purgatives and parenteral fluids against dehydration and anorexia together with supportive therapy would be beneficial in these animals (Deeming, 1999; Yuksek *et al*., 2002; Komnenou *et al*., 2003). Obtaining positive results in this study with medical treatment in ostrich chicks with partial obstruction support the results of these investigators.

It has been reported in the studies performed that gastric impaction requires emergency treatment and surgery is unavoidable in cases where positive responses cannot be obtained with medical treatment (Gamble and Honnas, 1993; Mushi *et al*., 1998; Komnenou *et al*., 2003).

It has been reported in the studies performed that in gastric impaction problems frequently seen in ostrich chicks, radiograms are helpful for the diagnosis and proventriculotomy procedure is a surgical treatment mode commonly used in ostrich chicks. In addition, it has also, been reported that antibiotic therapy and supportive therapy are also required in the postoperative period (Komnenou *et al*., 2003). In our study, as reported by Komnenou *et al*. (2003), it was found that clinical and radiological examinations were important for the diagnosis of gastric impaction cases. It was found that finding non-food materials in proventriculus and ventriculus and level of obstruction are also, important in the selection of appropriate treatment and performing proventriculotomy operation is important particularly in ostrich chicks with gastric impaction not responding to medical treatment.

CONCLUSION

As a result, it is concluded that gastric impaction cases seen in ostrich chicks can be reduced with ensuring appropriate conditions in pens, giving proper habits of eating, balanced nutrition and eliminating the existing stress factors, that radiological examination will determine the level of obstruction, make the diagnosis easier and direct the treatment and that surgical treatment should be performed with no loss of time in cases not responding to medical treatment or with complete obstruction.

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