Incidence of Tibiotarsal Rotation and Its Effect on Production Performance in Emu Birds

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Abstract
The present study was undertaken to elucidate the incidence of tibiotarsal rotation and its relation to productivity in emu birds at Regional Research Centre, Pudukkottai. A total of 15 chicks were affected among 116 chicks hatched during the breeding season. In the present study, the severely affected eight emu chicks (mean ± SE) died on 39.76± 4.07 days of age. Seven chicks showed only mild symptoms and were able to survive with reduced movement. The study revealed 12.93 per cent of chicks were affected with tibiotarsal rotation in 4 to 8 weeks age group. Further significant difference (P ≤ 0.05) was observed between the body weight (Kg) of tibiotarsal affected and control group emu birds.

Key words: Emu, Tibiotarsal rotation, Body weight

Pelvic limb deformities are a common problem in emu chicks reared under captive condition. Tibiotarsal rotation was characterized by deformity of the coxo-femoral joint due to rotation of the tibiotarsal bone above the hock joint leading to turning of the foot to the outside (Hahulski et al.,1999). External tibiotarsal rotation affected ostrich chicks showed decrease in production (Bezuidenhout and Burger, 1993). An attempt was made to elucidate the incidence of tibiotarsal rotation and its relation to productivity in emu birds.

Materials and Methods
The study was carried out at the Emu Research Unit, TANUVAS –Regional Research Centre, Pudukkottai during the year of 2012-13. Eggs were incubated artificially and 116 chicks hatched during the breeding season. From hatch to two weeks of age, emu chicks were reared in the brooder house. After two weeks of age, emu chicks were housed in communal pen with sand flooring up to one year of age. No bedding materials were used in the house. The chicks were provided with ad libitum concentrate feed containing 20 per cent crude protein, 2700 kcal metabolizable energy. All the emu chicks were immunized against ranikhet disease.

Emu chicks with tibiotarsal rotation were diagnosed on the basis of clinical and patho-anatomical observations. Clinically, the affected birds were divided into two groups: Severely affected birds were recumbent or crawled leg-deformed birds while the moderately affected ones could still walk despite the clear deformity. Birds surviving with mild signs were weighed at monthly intervals up to six months of age. Ten number of same age group birds hatched without tibio-tarsal rotation were taken as a control to compare the production performance. The data collected were analysed using Statistical Package for the Social Sciences (SPSS) computer software 17.0 (SPSS, 2008).

Results and Discussion
Among 116 chicks, 15 chicks (12.93 per cent) were affected with tibiotarsal rotation. Eight chicks were severely affected and could not stand and thus injured the hock joint by rubbing it on the floor while attempting to stand up. Consequently, affected birds found difficulty to reach food and water troughs and eventually died of starvation or wound infection. The severely affected chicks died on 28, 37, 32, 51, 25, 41, 59 and 42 day of age, respectively. Similar findings were observed in ostrich chicks by Gilislider
The cause of tibiotarsal rotation was multifactorial. A high serum zinc value had been linked with an increased incidence of tibiotarsal rotation in ostrich chicks. Additionally, vitamin D deficiency, biotin (vitamin H) deficiency, vitamin B6 deficiency, food deprivation, a high amino acid to protein feed ratio, a low dietary calcium level, a high energy feed, high peak growth hormone concentration and the mycotoxin fusarochromonone had been linked to tibiotarsal rotation in chickens reported by Hahulske et al. (loc. cit). Genetics, nutrition, lack of enough exercise and high growth rates of young chicks associated with overfeeding of high protein diets are the causes of limb deformity (Bruning and Dolensenk, 1986; Reece and Butler, 1984).

In the present study, the severely affected emu chicks died on 39.76 ± 4.07 days. Squire and More (1998) reported that tibiotarsal rotation was an important cause of mortality in ostrich chicks during the first 10 week after hatch. Bezuidenhout and Burger (loc. cit) found that tibiotarsal rotation developed during a period of rapid growth, from 2 to 10 weeks of age, in both chickens and ostriches and progressed rapidly, resulting in birds that were unable to ambulate. Seven chicks showed only mild symptoms. In mild cases, the affected chicks showed only a "wind-up milling" gait while running and thus the affected leg swings out rather than going straight ahead. The chicks showing mild signs were able to survive with reduced movement.

Highly significant (P ≤ 0.05) difference was observed between the weight (Kg) of tibiotarsal affected and control group emu birds at 1st, 2nd, 3rd, 4th, 5th and 6th month of age as proper locomotion was required for feed intake and thus directly influences in weight gain. Mushki et al. (1998) ascertained that from the hatching to sixteen weeks of age, the body weight was highly correlated with the metatarsal length. External tibiotarsal rotation affected a large population of ostrich chicks resulting into a decrease in productivity for meat producers (Bezuidenhout and Burger, loc. cit).

In this study, the affected birds were offered restricted feeding in order to reduce the excessive protein intake leading to reduced weight gain recorded in the affected birds. In addition to that, the birds were given calcium:phosphorus supplement. Severely affected chicks however did not respond. But chicks affected moderately shown improvement.

To conclude 12.93 per cent of chicks were affected with tibiotarsal rotation in 4 to 8 weeks age group. Further significant difference (P ≤ 0.05) was observed between the body weight (Kg) of tibiotarsal affected and control group emu birds.

References