

Dept. of Surgery
Fac. of Vet. Med., Assiut Univ., Egypt.
Head of Dept. Prof. Dr. F. Makady

**ABNORMALITIES AND OVERGROWTHS OF THE
CLAWS IN NATIVE COWS, BUFFALOES,
AND FRIESIAN COWS**
(With 4 Tables and 25 Figures)

By
M.H. EL-GUINDY and M.F. AHMED
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الشذوذات والنمو المفرط في أظلاف الأبقار المحلية والجاموس وأبقار الفريزيان

محمود حسين الجندي ، محمود فتحي أحمد

تم فحص عدد ٤١٢ جاموسة، و ٣١٦ بقرة محلية، و ٤٣٠ بقرة فريزيان وظهرت الشذوذات والنمو المفرط في عدد ١٥٦ جاموسة، وعدد ١٠١ بقرة محلية، وعدد ١٢١ بقرة فريزيان وكانت نسبتها ٢٨% في الجاموس ، ٣٢% في الأبقار المحلية ، ٢٨% في الأبقار الفريزيان وأتضح أن شذوذات الأظلاف كانت أكثر حدوثاً في الأظلاف الخلفية عن الأظلاف الأمامية في الأبقار الفريزيان بينما لم يكن ذلك في الجاموس. وكانت الأظلاف الحلزونية والمجعدة والمقصية وذات النمو المفرط والمتجهة الى الخارج أو الى الداخل أكثر شيوعاً في الجاموس عن الأبقار المحلية والفريزيان وأتضح من النتائج أن التقدم في العمر ونوع الفصيلة ونوع الأرضية ووزن الحيوان وحجم الضرع ومدة الحمل تلعب دوراً كبيراً في ظهور هذه الشذوذات من عدمة ، وكانت نسبة شذوذات الظلف الوحشى للقوائم الخلفية في الأبقار الفريزيان أكثر من أى ظلف آخر. أتضح من النتائج أن الحيوان الواحد يمكن أن يصاب بشذوذتين أو أكثر في الأظلاف. ولما كان للجاموس شرس الطباع ينصح الباحث باستخدام الرميون قبل تقليم الأظلاف الشاذة أو المفرطة النمو.

SUMMARY

A number of 412 buffaloes, 316 native cows and 430 Friesian cows were inspected out of them 156 buffaloes, 101 native cows and 121 Friesian cows had signs of claw abnormalities and overgrowths. The incidence of abnormalities was about 382 in buffaloes, 322 in native cows and 28% in Friesian ones. Hind claw abnormalities in Friesian cows were more frequent than fore claw abnormalities, while in buffaloes it was not the case

Corkscrew, wrinkled, scissors claws, toeing out, in and overgrown claws were prevalent in buffaloes more than in native and Friesian cows. The age, species, type of floor, body weight, size of the udder and period of pregnancy play a role in the increase or decrease of claw abnormalities. The lateral perlvic claw of Friesian cows presented a high percentage of abnormalities. Two or more than two deformities can be observed in one animal, It was necessary to moisten the claws for at 12 hours before correction in all species, however in buffaloes it was necessary to give rumpon I.M. 1/4 hour before trimming because of their visciousness.

Key words: Cows-Buffaloes-Claws-Abnormalities

INTRODUCTION

Large ruminants are subjected to overgrowths of their claws, specially those breed indoors or in closed farms and are not allowed to pasture or to come out to graze in the field. These animals are breed for a long time for the purpose of milk production, hence the wear is greater than the tear and overgrowth of the claws takes place. These overgrowths are not prevalent in animals bred for meat production, because the period of fattening do not usually exceed one year, a time which is not enough to cause overgrowth of the claws.

These overgrowths are usually complicated by deformity or change in the normal shape of the claw which terminates by inability to walk properly, abnormal gait and lameness which lead to decrease in milk production and decline in body weight which are the cause of great financial losses. Claw abnormalities may lead to stumbling, falling down and fracture of one of the bones, dislocation of the joints.

The aim of the present study is to determine the common forms of overgrowths and abnormalities in the claws of native cows, buffaloes and Friesian cows as well as the various factors which may influence their appearance as breed, age, sex, body weight, breeding purpose, size of the udder and limb conformation.

Knezevic (1962) stated at least 15% of the austrian cattle had claw deformities and the annual loss was about 100 million shillings.

Flourentine (1963) came to a conclusion that breeds of light coloured claws usually present softer texture than darkly pigmented ones.

Prentice (1973), Glicken and Kerdrick (1977) and Greenough (1980) found that claw deformities are mostly found in adult dairy cattle. The latter recorded that the higher incidence of abnormalities were present in the lateral claw.

Kingrey (1963), Greenough *et al* (1972) and Glicken and Kendrick (1977) reported that some claw deformities were probably due to congenital predisposition.

Anderson and Lundstrom (1980) observed that claw deformities and overgrowths were more common in diseased than in healthy cows, while Modrakowski *et al* (1980) stated that deformed claws predispose to digital diseases.

Russel and Weaver (1978) reported that 31% of feet lesions were associated with overgrowth.

Toussaint raven (1973) stated that a faster horn growth in the lateral claw predisposes to traumatic injuries, which may cause marked abduction of the leg. Funk (1970) added that abduction of the leg indicates pain in the lateral claw, While crossing the legs or placing one leg cranial to the other indicates the possibility of a lesion in the medial claw.

Pohly (1918), Rusterholz. (1920), Hickmann (1964) and Shuttleworth (1966) stated that the etiology of overgrown claws is lack of wear due to standing on soft surfaces thus permitting excessive overgrowth of the horn.

MATERIAL and METHODS

In the present study a number of 412 buffaloes, 316 native and 430 Friesian cows were inspected. Out of the examined animals 156 buffaloes, 101 native cows and 121 Friesian cows had signs of claw overgrowth or abnormality. The age of the examined animals ranged from 2-12 years.

History of every case including breeding purpose, system of housing, type of floor, type of claw abnormality and its duration, abnormal conformation of the limbs, position of the carpus and tarsus, age, body weight, size of the udder and duration of pregnancy were taken into consideration. Thorough observation of the animals at rest and during motion and then examination using the hoof knife, hoof tester and percussion hammer. During examination the claw joint was flexed, extended and rotated to detect any lesion associated with the abnormality. Moreover stress was oriented to the factors influencing the appearance of claw abnormalities. Before trimming it was necessary to moisten the claws for at least 12 hours by immersing them in a

shallow dip of water, then using the claw cutter, the hoof knife and currette to remove the excess horn and to return the claw to its normal shape as far as we can.

This was easily accomplished in cows, but in buffaloes it was necessary to give zylazine Hcl in a dose rate of 0.2 mg/kg body weight I.M. because of their visciuousness.

RESULTS and DISCUSSION

Claw abnormalities and overgrowths coustituted an incidence of about 38% in buffaloes, 32% in native cows and 28% in Friesian cows, which is a very high incidence in comparison to what was mentioned by Greenough et al (1972), Knezevic (1962) and Ali (1983). This high incidence indicates that there is a number of factors which play a role in this problem. These factors are the owners, attendants, methods of breeding, type of floor on which the animals are bread, body weight, limb conformation, time of pregnancy and lastly the size of the udder. There may be other factors responsible for these abnormalities as heriditary predisposition and some other environmental conditions which need more investigations and further studies.

Prentic and Neal (1972) and Baggot and Russel (1981) stated that hind claw abnormalities in Friesian cows appeared to be more frequent than fore claw abnormalities, a result which is in close agreement with the present results. This may be attributed to the heavy body weight of Friesian cows as well as the large size of the udder which compell the cow to abduct the pelvic limbs bearing more weight on the inner claws. In buffaloes this phenomenon finds no support, perhaps due to the fact that the horn of the fore feet is harder than that of the hind ones as stated by Wyssman (1902) in cattle, thus it undergoes less wear and is subjected to overgrowth. In the same time the udder of buffaloes is small in size in comparison to the udder of Friezian cows. In addition the condition may be attributed to the faster growth of the horn of the thoracic limb claws than that of the pelvic ones as stated by Prentice (1973).

The present results indicated that corkscrew claws, (Fig. 1, Fig. 15& Fig. 16) wrinkeled claws, (Fig. 2& Fig. 14) scissors claws, toeing out, (Fig. 3, 17&18. (Fig. 4) & Fig. 11) toeing in (Fig. 5): Fig. 12, Fig. 13) and overgrown claws (Fig. 6)& Fig. 19) were prevalent in buffaloes more than in native and Friesian cows, while hypoplastic claws were only met with in native cows, a result which is nearly similar to that reported by Ali (1983), except in

hypoplastic claws (Fig. 20) which are not met with in the present work. The type of floor plays also a role in claw overgrowths and abnormalities. While corkscrew, wrinkled, scissors and overgrown claws were prevalent on soft floor more than on the other two types of floor, yet toeing out and toeing in were more prevalent on the mixed type floor. These results agreed to a great extent to those mentioned by Carne *et al* (1972) and Greenough (1982) who mentioned that the different types of floor have a significant effect on claw abnormalities. On the other hand Madrakowski *et al* (1980) stated that a hard concrete floor is unsuitable for claws.

Diverging claws (Fig. 7, 8, 9) and scorpion-like (Fig. 10) claws were nearly of the same percentage in the three types of floors. These two abnormalities were not stated anywhere according to the available literature. In this work it was observed that the higher incidence of claw abnormalities and overgrowths were in adult animals, and the incidence increases with age. This agrees with the findings of Prentic (1982) and Ali (1982).

In the present study we observed that the percentage of abnormalities in the lateral pelvic claw of friesian cows were very high. This may be attributed to abduction of the hind limbs due to the large sized udder where the cows are obliged to bear most of their weight on the medial claws, while the lateral one grows more than normal and shows more abnormalities. This is in agreement with Prentice and Meal (1972), Russel and Weaver (1978), Greenough (1980) and Ali (1983).

Two or more than two deformities can be observed in one animal (Fig. 3, 16 and 17). This is in agreement with Greenough (1980) and Ali (1983).

REFERENCES

- Ali, S.E.M.M. (1983): Incidence of claw abnormalities in cattle and buffaloes. M.V.Sc. Faculty of Vet. Med. Assiut University.
- Andersson, L; Lundstrom, K. (1980): The influence of breed, age and season on digital diseases in swedish dairy cows. 3rd. Int. symposium" on disorders of ruminant digit. October 1-5, 1980. p.p. 62 74. Vienna, Austria.
- Baggott, D.C. and Russeli, A.M. (1981): Lameness in cattle. Br. Vet. J., 137 (1): 113.
- Carne, H.R. Larsen, I. H.; Franklin, M.C. and Loomis, L. N. (1964): Lameness in beef settle, Aust. Vet. J. 40. (11): 382.
- Florentin, M. (1963): Cited by Greenough, P.R., *et al*. (1972).

- Funk, K.A. (1970):* Common conditions of the cow's Foot. *Med. Vet./ Pract.*, 51 (9): 46.
- Glaicken, A. and Kendrick. J.W. (1977):* Hoof overgrowth in Holstein-friesian dairy cattle. *The Journal of Heredity* 68: 386-390.
- Greenough, P.R.; MacCallum, F.J. and Weaver, A.D. (1972):* Lameness in cattle. 1st. Ed., Edinburgh: Oliver and Boyd.
- Greenough, P.R. (1980):* Claw deformities 3rd. nt. symposium " October 1-5, 1980. P.P.56-61. Vienna. Austria.
- Hickman. J. (1964):* *Vet orthopaedics* 1st. Edition oliver & Boyed L td., Edinburgh & London.
- Kingrey, B.W. (1963):* Report of A.R.G. conference on foot disorders in cattle (1964) *Vet. Rec.* 76-61.
- Knezevic, P. (1960):* Care of the feet in cattle. *Wien Tierarztl, Wschr*, 47-240.
- Modrakowski, A.; Karim, M.A. and Al-Dahash. S.Y.A. (1980):* The incidence of digital diseases in cattle in Northern Iraq. 3rd. International symposium" On disorders of the ruminant digit" October 1-5, 1980. P.P. 191-199, Vienna, Austria.
- Russell, A.M. and Weaver, A.D. (1978):* The compton survey of bovine lameness 1977. Report of the 2nd. Sumposium on bovine digital diseases, Veterinary Institute, Skara, 1978. P.P. 5-8.
- Rusterholz, A. (1920):* The specific traumatic sole ulcer, in cattle schw, arch. *Tierhkl.* 62. 421 and 505.
- Shuttleworth, A.C. (1966):* Foot diseases and injuries, in international Encyclopedia of Vet. Med. 2 1078-1079.
- Tossaint Raven, E. (1973):* *Lameness in cattle and foot care. Neth. J. Vet. Sci.* 5 (2) 102-111.
- Wyssmann, E. (1902):* Cited by Greenough, *et al.* (1972).

LEGENDS

- Fig 1: Corkscrew claw fore limp (Buffalo).
- Fig 2: Wrinkled claws in both fore limbs (Buffalo).
- Fig 3: Scissors claw right fore limb wrinkled medial daw left fore limb (Buffalo).
- Fig 4: Toeing out medial claw both fore limb 5 (Buffalo).
- Fig 5: Toeing in lateral claw right fore limb (Buffalo).
- Fig 6: Overgrown claws fore limb (Buffalo).

- Fig 7: Diverging claws in right fore limb with a transverse cnarc (Buffalo).
 Fig 8: Diverging claw in left fore limb (Friesian cow).
 Fig 9: Diverging claw right fore limb (native cow).
 Fig 10: Scorpion like claw right hind limb (native cow).
 Fig 11: Toeing out medial claw in both fore limbs (native cow).
 Fig 12: Toeing in lateral claw in hind limb (native cow)
 Fig 13: Toeing in left fore limb (Friesian).
 Fig 14: Wrinkled right hind limb (Friesian).
 Fig 15: Corkscrew claws and scissors left hind limb (native cow).
 Fig 16: Corkscrew right hind limb (Friesian).
 Fig 17: Scissors claw both fore hind limbs with toeing out of both medial claws.
 Fig 18: Scissors claw right fore limb (Friesian).
 Fig 19: Overgrown medial claw fore limb with toeing out (native cow).
 Fig 20: Hypoplastic claw right hind limb (native cow).

Table. 1: Incidence percentage of claw abnormalities among native cows Friezian cows and Buffaloes.

Species	No. of inspected	No. of affected	Incideuce percentage
Native cows	316	101	31-96%
Friesian cows	430	121	18-14%
Buffaloes	412	156	37-86%

Table. 2: Incidence percentage of different claw abnormalities in native cows Friesian cows and Buffaloes.

Abnormality	Native cows		Friesian cows		Baffaloes	
	NO.	%	No.	%	No.	%
Corkscrew	15	32-25	8	16-66	25	52-08
Wrinkled	20	31-74	10	15-87	33	52-30
Seissors	8	29-62	3	11-11	16	59-25
Toeing out	35	29-16	11	9-16	74	61-66
Toeing in	22	33-84	8	12-30	35	53-84
Hypoplastic	3	100%	-	-	-	-
Over grown	7	29-16	7	29-16	10	41-66
Diverging	7	50%	7	50%	-	-
Scorpion like	9	64-28	5	35-70	-	-

Table 3: Incidence percentage of claw abnormalities following housing on different types of floor.

Abnormality	Soft floor	Paved floor	Mixture between the two floors
Corkscrew	54%	16%	30%
Wrinkled	43%	24%	33%
Scissors	47%	19%	34%
Toeing out	37%	25%	38%
Toeing in	30%	33%	37%
Hypoplastic	-	50%	50%
Overgrown	70%	12%	18%
Diverging	33%	33%	34%
Scorpion Like	31%	35%	34%

Table 4: Percentage distribution of claw abnormalities in relation to thoracic and pelvic limbs in different breeds.

Breed	Seat of abnormality	Corkscrew	Wrinkled	Scissors	Toeing out	Toeing in	Hypoplastic	Over grown	Diverging	Scorpion Like
Native cows	<u>Thoracic limb</u>									
	Lateral	5-7	9-9	40-1	19-2	17-2	46%	57	-	-
	Medial	9-9	11-2	14-3	18-3	19-4	38%	6-1	-	-
	<u>Pelvic limb</u>									
	Lateral	61-2	33-1	26-1	48-7	46-2	14	40-2	-	64
Friesian cows	Medial	23-2	40-1	19-6	13-8	17-2	2	40-2	-	36
	Four feet	-	5-7	-	-	-	-	7-8	-	-
	<u>Thoracic limb</u>									
	Lateral	3-2	9-7	22-4	12-3	37-3	-	3-1	-	-
	Medial	7-2	9-2	32-2	9-7	17-2	-	7-5	-	-
Buffaloes	<u>Pelvic limbs</u>									
	Lateral	80-5	18-9	19-8	74-6	31-3	-	39	-	7-81
	Medial	9-1	60-4	26-6	3-4	13-9	-	16-6	-	3-01
	Four feet	-	1-8	-	-	-	-	3-4	-	-
	<u>Thoracic limb</u>									
Lateral	7-2	24-1	12-3	22-1	23	-	32	-	-	
Medial	7-4	37-8	23-2	27-3	29	-	21-3	-	-	
Buffaloes	<u>Pelvic limbs</u>									
	Lateral	46-7	17-4	15-7	26-1	27	-	18-9	-	-
	Medial	38-7	18-3	28-8	24-6	21	-	15-2	-	-
Four feet	-	2-4	-	-	-	-	12%	-	-	-













