

DYSTOCIA IN GOATS FROM DJELFA IN ALGERIA

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Abstract. Dystocia, or difficult birth, is defined as prolonged and difficult parturition. It may be either of maternal or fetal origin. To our knowledge no study has been made on dystocia in goats. Thus, the aim of this study was to describe the common causes of dystocia in goats from Djelfa, in Algeria. Among the general causes, fetal causes dominants the maternal once with a rate of 68,75% and 31,25%, respectively. Regarding specific causes, mal-disposition, specially malposture, was the most frequent (54,54%), followed by emphysema (25%) and finally oversized fetus (9,09%). For maternal causes of dystocia, narrowing pelvis was the predominant causes with a rate of 80% and it was specially observed in primiparous does. The present survey has shown that fetal dystocia are more frequent in multiparous than in primiparous does with a rates of 100% and 0%, respectively. While maternal dystocia are very frequent in primiparous than in multiparous does (80% vs 20%, respectively) (table 2). In addition, dystocia was strongly associated with double litters size (50%), followed by single litters size (37.5%).

Keywords: Causes, Dystocia, Goats, Djelfa, Algeria

INTRODUCTION

Goats play important economical role for the small farmers of landless, given their suitability to poor systems (Khan et al., 2006). They are widely adapted to different climates and are found in all production systems (Ouchene-Khelifi et al., 2018). In Algeria, goats are distributed unevenly in different regions and under various climatic and environmental conditions (Bourabah et al., 2013), principally in the steppic regions (41.1%), in mountainous areas (28.8%) and in Saharan regions (22.5%) (Khemici et al., 1993).

Among the four main local breeds (Arabia, Makatia, M'Zabyte and Kabyle) (Ouchene-Khelifi et al 2018), Arabia is the dominant breed. The goats are considered one of the highly fertile domestic animals. There are several reproductive diseases that affect the fertility and production causing considerable economic losses.

Dystocia is one of these problems (Hussain and Zaid, 2010). Dystocia, or difficult birth, is defined as prolonged and difficult parturition which takes more than one hour after rupture of the fetal membranes (Ahmed et al., 2017) with assistance frequently being required (Moges, 2016). It is a contributory factor in peri-natal death of dams and newborns because of damage to the birth canal and use of excessive traction forces (Brounts *et al.*, 2004; Scott, 2005). Dystocia may be either of maternal or fetal origin (Singh et al., 2017). Maternal dystocia were mainly due to a deficient dilatation of the cervical canal (ringwomb), narrow pelvis and uterine inertia. Fetal

dystocia occurred mainly due to oversize, mal-disposition, and monsters (Noakes *et al.*, 2009; Ali, 2011). The incidence of dystocia is considered higher in does compared to ewes (Mehta *et al.*, 2002). Dystocia in sheep and goat, results in huge economic losses to farmers either due to death of new born or dam or adversely affecting dam fertility (Mcsporrán, 1980). In Algeria some studies have been devoted to the study of dystocia in sheep (Ghanam *et al.*, 2017; Mostefai *et al.*, 2019 ; Mahmoud *et al.*, 2019; Dahmani *et al.*, 2019) but to our knowledge no study has been made on dystocia in goats. Thus, the aim of this study was to describe the common causes of dystocia in goats from djelfa, in Algeria.

MATERIALS AND METHODS

Study area

The wilaya of Djelfa, located in the center of the steppe, is the most important area of this latter. This wilaya is a transition zone between the steppe highlands of the Tell Atlas and the pre-Saharans of the Saharan Atlas. It is between 2 ° and 5 ° east longitude and between 33 ° and 35 ° north latitude. It covers an area of 33,236 km². Winters are cold and harsh and summers hot and dry (Yabrir *et al.*, 2015). The main cities of Djelfa are Ain Oussara, Messaadi and Hassi Bahbah. The present study was carried in Ain Ouassara city.

Study design

A total of 16 female goats (4 primiparous and 12 multiparous) suffering from dystocia and presented to a private veterinary clinic in Ain Oussara city were the subject of the study from September 2017 to January 2020. These females belong to the arbia breed with the exception of one which showed a phenotype of a Syrian goat. Once the female goat with difficulty in delivery is presented to the veterinary clinic, the history and clinical condition of each animal were noted and a detailed vaginal examination was considered to determine the cause of the dystocia. Each case was attributed to a single primary cause; any secondary or subsequent factors were ignored (Thomas, 1992).

RESULTS AND DISCUSSION

Among the general causes, fetal causes dominants the maternal once with a rate of 68,75% and 31,25%, respectively. We would like to point out that the most frequent cause of dystocia is due to fetal mal-posture (37.5%) where head deviation was present in all cases. It follows fetal emphysema and narrow pelvis (25% each) and ultimately oversized fetus and non-dilation of the cervix (6,25 each). Regarding specific causes, mal-disposition, especially malposture, was the most frequent (54,54%), followed by emphysema (25%) and finally oversized fetus (9,09%).

For maternal causes of dystocia, narrowing pelvis was the predominant causes with a rate of 80% and it was specially observed in primiparous does. However, ringwomb represent only 20% of maternal causes of dystocia, which was observed in the Syrian goat. These results are summarized in table 1.

The present survey has shown that fetal dystocia are more frequent in multiparous than in primiparous does with a rates of 100% and 0%, respectively. While maternal dystocia are very frequent in primiparous than in multiparous does (80% vs 20%, respectively) (table 2). In addition, dystocia was strongly associated with double litters size (50%), followed by single litters size (37.5%) (Table 3).

Table 1

Frequencies of different causes of dystocia goats (n=16)

General causes	Specific causes	Number of animals	Global frequency	Specific frequency
Fetal 11 (68,75%)	Mal-posture	6	37,5% (6/16)	54,54% (6/11)
	Emphysema	4	25% (4/16)	25% (4/11)
	Oversize	1	6,25% 5 (1/16)	9,09 % (1/11)
Maternal 5 (31,25%)	Narrow pelvis	4	25% (4/16)	80% (4/5)
	Ringwomb	1	6,25% 5 (1/16)	20% (1/5)

Table 2

Effect of parity on the cause of dystocia in goats

	Primiparous	Multiparous
Fetal	0% (0/11)	100% (11/11)
Maternal	80 (4/5)	20% (1/5)

Table 3

Effect of the litter size on dystocia

Number of fetus	Frequency of dystocia
Single	37.5% (6/16)
Double	50% (8/16)
Triple	12.5% (2/16)

A majority of the Algerian goat population is raised under low-input farming systems (Madani et al., 2015). Despite their vital roles in rural livelihoods and their economic importance, goats have been neglected in development programmes (Laouadi et al., 2018) and their management is traditional (Ouchene-Khelifi et al., 2018).

During the present study, only 16 goats were presented to this veterinary clinic, while in another study on ovine dystocia (Mostefai et al., 2019), 87 ewes were presented to the same clinic and for a shorter period (September 2017 to March 2018), which can be explained by the fact that sheep herd is larger than that of goats on one hand, and breeders provide less therapeutic treatment for goats from where these latter are less presented to the clinic, on the other hand.

For goats, the incidence of dystocia, which is higher than in sheep, is difficult to interpret as they are kept in smaller herds and at many locations as individuals (Purohit, 2006). Incidence of dystocia in goat has been reported to be about 7% (Abdul-Rahman et al., 2000) and 8,23% (Mehta et al., 2002). Dystocia may be either of maternal or fetal origin (Singh et al., 2017). Occurrence of dystocia is related to several factors including postural abnormalities, number and size of fetuses, fetal anasarca or emphysema, nutritional status of dam, number of kidding and breed (Roberts, 1971; Smith, 1980; Arthur et al., 1982; Adams, 1986).

In the present study, the fetal causes of dystocia were more common than the maternal causes. Similar findings were reported in goat by several authors such as Abdul-Rahman et al. (2000) and Hussain and Zaid (2010). During this study fetal dystocia was the most frequent essentially in multiparous, followed by maternal

dystocia particularly in primiparous. Ali (2011) reported that maternal dystocia occurred more frequently in primiparous goat in both Aradi and Damascus breeds. This situation corroborates with the finding of Ali (2011).

In agreement of the findings of our study, many researchers (Majeed and Taha, 1989a ; Majeed, 1994 ; Jackson, 1995 ; Abdul-Rahman et al., 1999 ; Hussain and Zaid, 2010 ; Ali, 2011 ; Anusha et al., 2016 ; Ahmed et al., 2017) find that fetal maldisposition represent the major causes of fetal dystocia accounting for more than half of the dystocia cases.

In the total 248 goats, 130 cases (52.9%) were fetal and 118 (47.1%) maternal in origin. Fetal dystocia occurred due to maldisposition (46,75%) followed by emphysematous fetus and monsters in a rate of 5.6% of all dystocia cases. Maternal dystocia occurred mainly due to ringwomb or failure of cervix to dilate (27.4%). Other causes of maternal dystocia included uterine inertia (3.22%) and narrow pelvis (16.9%) (Majeed and Taha, 1989b). It has been assumed that mild or severe fetal ill and fetal death might predispose to fetal maldisposition, as may maternal illness or abnormal hormone level (Jackson, 1995; Noakes et al., 2009).

According to Jackson (1995) and Ali (2011), fetal maldisposition is the most common cause of ovine and caprine dystocia. In Algerian sheep, Mostefai et al. (2019) recorded in their study that fetal causes of dystocia were more prevalent than maternal one. Malpresentation was the most important cause of dystocia, followed by emphysema, ringwomb and uterine-inertia. This findings comfort our results.

The normal birthing position of the fetus is front feet first, followed by the head (Schatten and Constantinescu, 2007). The most common cause of fetal maldisposition that results in dystocia is the deviation of head and neck (Majeed, 1994 ; Abdul-Rahman et al., 1999; Hussain and Zaid, 2010 ; Zuhair, 2017). The degree of head deviation varies, most of the cases will be having only slight head deviation which can be easily corrected per-vaginally. Head deviation can occur laterally or downwards which varies in every case (Purohit, 2006). Our results showed that head deviation is present in all fetal maldisposition cases which are in agreement with those reported by these authors.

Simultaneous presentation of twins in birth canal was a common cause of dystocia in goats (Ali, 2011). The high incidence of twins and triplets may predispose for this condition in goats (Franklin, 1986; Jackson, 1995).

Maternal causes were mostly associated with failure of cervical dilation or ringwomb. It is commonly a sign of prolonged dystocia, and caesarean section is indicated. The exact etiology of this condition is not known, but it has been suggested that, in sheep and goats, hypocalcaemia, hypophosphatemia, mineral imbalance and or / ingestion of estrogen by pregnant animals, present in fungi or clover are the main causes of ringwomb. Hypocalcemia in the doe may cause nonproductive uterine contractions and failure of the cervix to dilate (Majeed and Taha, 1991).

In our survey, narrowing pelvis is the main maternal cause of dystocia. This result is in disagreement with those reported by Majeed (1994) ; Purohit, (2006) ; Ali, (2011) ; Sharma et al., (2014) ; Bhattacharyya et al., (2015) ; Singh et al., (2017) ; Zuhair, (2017) ; Sharun and Erdoğan, (2019) who reported that the main maternal dystocia is ringwomb. This difference may be explained by the fact that breeders in Algerian steppe appreciate Arbia breed for its low requirements, its resistance to harsh

climatic conditions and its ability to walk long distances, compared to other Algerian breeds or those imported from other countries (Laouadi et al., 2018). In addition, the daily milk production of this breed was estimated at 0.89 ± 0.91 kg per day what classifies this breed as very far from being a purely dairy goat such as Alpine and Saanen (Djouza and Chehma, 2018). The low milk yield can be explained by the poor body condition of the goats attributed to energy and protein deficiency in feeding based on grazing in arid and semi-arid areas characterized by low rainfall, and closely related to the practiced management systems (Morand-Fehr et al 2007). This poor body condition may explained the high incidence of narrowing pelvis in primiparous obtained in our survey. Additionally, some females may be themselves not fully grown and their pelvic may be quite small (Jackson 1995).

CONCLUSIONS

Dystocia in goats from Djelfa in Algeria is of origin, mainly fetal and secondarily maternal. Fetal dystocia are generally observed in multiparous while maternal dystocia are observed in primiparous. Fetal maldisposition is the most common cause of fetal dystocia and narrowing pelvis is the most common cause of maternal dystocia. It is therefore recommended that other epidemiological studies be carried out on a larger number to verify other causes of dystocia and elucidate the risk factors involved.

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