Unilateral tibio-tarsal rotation in a 14-month old ostrich hen destined for slaughter

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SUMMARY

The authors would like to report an unusual incidence of severe tibio-tarsal rotation in a 14-month old ostrich hen designed for slaughter and housed on an ostrich farm in Poland (51º43´N, 15º33´E, October 2007). The ambient indoor and exterior temperature from 0600-1800 was recorded at 2-hr intervals as 20.40 (mean) ± 0.12 (SEM) and 14.98 ± 1.35ºC, respectively. The exterior relative humidity recorded likewise was 50.00 ± 0.67%. The pathology expressed itself in the left limb with an outward angle of rotation in the foot of 92º (Figures 1-3). The perpendicular height of the hen, and length of the right femur, tibia, metatarsals, toe and claw lengths were 120 *vs*. 140, 59 *vs*. 56, 36 *vs*. 42, 10 *vs*. 5.5, 6 *vs*. 11 and 3 *vs*. 4.5 cm, respectively by comparison with an age-matched normal hen.

CASE REPORT

Tibio-tarsal rotation clearly affects all aspects of the limb and impairs/restricts movement. Despite a slight shuffling gait the hen appeared adapted to its ailment, although it did experience a few bumps and collisions from other birds. The hen appeared able to drink and feed from the raised troughs in its paddock enclosure. The commercial raising of the birds negates the need for speed as would be required in the wild. In the latter situation, an ostrich chick suffering from leg deformities would quickly succumb to the elements or to predation. The eventual quality of the skin on this bird was dubious as it was scratched from leaning on paddock fencing. The farmer was therefore saving the bird principally for meat.

DISCUSSION

There are a few published studies specifically of tibio-tarsal rotation in ostrich chicks, but studies in older birds are lacking. Various skeletal problems including leg deformities of the tibio-tarsal and tarsal-metatarsal bones may be caused by factors that include improper feeding and unsuitably balanced diets (Cooper 2007; Cooper and Horbańczuk 2004; Cooper, Horbańczuk and Fujhara 2004). Genetic aspects are suggested (Huchzermeyer 2002). In our current observations, it is interesting to note that the principal occurrence of tibio-tarsal rotation in the left limb differed from observations in ostrich chicks in which the right limb was more affected (Bezuidenhout and Burger, 1993; *Mushi et al*., 1999). A study in Australia revealed that tibio-tarsal rotation as an important cause of mortality in farmed ostrich chicks during the first 10 weeks after hatch and the authors suggested that reduction thereof may include pen design, access to water and nutrition (Squire and More, 1998). Another study determined that the serum-zinc values were significantly higher and

the bone-calcium and phosphorus values significantly lower in tibio-tarsal rotation chicks *vs*. healthy chicks (Bezuidenhout *et al.,* 1994). The authors deduced poor mineralization of bone with subsequent reactive osteoid formation.

We suggest that the limbs of the 14 month old ostriches are saved for further study including mineral content, the use of radiological images to determine the spongious matrix of the tibio-tarsal bones (Charuta – personal communication). We also recommend that if the incidence is high on a farm that ostriches of different ages are sacrificed and detailed dissections of the affected limbs made. Perhaps the method used in Cooper *et al.,* (2008) may be used in patho-morphological investigations.

Figure 1. Tibio-tarsal rotation expressed in left limb of 14-month old ostrich hen

Figure 2. Tibio-tarsal rotation expressed as a 92º outward deviation from normal

Figure 3. Marked swelling in foot and disorientation of the metatarsal bone

REFERENCES

Bezuidenhout A, Burger WP. The incidence of tibiotarsal rotation in the ostrich (*Struthio camelus*). *J South Afr Vet Assoc* 64: 159-161, 1993.

Bezuidenhout AJ, Burger WP, Reyers F, Soley JT. Serum- and bone-mineral status of ostriches with tibiotarsal rotation. *Ond J Vet Res* 61: 203-206, 1994.

Cooper RG. Differences in stride between healthy ostriches (*Struthio camelus*) and those affected by tibiotarsal rotation. *J South Afr Vet Assoc* 78: 52-53, 2007.

Cooper RG, Horbańczuk JO. Ostrich nutrition: a review from a Zimbabwe perspective. *Revue Sci Tech* 23: 1033-1042, 2004.

Cooper RG, Horbańczuk JO, Fujhara N. Nutrition and feed management in the ostrich (*Struthio camelus domesticus*). *Anim Sci J* 73: 175-181, 2004.

Cooper RG, Mahrose KhMA, El-Shafei M. Spread bow leg syndrome in ostrich (*Struthio camelus*) chicks aged 2 to 12 weeks. *Brit Poul Sci* 49: 1-6, 2008.

Huchzermeyer FW. Diseases of farmed crocodiles and ostriches. *Revue Sci Tech* 21: 265-276, 2002.

Mushi EZ, Binta MG, Chabo RG, Isa JF, Phuti MS. Limb deformities of farmed ostrich (*Struthio camelus*) chicks in Botswana. *Trop Anim Health Prod* 31: 397-404, 1999.

Squire BT, More SJ. Factors on farms in eastern Australia associated with the development of tibiotarsal rotation in ostrich chicks. *Aust Vet J* 76: 110-117, 1998.