Short Communication

FATAL HEMORRHAGE DUE TO AORTIC RUPTURE IN AN OSTRICH (*STRUTHIO CAMELUS*) CHICK

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Received : 22.07.2013 Accepted : 06.12.2013

ABSTRACT

The paper describes an incidence of aortic rupture in an ostrich chick maintained at the Post Graduate Research Institute in Animal Sciences, Kattupakkam. A male ostrich chick, aged 3 months died suddenly with bleeding from the mouth. A thorough necropsy was conducted. The carcass was pale. A blood clot of about 80 ml was noticed in the thoracic cavity adjacent to heart and it originated from a rupture in the aorta. The clot was found to extend into the neck around the trachea. Based on the necropsy lesions, it was concluded that death was due to oligaemic shock resulting from hemorrhage caused by ruptured aorta. Aortic rupture has been associated mainly with nutritional complications. Copper and zinc deficiencies, high protein or fat content in feed, degenerative changes in wall of aorta (atherosclerosis) and hypertension are some of the factors predisposing the condition. Nutritional changes such as increase in crude fiber, supplementation with reserpine and copper and decreasing the total energy and protein has given favourable results. It was concluded that the aortic rupture may be associated with nutritional complications.

Keywords: Ostrich, aortic rupture, nutrition, *Struthio camelus,* aneurysm.

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INTRODUCTION

Ostrich, belonging to the family Ratites is the largest living bird. They originated from Africa and extended in to Eurasia. These birds in the wild have their habitat in open deserts, grasslands and shrublands with bird densities of one per 5-20 acres. They are selective foragers with a diet comprising mainly of grasses, forbs and other plants. They ingest stones and soil to meet their mineral requirement. Commercial ostrich farms gained momentum due to demand for ostrich meat, skin and feather, but were restricted in space. The nutritional requirement of the bird could not be met from foraging alone and concentrates were supplemented. However, nutrition of commercial ostriches is not completely standardized. Complications due to mineral deficiencies resulting in aortic rupture have been reported from different parts of the world in ostrich, emu and turkeys (Vanhooser *et al*., 1994; Baptiste *et al*., 1997; Vanveen, 1999; Ferreras *et al*., 2001).

Ostriches were first introduced in India at the Post Graduate Research Institute in Animal Sciences (PGRIAS), Kattupakkam a unit of the Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) in the year 2000. This is the only ostrich farm in the country and this paper reports the incidence of aortic rupture in an ostrich chick and its management.

METHODS, RESULTS AND DISCUSSION

A male ostrich chick, aged 3 months died suddenly with bleeding from the mouth (Fig. 1). Sudden death, clinical signs and climate (peak summer with high temperature and humidity) suggested that the cause could be heat stroke. A thorough necropsy was conducted. External examination revealed absence of fracture or external bleeding wound. The carcass was pale. On opening the carcass, all internal organs were pale. The brain showed pin point hemorrhage (Fig. 2). A blood clot of about 80 ml was noticed in the thoracic cavity adjacent to heart and originated from a rupture in the aorta (Fig. 3). The clot was found to extend into the neck around the trachea (Fig. 3 and 4). Based on the necropsy lesions, it was concluded that death was due to oligaemic shock resulting from hemorrhage caused by ruptured aorta.

In the present case, the site of rupture of aorta was just anterior to its origin, and this was not uncommon (Lumeij and Ritchie, 1997). However, the most common site of rupture was the abdominal aorta at a location between the external iliac and ischiatic arteries. Lamm *et al*., (2007) have described similar lesions associated with arterial aneurism of abdominal aorta in cattle.

Van veen (1999) has reviewed aortic ruptures in different poultry species and fast growing male turkeys were most commonly affected, while the condition also has been described in chicken, ostrich and water fowls. The mortality in flocks affected with aneurysm was 1 per cent. Other reports with similar mortality, male predisposition and occurrence early in age (12 to 24 weeks of age) are also reported (Lumeij and Ritchie, 1997; Crespo and Shivaprasad, 2003). Findings in the present investigation can be corroborated with the

above reports. This was the first incidence of death due to aortic rupture in the flock with a size of one hundred birds (mortality of 1 %) and the affected ostrich was three months old male.

Aortic rupture has been associated mainly with nutritional complications. Copper and zinc deficiency, high protein or fat content in feed, degenerative changes in wall of aorta (atherosclerosis) and hypertension are some of the predisposing factors (Vanhooser *et al*., 1994; Baptiste *et al*., 1997; Vanveen, 1999; Ferreras *et al*., 2001). Most of the earlier reports associated with aortic rupture is due to deficiency of copper. Four cases of aortic rupture in ostrich associated with deficient levels of copper in the liver were presented by Vanhooser et al. (1994). The aortic lesions noticed were consistent with vascular lesions described in turkeys and chickens with copper deficiency. Three cases of aortic rupture in ostriches were described by Shivaprasad *et al*. (2004) and the necropsied liver was deficient in copper and zinc. Copper has a significant role in elastin formation and deficiency leads to fragmented elastic fibres and degenerated smooth muscle cells in the aortic walls. Other factors described above play a role in precipitating the rupture of weak walls caused by aneurysm leading to hemorrhage and death. Copper supplementation has been found to reduce the incidence of aortic rupture by half (Guenther *et al*., 1978) in turkey poults. The role of copper in maintaining the integrity of aorta has been proved by Green *et al*. (1987) in human beings. As seen in the present case, sudden death without any clinical signs is common in birds with aneurysms. In the present case the location of the farm is in Kancheepuram district of Tamilnadu and the soil is deficient in copper and zinc (Mineral map of Tamilnadu (report, 2008)). The ostrich chick feed used at the station had a nutritional composition of C.P – 17.8 %, M.E – 2732 Kcal/kg, C.F – 8 %, Ca – 1.7%, P – 0.7 %, Lysine – 1.0%, Methionine – 0.5%, Na – 0.25%, K – 0.70%, Fe – 80 mg/100 kg, Cu – 8mg/100 kg and Mn – 22mg/100kg.

Ostriches, particularly young growing chicks have a tendency to take 1-3 % of their feed consumption as soil, which can lead to nutritional problems related to mineral content. Certain soils rich in iron and molybdenum, when ingested interferes with copper metabolism through chelation resulting in copper deficiency in spite of adequate levels in feed (Cilliers and Angel, 1999). Nutritional changes in feed were brought about by increasing the copper content in feed to 20 mg/kg. Access to soil was restricted for the ostrich chicks and further incidence of the condition was avoided. Favourable results have been obtained by supplementation with reserpine and copper (van Veen, 1999). However, a detailed investigation on the mineral profile in serum, soil and feed in order to address the issues related to absorption of copper.

Fig. 1. Carcass of ostrich with bleeding from mouth

Fig. 2. Hemorrhage in brain

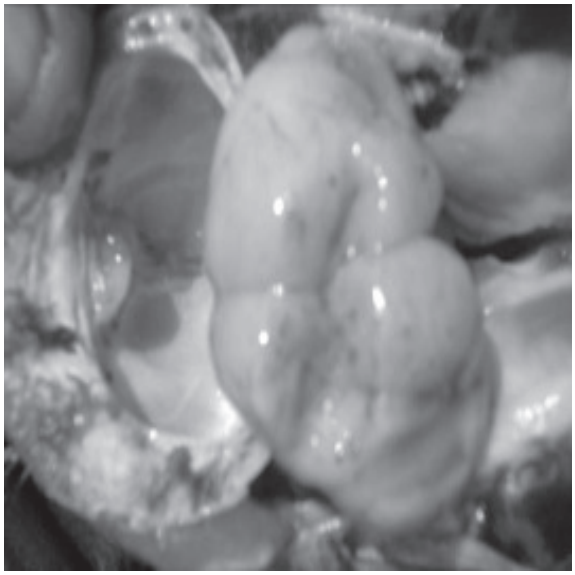

Fig. 3. Site of aortic rupture

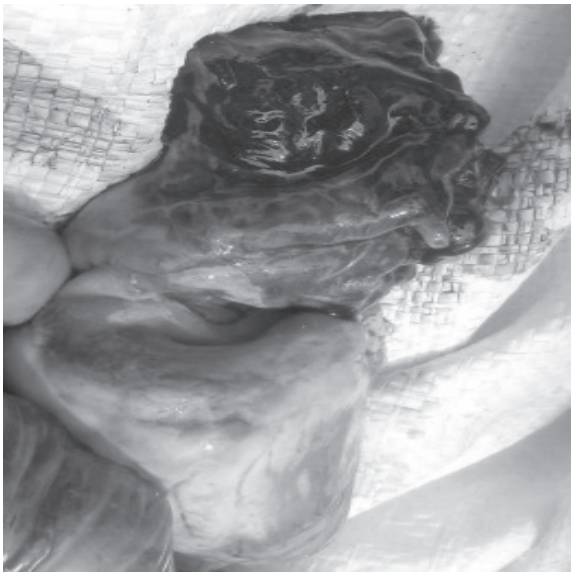

Fig. 4. Bleeding extending in to the neck

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