Periparturient conditions affecting camels (*Camelus dromedarius*) in Israel and their treatments

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Key words

Camelus dromedarius - Perinatal period - Pathology - Israel.

Summary

This paper summarizes cases of pathological periparturient conditions found and treated in camels, by a private ambulatory clinic in the Negev region of Israel, during the years 1995-1999. A total of 39 camels were presented with the following periparturient conditions: 27 camels with dystocia, 9 camels with prolapse of the uterus, and 3 camels with retention of the placental membranes. The main causes for dystocia were malposture of the fetus and torsion of the uterus, but other causes were also found. In Israel, the practice of keeping camels tied with no exercise could serve as a risk factor for most of these conditions. Most published literature on periparturient conditions in camels is limited to case reports. The present paper, which includes a relatively large number of cases, could be of importance to help understand the etiological aspects of these conditions.

■ INTRODUCTION

The frequency of dystocia in camels is reported to be approximately 1% of births (7) and not much has been published on this subject (1). Nevertheless, the economical impact on one family caused by loss of dam or calf due to dystocia can be very heavy, especially in Israel where most Bedouin families only own one or two female camels for milking. Other periparturient conditions such as prolapse and torsion of the uterus have been reported in camels (2, 3, 6, 8, 12) and are also of economical importance. Retention of fetal membranes is uncommon in camels although some cases are said to be fatal (1).

To the knowledge of the author, this is the first report of occurrence, treatment and outcome of pathological periparturient conditions in camels in Israel. Because the study includes a relatively large number of cases, it might help improve our understanding of the etiology and therapeutical aspects of these conditions.

■ MATERIALS AND METHODS

Cases and animals

All cases were presented to a private ambulatory clinic between January 1995 and April 1999. The clinic operated in the Negev, a semiarid to arid area in Southern Israel. The camel population in the area was estimated at 2500. Practically all camels were owned by Bedouins who usually kept one or two camels tethered near home for milking. Camels were usually fed wheat or barley hay or straw, with or without a supplement of grain, and usually without access to grazing. Documentation of each case included history, clinical symptoms and treatment. When possible, contact was made with the owner in order to follow up on the case.

Procedures

Mutation of the fetus

Epidural anesthesia using 3-4 cc lidocaine 2% with epinephrine (Xylocaine®, Vitamed, Israel) injected between the last sacral and first coccygeal vertebrae was used in most cases. Uterus relaxation was achieved by injecting 100 mg of isoxsuprine (Vitamed, Israel) intravenously (i.v.). Repositioning of the calf was done while the dam was standing.

Fetotomy

Epidural anesthesia was used as described above. Thygesen's fetotome was used and the obstetrical wire was positioned preferably while the camel was standing. Finally, 50 IU of oxytocin (Vitsyntocin®, Vitamed, Israel) were administered i.v. and a combination of 5 x 10^6 IU penicillin and 6.25 g streptomycin (Pen-strep®, Vetimex, Holland) was administered IM for 3-6 days.

Uterine torsion

Diagnosis was made by rectal or vaginal palpation. In case the cervix was open, the dam was tied in right lateral recumbency for the correction of clockwise torsions. The dam was then rolled over the back while the calf was held back transvaginally. In case the cervix was not open, the same procedure was attempted with simultaneous administration of external pressure on the fetus through the dam's body wall.

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Cesarean section

Sedation was induced by administration of xylazine 0.12 mg/kg i.v. (Vitamed, Israel). The dam was positioned in sternal recumbency and the operation was performed via the left upper flank.

Prolapse of the uterus

Owners were advised to tie the animal in sternal recumbency and wrap the uterus in a clean wet cloth. In case the uterus was badly wounded and/or the mucosa was severely necrotic, or if the uterus could not be repositioned, a ligation was applied at the level of the vagina and the uterus was amputated. Reposition of the uterus was performed preferably with the dam standing, without sedation but with epidural anesthesia as described above. Prior to repositioning, the uterus was placed on a plastic box and held by two helpers. The clinician was positioned between the helpers, behind the camel. The uterus was thoroughly rinsed and pushed back in place. After pushing uterine horns as far back as possible, a plastic bottle held by the bottleneck was used as an extension of the arm to make sure the tips of the horns were not inverted. The uterus was then rinsed with cold water using a hose or a tube and funnel. Finally, oxytocin and antibiotics were administered as previously described.

Retention of placental membranes

Oxytocin (30-50 IU) was injected i.v. After 5-10 min the membranes were removed manually. Antibiotics were administered as previously described.

■ RESULTS

Dystocia

During the study period, 27 camels incurred dystocia. Details of these cases are summarized in table I. Seventeen of these cases (63%) were caused by malposture or malpresentation of the calf.

Table I

Cases of camels presented with dystocia to a private ambulatory clinic in Negev region, Israel, January 1995-March 1999

Num.	Parity	Diagnosis	Therapy	Fate of the dam	Fate of the calf	TP* (hours)
1	n.a.[1]	Bilateral hock flexion	Mutation	+[2]	-[3]	
2	M[4]	Bilateral hock flexion	Mutation	+	-	
3	M	Bilateral hock flexion	Mutation	- (8 weeks)	-	24
4	M	Retroflexion of head and neck with carpal flexion	Fetotomy	+	-	48
5	n.a.	Retroflexion of head and neck	Fetotomy	+	-	18
6	M	Right uterine torsion 270° and vaginal rupture	Euthanasia	-	-	18-19
7	M	Right uterine torsion 90°	Roll and forced extraction	+	-	48
8	M	Retroflexion of head and neck	Fetotomy	+	-	72
9	M	Retroflexion of head and neck with carpal flexion	Mutation	- (1week)	-	10
10	n.a.	Uterine inertia	Forced extraction	+	+	
11	P[5]	Prolapse of gravid uterus through vaginal rupture	Hysterotomy	-	-	11
12	M	Bilateral hock flexion	Mutation	+	+	n.a.
13	M	Posterior presentation with extraction umbilical cord around tarsus	Forced extraction	+	_	6
14	M	Arthrogryposis	Fetotomy	+	-	30
15	M	Bilateral hip flexion	Fetotomy	+	-	120
16	M	Right uterine torsion 180°	C. section	+	+	n.a.
17	M	Uterine inertia	Forced extraction	+	+	48
18	P	Right torsion of the uterus 270°	C. section	+	+	18
19	P	Retroflexion of head and neck	Fetotomy	+	-	14
20	P	Relatively too big calf	Forced extraction	+	+	7
21	P	Ventrolateral flexion of head and neck	Fetotomy	- (3 days)	-	4-5
22	S[6]	Ventrolateral flexion of head and neck	Fetotomy	- (1 day)	-	24-48
23	S	Macerated calf	Forced extraction	- (12 h)	-	72
24	P	Retroflexion of head and neck	Fetotomy	+	-	18
25	M	Retroflexion of head and neck	Fetotomy	+	-	24
26	P	Retroflexion of head and neck Severely septic dam	-	-	-	24
27	M	Bilateral hock flexion	Fetotomy	+	-	8

* Estimated time between labor stage II to arrival of clinician. 1. Not available; 2. Survived; 3. Died; 4. Multiparous; 5. Primiparous; 6. Second *partus*

In all cases but one, the calf was dead by the time the clinician checked the dam. Fetotomy was performed in ten cases.

Mutation of the fetus was attempted in four cases of bilateral hock flexion, and one case of retroflexion of head and neck. Two of these dams died, one of them two months later due to chronic, suppurative peritonitis originating from a tear in the vagina that occurred during the mutation and was sutured *post-partum.*

During the study period, four cases of torsion of the vagina and uterus were diagnosed. All torsions were to the right (clockwise). In one case a concurrent vaginal rupture was diagnosed through which the head and neck of the calf displaced to the abdominal cavity of the dam. Consequently, the dam was euthanized. In another case the dam was rolled and in two cases cesarean section was performed after rolling failed. In both latter cases the dams rejected the calves after the operation.

The remaining cases of dystocia were caused by uterine inertia (two cases), presence of a macerated calf in the uterus (one case), arthrogryposis (one case), a relatively oversized calf (one case) and prolapse of a gravid uterus horn through a rupture in the vagina (one case).

Uterine prolapse

During the study period, nine cases were treated. The details are summarized in table II. Average time between parturition and prolapse was approximately 4 h (range 0-10 h). In four out of seven cases the dam survived reposition. No camel survived amputation of the uterus although in one case the uterus was prolapsed for three days until the clinician was summoned.

Retention of placental membranes

Three camels were presented with retention of the fetal membranes for more than 4 h *post-partum.* The membranes became loose shortly after administration of oxytocin and were manually removed without difficulties. The owners reported no further complications.

Table II

Cases of camels presented with uterine prolapse to a private ambulatory clinic in Negev region, Israel, January 1995-March 1999

Num.	Parity	Therapy	TP* (hours)	Fate
1	M[1]	Reposition	0.5	+[2]
2	M	Reposition	0	+
3	M	Reposition	n.a.[3]	-[4] (2 weeks)
4	M	Amputation[5]	4	- (4 days)
5	M	Reposition	n.a.	+
6	M	Reposition	2	+
7	P[6]	Reposition	10	-
8	P	Amputation	4	- (2 days)
9	M	Reposition	7	- (2 days)

* Time between *partus* and prolapse
1. Multiparous; 2. Survived; 3. Not available; 4. Died; 5. In this case the owner presented the case three days after the occurrence of the prolapse; 6. Primiparous

■ DISCUSSION AND CONCLUSION

Most published data on dystocia in camels is limited to case reports (3, 5, 10, 11). In this study, a large percentage of camels (63%, 17/27) suffered from dystocia due to malposture and malpresentation of the fetus. The estimated time between owner noticing symptoms that could be attributed to stage II of labor (i.e. frequent lying and standing and/or passage of allantoic fluid from the vulva and/or powerful contractions of the abdominal muscles) and arrival of clinician was very long (average 30.9 h, range 4.5-120 h). This was mainly due to the inability of many owners to recognize initiation of the *partus* but also because of time wasted on lay assistance. Both can be attributed to lack of experience of the owners in recognizing and managing dystocia.

All four cases of uterine torsion in this study were clockwise. Clockwise torsion seems to be more common in Old and New World camelids (2, 3, 4), although some authors suggest that anticlockwise torsion should be more common (7).

Reports on prolapse of the uterus are rare (6, 8, 12). Reposition of the uterus was achieved much more easily when the camel was standing. Time from *partus* to prolapse was similar to that found in cattle.

Pregnant cows kept in close confinement and those suffering from periparturient hypocalcemia are more prone to difficulties such as uterine inertia, torsion of the uterus and prolapse of the uterus (9). In Israel, where most camels are kept tied near the tent with no exercise, confinement could serve as a risk factor for dystocia and prolapse of the uterus. Hypocalcemia could also play a role in the etiology of these cases in Israel. Unfortunately, serum calcium levels were not checked in this study. Nevertheless, severe cases of hypocalcemia have been found in lactating camels in Israel (13).

In the opinion of the author, mutation of a malpostured calf should be restricted to cases in which the calf is alive. The dam should stand, and a uterus relaxant should be used. It must be kept in mind that the risk of tearing the vagina or uterus is extremely high due to the long extremities of the calf. Therefore, it might be wise to perform a cesarean section in many of these cases. If the calf is dead and the cervix is sufficiently dilated, fetotomy is the treatment of choice. If the cervix is not sufficiently dilated, a cesarean section must be performed. In case the dam is severely septic, salvage slaughter or euthanasia should be considered.

Prognosis for future conception and birth is unknown because owners tend to sell the treated camels after they recover and because of difficulties in performing a proper follow-up on the cases.

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Résumé

Straten Van M. Pathologies du péripartum affectant le dromadaire (*Camelus dromedarius*) en Israël et leur traitement

Cette communication résume les cas de pathologies du péripartum observées et traitées par une clinique privée ambulante dans la région du Negev en Israël au cours des années 1995-1999. Un total de 39 femelles dromadaires ont présenté les problèmes suivants : 27 cas de dystocie, 9 cas de prolapsus utérin et 3 cas de rétention placentaire. Les causes principales de dystocie ont été les mauvaises postures du fétus et la torsion de l'utérus, mais d'autres causes ont également été trouvées. En Israël, la pratique du gardiennage entravé des dromadaires privés d'exercice peut être considérée comme un facteur de risque pour la plupart des pathologies du péripartum. La majorité des publications sur ce sujet chez le dromadaire se limitent à la description de cas. La présente publication qui inclut un nombre relativement important de cas peut être utile pour comprendre les aspect étiologiques de ces pathologies.

Mots-clés : *Camelus dromedarius* - Période périnatale - Pathologie - Israël.

Resumen

Straten Van M. Condiciones peri parto que afectan a los camellos (*Camelus dromedarius*) en Israel y su tratamiento

El presente trabajo resume casos de condiciones peri parto patológicas, encontradas y tratadas en camellos por una clínica ambulatoria privada, en la región de Negev, Israel, durante los años 1995-1999. Se presenta un total de 39 camellas con las siguientes condiciones peri parto: 27 camellas con distocia, 9 camellas con prolapso uterino y 3 camellas con retención de membranas placentarias. Las principales causas de distocia fueron una mala posición del feto y torsión del útero, aunque también se encontraron otras causas. En Israel, la práctica de mantener al camello atado y sin ejercicio puede actuar como factor de riesgo para la mayoría de estas condiciones. La mayor parte de la literatura publicada sobre las condiciones peri parto en camellos se limita al reporte de casos. El presente estudio, que incluye un número relativamente grande de casos, podría ser importante para ayudar a entender los aspectos etiológicos de estas condiciones.

Palabras clave: *Camelus dromedarius* - Periodo perinatal - Pathología - Israel.