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## **ABNORMALITIES AND OVERGROWTHS OF THE CLAWS IN SHEEP AND GOATS IN ASSIUT PROVINCE**

(With 6 Tables and 17 Figures)

By

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شذوذات نمو الأظلاف والنمو المفرط لها في الأغنام بمحافظة أسيوط

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تم فحص عدد ١٤٨٨ من الأغنام، ١٢٤٨ من الماعز لاستبيان وجود تشوهات أو زيادة في نمو الأظلاف وأتضح أن نسبة الإصابة ٣٣.٣٪ في الأغنام و ٢٥٪ في الماعز وكان نسبة الإصابة أعلى في الإناث عن الذكور وخاصة في أظلاف القوائم الخلفية وذلك بسبب الحمل المتقدم أو كبر حجم الضرع بعد الولادة. وكانت نسبة الإصابة كالآتي:- الأظلاف المجمدة ٢١٪ وأنحراف الظلف للخارج ١٦٪ وأنحراف الظلف للداخل ١٧٪ والظلف الحزوني ١٣٪ والأظلاف المفرطة في النمو ١٠٪ والأظلاف المتضخمة ٩٪ وأظلاف المتفرجة ٩.٣٪ وأخيرا صغر حجم الظلف ١٪. وكانت النسبة في الماعز كالآتي:- الأظلاف المفرطة في النمو ٣٣٪ والأظلاف المجمدة ٢٩٪ وأنحراف الظلف للخارج ٢٤٪ وأنحرف الظلف للداخل ٢٦٪ والأظلاف المتضخمة ٢٥٪ والأظلاف المتفرجة ٢٤٪ وأظلاف الحزونية ٢٠٪ وأظلاف صغيرة الحجم ٦٪ بينما كانت الأظلاف المتوضعة على بعض بنسبة ٧.٧٪ تقريبا.

### **SUMMARY**

goats were inspected for claw overgrowths and deformities. Incidence of these overgrowths were 33.3 in sheep and 25% in goats. The incidence was higher in females than in males specially in the hind feet because of advanced pregnancy or as the result of the large size of the udder after parturition. Wrinkled claws in sheep are present in 21.5% of the cases, while in toeing out it was 16%, in toeing in 17%, corkscrew 13%, elongated claws 10%, hyperplastic 9.5%, diverging 9.3% & lastly hypoplastic 1.5%. In goats the percentage was elongated claws 33% wrinkled claws 29%, toeing out

24%,diverging claws 24.5%, corkscrew 20.2%, hypoplastic claw 6.5% overlapping claws were only seen nearly in 7.7% of goats.

*Key words: Sheep- Goats-Claws-Abnormalities-Assiut.*

## INTRODUCTION

Sheep and goats are considered good sources for meat production, because of the delicious taste of their meat specially the fried one. In addition they give birth usually more than one offspring in a period of 5 months pregnancy. Some arabian countris depend mainly on the meat of sheep and goats as saudiarabia, syria, yemen, libanon and sudan-for these reasone the importance of breeding these animals became increasing very rapidly. The claws of ovines and caprines are usually neglected because they are bread in large numbers and the overgrowth of their claws is usually overlooked. In the other rainy counties some flocks of sheep and goats are obliged to stand on muddy areas where maceration of the horn or the skin of the interdigital space takes place followed by injury and infection. The aim of the present study is to evaluate the different forms of claw overgrowths and abnormalities in sheep and goats in Assiut province and the incidence percentage of each of them, sex incidence as well as their distribution in the thoracic and pelvic limbs, in addition the effect of floor and pregnancy on these abnormalities. Finally correction of the deformity was an aim.

In the year (1963) Flourentine observed that claws of bright colouration are subjected to abnormalities more than those of dark colouration. On the contrary Greenough *et al* (1972) stated that there are other hereditary causes to claw abnormalities. In (1980) Kral *et al* classified overgrown claws in cattle into beak claw and scissors claw.

Boackart *et al* (1958) named a type of these overgrowths as corkscrew claw. O'connor (1982) stated that aquired claw abnormalities include turning in and turning out of the claws and added that these abnormalities are the main cause of lameness in these species. Andreson *et al* (1980) found that abnormalities in the claw overgrowths were prevalent in diseased animals than in healthy ones. In the year (1983) Ali stated that claw abnormalities in cattle were nearly 26% corkscrew, 22.1% scissors claw, 19.7% overgrown claws and 11.9% curved claws. Soliman *et al* (1984) classified claw abnormalities in sheep and goats into beak claws, scissors claws and corkscrew claws. Khamis *et al* (1984) classified claw abnormalities in cattle into 3 types namely overgrown claws, scissors claw and hypoplastic one.

They added that these abnormalities were associated with some pathological changes as osteitis, periostitis and ulceration in articular cartilage.

## **MATERIAL and METHODS**

The materials of this work were collected from animals coming to the clinic of the faculty of veterinary Medicine, Assiut, animals coming to animal health centers in Assiut Province and from some private farms in Assiut Province.

The incidence of claw abnormalities and overgrowths in sheep and goats were detected. Affected animals were submitted to a preliminary inspection to isolate those having signs of lameness and claw malconformations. History of each case including breeding purpose, system of housing, type of floor, duration of abnormality and time of claw caring.

General inspection including sex, limb conformation, wide hocks, tied in hocks or wide or narrow carpal joints and size of the udder were recorded. Correction of these abnormalities was performed under the effect of xylazine Hcl in a dose of 0.2 mg/kg body weight. The affected claws are moistened by running water for 24 hours after which correction became easy using the claw cutter and removing as far as possible the excess in the horn taking care not to injure the sensitive tissues. After correction, the animals were put on soft ground.

## **RESULTS and DISCUSSION**

In the present study abnormalities in the overgrowth of claw constituted an incidence of 33-3% in sheep and 25% in goats as shown in table 1. This high incidence of claw abnormalities denotes that attendants and owners do not take care of their animals, in addition lack of exercise and increasing time spent in the stall leading to decrease in horn wear contribute to the problem. Abnormalities in overgrowths of the claws in sheep and goats are more prevalent in the hind feet than in the fore ones as shown in Table 4.

In this study corkscrew and wrinkled claws (Fig. 4, Fig. 16, Fig. 6 & Fig. 15) were more prevalent in the lateral claws of the fore feet, while toing out and wrinkled claws were prevalent in the medial claw of the fore feet. On the other side, wrinkled claw, toeing in (Fig. 13) and toeing out (Fig. 3, Fig. 7 & Fig. 12) were more prevalent in the lateral claws of the hind limbs, as well as in the medial claw of the same limbs as shown in Table. 4. The prevalence of these abnormalities in the hind feet agree with what was mentioned by

Wyssmann (1902), Greenough *et al* (1972), Greenough (1982) and Ali (1983) in cattle. These authors stated that the horn of the hind feet is weaker than the horn of the fore feet. In our opinion the main cause of prevalence is the subjection of the hind feet to moisture from the urine and faeces specially in illdrained stalls.

The incidence of claw abnormalities in sheep and goats is high in females than males, specially in their hind feet owing to the fact that pregnancy specially in the advanced state puts more weight on the hind feet. (Table. 3).

Wyssmann (1902) added that the enormous size of the udder cause an abnormal gait in cows and to accomodate a large sized udder, the hind limb have to be carried apart and rather more caudally. This will result in abnormal disposition of stress. The present results in sheep and goats support this opinion, where a high significant effect of udder size could be estimated in this respect (Table. 6). The same results were observed by Greenough (1982) and Ali (1983) in cattle. It is evident from the present study that the type of floor has an effect on claw abnormalities where the incidence of these abnormalities is more prevalent in animals bread on soft floor because of the accelerated horn growth than the horn tear (Table. 5).

In this investigation wrinkled claws (Fig. 6) are present in the form of dry and rough appearance as mentioned by Greenough (1980). He attributed the condition to inadequate function of the periople which usually occurs concurrently with riding. The depletion of stratum externum, however can occur mechanically in dry sandy, dry and windy areas or as a normal process of aging.

The present study revealed the higher incidence of this abnormality in the lateral hind claws as shown in table 4, a phenomenon supported by Wysmann (1902) and Greenough (1982), who stated that the horn of the fore feet is stronger than that of the hind feet. The percentage incidence of claw abnormalities in sheep was nearly 21.5% wrinkled claws, 16% toeing out, 17% toeing in 13% corkscrew, 10% elongated 9.5% hyperplastic, 9.3% diverging claws (Fig. 8) and 1.5% hypoplastic claws (Fig. 10) approximately.

In goats the incidence was 33% elongated claws 29% wrinkled (Fig. 16), 26% toeing in (Fig. 13), 25% hyperplastic (Fig. 16), 24.5% diverging claws (Fig. 14), 24% toeing out (Fig. 12) 20.5% corkscrew, 6.5% hypoplastic claws (Fig. 9) and lastly overlapping claws which were only seen in goats (Fig. 11) in a percentage of 7.7% approximately. In the present study corkscrew, wrinkled and elongated claws were more prevalent in the lateral claws of the fore feet and hind feet of sheep and goats (Table. 4). Toeing in was prevalent in the lateral claw of the fore feet and hind feet of sheep and

goats, while toeing out was prevalent in the medial claw of the fore feet in sheep and in the lateral claw of the fore and hind feet of goats. In some cases all claws of the fore feet were toeing out. This is mostly attributed to congenital or acquired mal-position of the fore limbs as tied-in carpal joints (Fig. 12). Nearly the same results were stated by Greenough (1980) in cattle, Hypoplastic claws were only present in the lateral claws of both fore and hindfeet except one case only where it was present in the medial claw (Table. 4). Bifurcated claws were only present in the thoracic limbs of sheep where one of the claws is affected (Fig. 5). Overlapping claws were only seen in the hind feet of goats where the medial claw in most cases overlap the lateral claw (Fig. 11).

In the present study hyperplastic calws were only present in the medial claws of the thoracic and pelvic limbs of sheep, but in goats it was found only in the medial claw of the pelvic limbs.

The high incidence of wrinkled claws in sheep and goats is related to the alternate moisture and dryness in the stall ground, while toeing in and toeing out in sheep and goats are related to the abnormal posture of the limbs as tied in hocks or hocks situated widely apart. This explanation is supported by Greenough *et al.* (1972) and Greenough (1982).

## REFERENCES

- Ali, S.E. M.M. (1983):* Incidence of claw abnormalities incattle and buffaloes M.V.Sc. Faculty of Vet. Med. Assiut University.
- Anderson, L. and Lundstrom, K. (1980):* The influence of breed, age and season on digital in swedish dairy cow; 3rd Int. Symposium on disorders of ruminant digit. October Lu5, (1980): p.p.62-71.
- Bouckaert, J.W. and Delodere, F. (1958):* De Kurketrakker Klauw- (Corkscrew claws in cattle) Vlaams diergeneesk. Tijdschr., 27 (6): 149-1520
- Florention. M. (1963):* Cited by Greenough. P.R., *et al* (1972).
- Greenough, P.R.; MacCallum, F.J. and Weaver, A.D. (1972):* Lameness in cattle 2 1st. Ed., Edinburgh: Oliver and Boyd.
- Greenough, P.R. (1980):* Claw deformities 3rd Int. symposium on disorders of the reuminant digit October 1-5, 1980. p.p. 56-61, Vienna, Austria.
- Greenough, P.R.; NacCallum, F.J.; and Weaver, A.D. (1981):* Lemeness in cattle 2nd Ed. John wright & sons Ltd., Bristol. England.

- Kral, E. and Roztocil, V. (1980):* Classification of affections of the bovine digit, 3rd Int, symposium on disorders of the ruminant digit. October 1-5, 1980; p.p. 88-89. Viennam Austria.
- Khamis, Y.; Hassanein, A.; Ahmed, A.S.; Soliman, A.S. and Easa, M, El, S. (1984):* Contribution to claw deformitis in native cattle Vet. Med. J. Vol. 32, No. 2.
- O'connor, J.J. (1982):* Dollar's veterinary surgery General operative and regional 4th edition Delhi 110032. India.
- Soliman, L.A.; Shabaan, L.A. ;El-Meligy. A. and Abd El-Gallil, Y. (1984):* Mangement of certain foot problem in sheep and goats. Faculty of Vet. Med. J. Zagazig University Egypt-Vol, x p.p. 255.
- Wyssmanum, E. (1902):* Cited by Grenough et al. 1972.

## LEGENDS

- Fig 1:** Hyperplastic medial claw right and corseven lateral claw left fore limb (Sheep).
- Fig 2:** Elongated claw left fore limb and toeing in (Sheep).
- Fig 3:** Toeing out both fore limbs (Sheep).
- Fig 4:** Corkscrew lateral claw (Sheep) left hind.
- Fig 5:** Bifurcated medial claw (Sheep).
- Fig 6:** Wrinkled claw (Sheep).
- Fig 7:** Toeing out and inverted V. (Sheep).
- Fig 8:** Diverging claw (Sheep).
- Fig 9:** Hypoplastic lateral claw (Sheep).
- Fig 10:** Hypoplastic lateral claw right limb (Goat).
- Fig 11:** Overlapping claw with hyperplasia of the medial claw of the right hind foot (Goat).
- Fig 12:** Toeing out all claws fore limbs (Goat).
- Fig 13:** Toeing in both claws right hind limb (Goat).
- Fig 14:** Diverging claws right fore limb (Goat).
- Fig 15:** Corkscrew left fore limb (Goat).
- Fig 16:** Winkled claw right fore limb and hyperplastic left fore limb (Goat).
- Fig 17:** Corkscrew lateral claw fore limb (Sheep).

Table (1): Incidence percentage of claw abnormalities in sheep and goats.

Species	No. of affected cases	No. of Inspected animals	Incidence percentage
Sheep	496	1488	33.3 %
Goats	312	1248	55 %

Table (2): Incidence percentage of different claw abnormalities in sheep and goats.

Abnormality	Sheep		Goats		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Diverging claws	48	9.3	48	15.4	94	24.7
Inverted V shape	7	1.4	—	—	7	1.4
Toeing in	84	16.9	28	9.0	112	26.00
Hypoplastic	7	1.4	20	6.4	27	7.8
Wrinkled claw	106	21.4	24	7.7	130	29.00
Toeing out	78	15.7	25	8.0	103	23.7
Corkscre <sup>w</sup>	65	13.1	23	7.4	88	20.5
Bifurcated claw	7	1.4	—	—	7	1.4
Elongated claw	49	9.9	72	23.0	121	33.0
Overlapping claw	—	—	24	7.7	24	7.7
Hyperplastic claw	47	9.5	48	15.4	94	24.9

Table (3): Sex incidence of different claw abnormalities.

Abnormality	Sheep				Goats			
	Male		Female		Male		Female	
	No	%	No	%	No	%	No	%
Diverging	10	21.7	36	78.3	13	27.8	35	72.2
Inverted V	1	14.3	6	85.7	—	—	—	—
Toeing in	14	16.6	70	83.3	7	25	21	75
Hypoplastic	—	—	7	100	1	5	19	95
Krinkled	18	17	88	83	2	8.3	22	91.7
Toeing out	13	16.7	65	83.3	5	25	20	75
Corkscrew	11	17	54	83	2	8.7	21	91.3
Bifurcated	1	14.2	6	85.8	—	—	—	—
Elougated	10	20.5	39	79.5	11	15.3	61	84.7
Overlapping	—	—	—	—	1	4.2	23	95.8
Hyperplastic	9	19.1	38	80.9	9	18.7	39	81.8



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

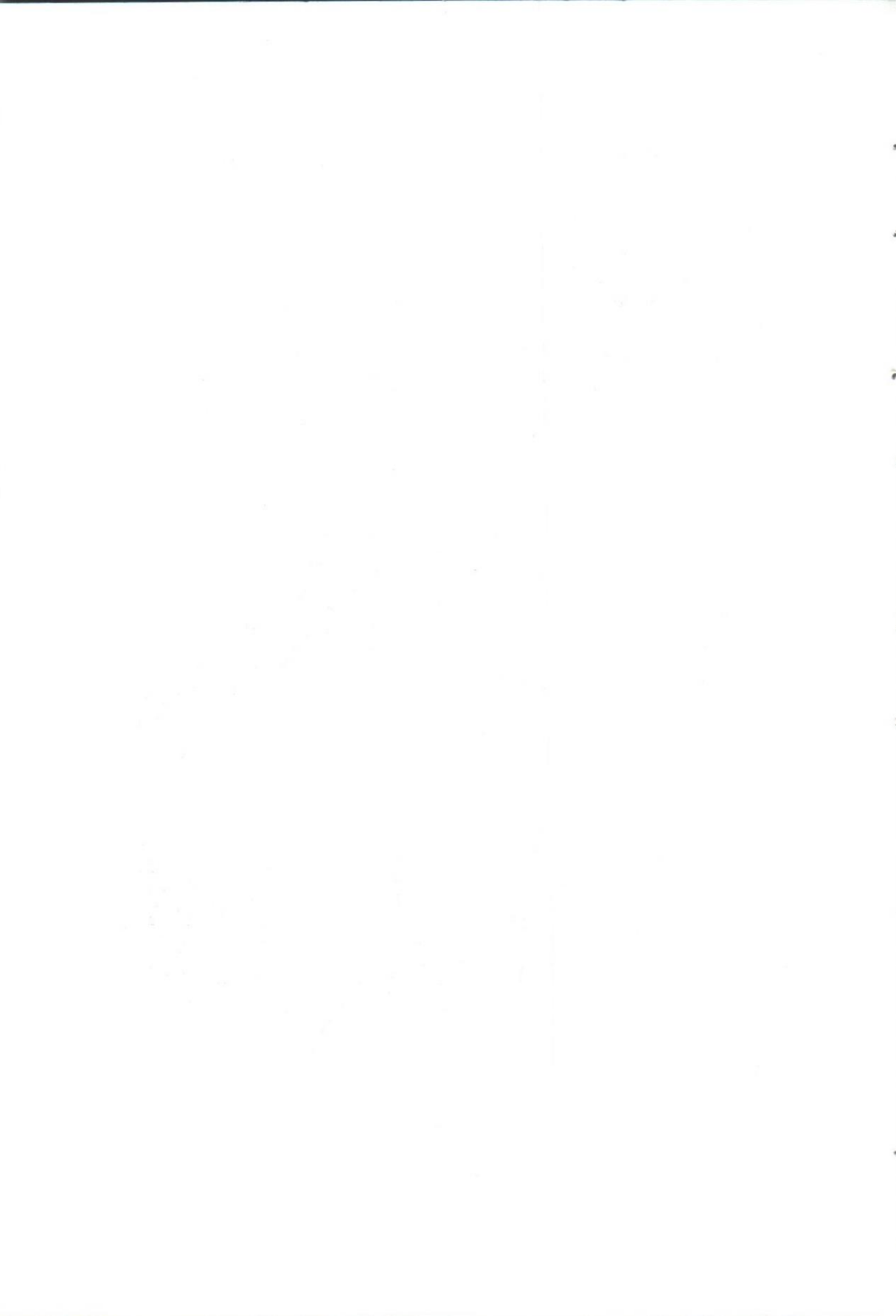
Species	Seat of abnormality	Diverging	Inverted V shape	Toeing in	Hypoplastic	Wrinkled	Topping out	Corkscrew	Bifurcated	Elongated	Overlapping	Hyperplastic	Total
Sheep	Thoracic limb	19	5	-	-	-	-	-	-	-	-	-	24
	Lateral claw	--	-	14	6	25	20	47	6	61	-	-	139
	Medial claw	--	-	12	-	22	23	4	1	13	-	2	77
	Pelvic limb	11	1	--	-	--	--	-	-	--	-	-	13
	Lateral claw	--	-	31	2	39	17	10	-	12	-	-	111
	Medial	--	-	27	-	20	18	4	-	3	-	45	117
	Four feet	16	-	--	-	--	--	-	-	-	-	-	16
Goats	Thoracic limb	16	-	--	-	--	--	-	-	-	-	-	16
	Lateral claw	--	-	9	8	7	7	15	-	27	-	-	73
	Medial claw	--	-	6	-	4	4	2	-	21	-	-	40
	Pelvic limb	18	-	-	-	-	-	-	-	--	-	-	18
	Lateral claw	--	-	8	9	9	9	5	-	13	2	--	55
	Medial claw	--	-	5	1	4	5	1	-	11	22	4	95
	Four feet	14	-	-	-	-	-	-	-	--	--	-	14

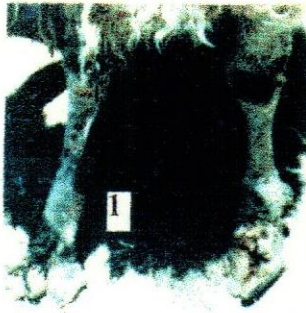
Table (5): Incidence percentage of claw abnormalities in sheep and goats in different types of floors.

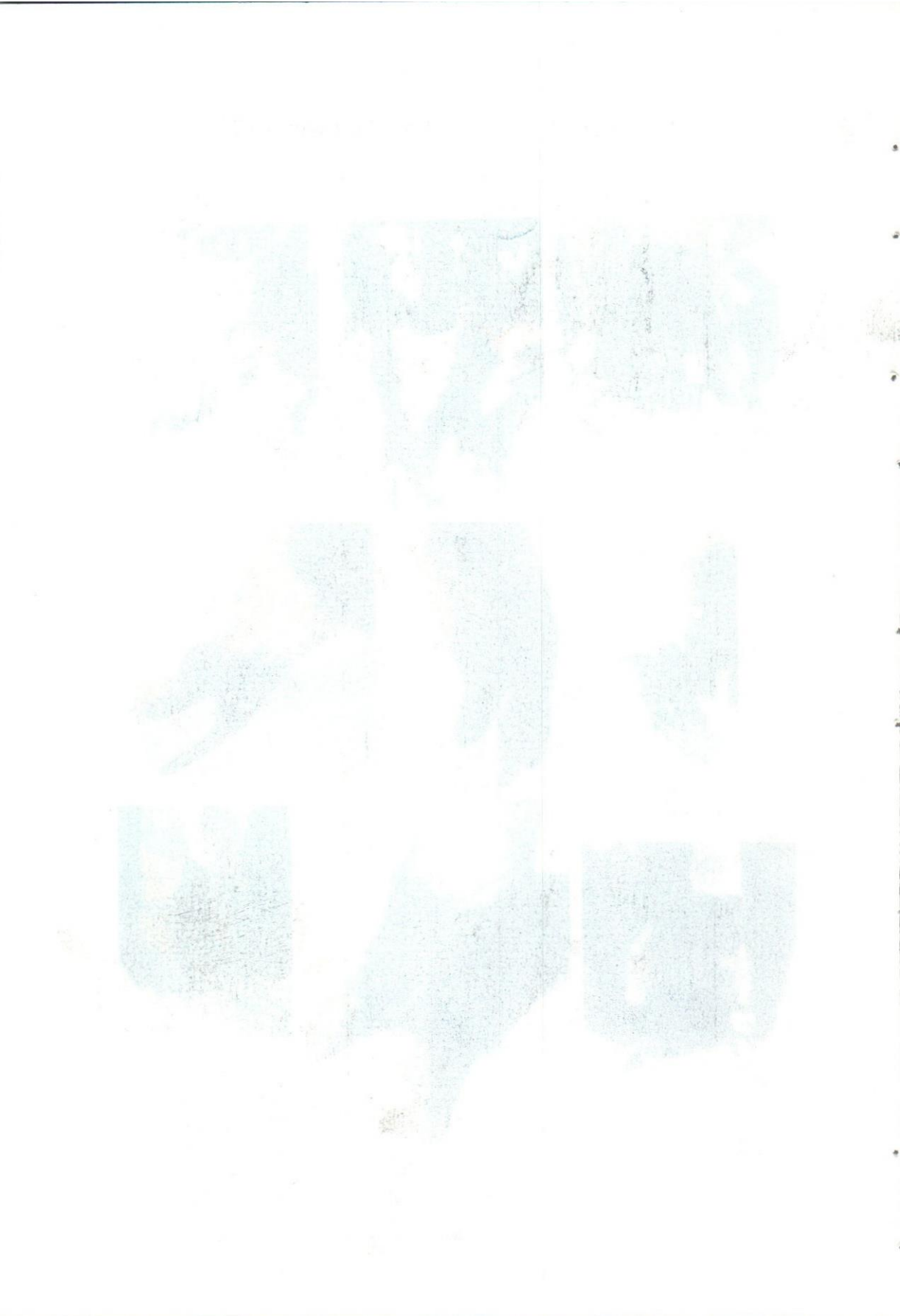
Abnormality	Soft floor	Hard floor (concrete)	Alternate moisture and dryness
Diverging	2.8 %	22 %	50 %
Inverted V	32 %	34 %	34 %
Toeing in	56 %	13 %	31 %
Hypoplastic	34 %	33 %	33 %
Wrinkled	59 %	17 %	24 %
Toeing out	53 %	17 %	30 %
Corkscre	49 %	19 %	32 %
Bifurcated	13 %	16 %	71 %
Flongated	67 %	11 %	13 %
Overlapping	68 %	4 %	28 %
Hypertrophied	77 %	3 %	20 %

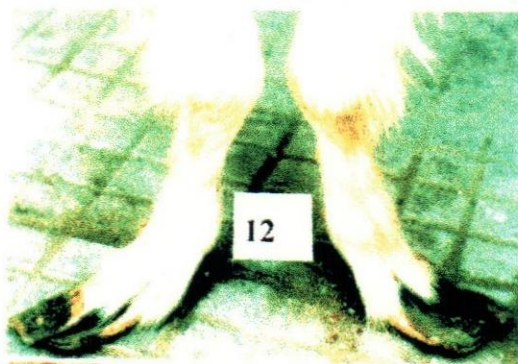
Table (6): Percentage claw abnormalities and overgrowth in relation to pregnancy and following parturition.

	Sheep		Goats	
	1st half of pregnancy	2nd half of pregnancy	1st half of pregnancy	2nd half of pregnancy
Non pregnant	13 %	15 %	11 %	13 %
After parturition		48 %		21 %
After parturition				55 %









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