Journal of Animal and Veterinary Advances 16 (2): 40-42, 2017
ISSN: 1680-5593

Dystocia Effect on the Viability of Lambs in Eastern Algeria

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Abstract: This study was carried on 100 cases of different types of dystocia in sheep raised in 09 different provinces of Eastern Algeria during 3 years (2012-2015). Out of 136 lambs obtained following dystocia, 52.20% died during birth and 47.79% survived. Factors significantly influenced the viability of these lambs were type of dystocia (fetal disproportion p = 0.001) and type of intervention (manual correction: p = 0.0001, caesarean: p = 0.02, referral to the slaughter p = 0.0001 and foetotomy p = 0.001). The objective of this study was to determine the main factors that influence the viability of lambs in Eastern Algeria.

Key words: Dystocia, lambs, viability, influence, Algeria

INTRODUCTION

The lamb is the main source of income in sheep farming, that is why its survival is the primary concern of all farmers. Indeed, after a long season of waiting and huge expenses incurred in the supply and monitoring of pregnant sheep, the farmer expects to recover its investment and make a profit, not loss its new product for one reason or another.

Dystocia is one of the main causes of perinatal lamb mortality (Susan Schoenian, 2006; Brounts *et al*., 2004; Scott, 2005). Lambing difficulties generally have two maternal and fetal origins (Noakes *et al*., 2009). The information of dystocia in sheep whether at regional or national level are scarce because the farmers themselves reduce many of the cases that come to them and which escape completely to veterinary control.

MATERIALS AND METHODS

Clinical examination: The study was conducted from May 2012-June 2015 on 100 cases of dystocia sheep in 09 different regions of Eastern Algeria: Souk Ahras, Oum El bouaghi, Bordj Bororij; Batna; Khenchla; Tebessa; El Tarf; Constantine and Guelma. Age of the sheep, size of the litter, type of dystocia, its consequences for the ewe and her product and the methods used to reduce dystocia were considered.

Statistical analysis: Coding and data entry is done by the software Epi Info Version 07 and Minitab. Statistical analysis included a description of the study population, for all measured variables. The results were expressed as numbers and percentages. The study of the relationship between these variables and the selection of the most representative variables was made using the following statistical tests: χ^2-test: χ^2 = O(O-C) 2/C; Fixed YATES: χ^2 = O [(O-C) -0.5] 2/C (used when the calculated effective <5); Fisher exact test (when the calculated effective <3).

RESULTS AND DISCUSSION

Effect of age on the viability of lambs: In the 40 primiparous ewes, aged 2 years, 20 have lost their lambs while 19 had live lambs. Among 60 multiparous sheep aged >3 years old, 30 ewes had their lambs against 27 (Table 1). According to the statistical test used (the KHI2), age did not significantly affect the viability of the lambs. Kerslake reported no significant relationship between age and viability of lambs (p>0.05).

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Table 1: Viability of lambs according to age

Age (ewe)	Dead lambs	Live lambs	Obtained lambs	Total
≤2	20	19.00	1	40
3	6	13.00	0	19
4	11	8.00	1	20
>5	13	6.00	2	21
Total	50	46.00	4	100
χ^2		2.93		
p-value		0.40		

Table 2: Effect of the litter size on the viability of lambs

Number of fetus	Dead fetus	Live fetus	Obtained fetus	Total
Single	33	32.00	0	65
Double	17	13.00	4	34
Triple	0	1.000	0	01
Total	50	46.00	4	100
χ^2		14.85		
p-value		0.590		

Table 3: Effect of dystocia origin on the viability of lambs

Dystocia origin	Fetal	Maternal	Total
Dead lambs	36	14.00	50
Live lambs	33	13.00	46
Obtained lambs	03	1.00	04
Total	72	28.00	100
χ^2		0.23	
p-value		0.86	

Effect of litter size on the viability of lambs: In the present study, 65 single litters, 34 double litters and one triple litter were recorded (Table 2). The production of live lambs has the same value with the production of the dead lambs in the simple range (33 against 32). According to the statistical test used, there is no significant relationship between litter size and viability of the lambs (p>0.05). This can probably be explained by the insufficient number of cases studied in this investigation. This result is in agreement with that reported by Young (0.06 et 0.1) respectively (p>0.05). Kerslake have indicated a significant relationship between litter size and viability of the lambs born per dystocia.

Effect of dystocia origin on the viability of lambs: For both maternal and fetal dystocia, the stillbirth rate has exceeded the viability rate (Table 3). We have noted, however, no statistically significant influence between the origin of dystocia and viability of lambs (p>0.05).

Effect of dystocia type on the viability of lambs: Among the eight types of dystocia recorded in the present study, only Feto-maternal disproportions had statistically significant relationship with the viability of lambs. Gautier and Corbiere (2011) have shown that prolonged parturition, maternal-fetal disproportion and poor presentation are the dominant causes of lamb mortality (Table 4).

Table 4: Effect of dystocia type on the viability of lambs

Lambs/ dyst	PFP	FMD	EMP	MONS	HYDR	TORS	ATRE	WEA	Total
Dead	25.00	4.000	3.00	3.00	1.00	5.00	7.00	2.00	50
Live	23.00	10.000	0.00	0.00	0.00	4.00	4.00	5.00	46
obtained Lambs	3.00	0.000	0.00	0.00	0.00	0.00	1.00	0.00	4
Total	51.00	14.000	3.00	3.00	1.00	9.00	12.00	7.00	100
χ^2	0.63	2.450	3.04	3.04	7. 37	0. 23	0.27	1.23	-
p-value	0.26	0.001	0.05	0.05	0.36	0. 09	0.10	0.06	-

PFP: Poor Fetal Presentation; FMD: Feto-maternal Disproportion; EPM: Emphysema Fetus; MONS: Monstrosities of the fetus; HYD: fetal Hydrops; TORS: Torsion of the uterus; ATRE: Atresia of the cervix; ATON: weakness of the uterus

Table 5: Relationship between types of interventions and viability of lambs

Fetus	Manual intervention	Ceasarean section	Hormonal method	Slaughter	Fetotomy	Total
Live fetus	41.0000	2.00	3.00	0.000	0.000	46
Dead fetus	23.0000	8.00	4.00	8.000	7.000	50
Obtained fetus	3.0000	1.00	0.00	0.000	0.000	4
Total	67.0000	11.00	7.00	8.000	7.000	100
χ^2	6.4900	2.02	0.43	5.900	5.100	
p-value	0.0001	0.02	0.15	0.0001	0.001	

Effect of the type of intervention on fetal viability: Almost, all methods of intervention in dystocia have a highly significant effect on the viability of lambs. Among 67 cases of dystocia reduced manually, 23 parturient ewes have lost their lambs against 41 ewes who had live lambs (p = 0.0001). About 11 cases of dystocia reduced by cesarean section, 08 ewes have lost their lambs against 2 (p = 0.02) (Table 5).

In this study also, we recorded 7, ewes that were referred to the slaughter and therefore, a total loss of the product also the impact of this practice on the viability of lambs in this case was also highly significant (p = 0.0001). The only remaining method, hormone therapy did not show a significant relationship with the viability of the Lambs (p>0.05). Navegh (2008) found a significant relationship between the manual reduction of dystocia, cesarean section and viability of lambs.

Effect of season on fetal viability: Season had no significant effect on the viability of the lambs (p>0.05), although spring season seems to show the most cases of dystocia among all other seasons. Dystocia is one of the major causes of neonatal mortality (Christley *et al*., 2003; Southey *et al*., 2004). Abdelhadi (2008) reported a prevalence of 10.8% of dystocia responsible of neonatal mortality of lambs. Purohit (2006) indicated that the incidence of dystocia in sheep is very high during winter and spring. Navegh (2008) reported a significant increase in the prevalence of sheep dystocia during the winter and spring. George (1975) mentioned no significant effect of the season on the viability of lambs (Table 6).

Table 6: Season effect on the viability of the lambs

Lambs	J	F	Mr	A	M	J	Ju	A	S	O	N	D	Total
Dead	02	01	09	09	09	02	00	02	01	07	03	05	50
Live	02	02	04	08	10	04	01	00	03	06	05	01	46
Obtained lambs	01	01	00	01	01	00	00	00	00	00	00	00	04
Total	05	04	13	18	20	06	01	02	04	13	08	06	100

$\chi^2 = 19.16$ p = 0.54; J: January; F: February; M: March; A: April; M: May; J: June; Ju: July; A: August; S: September; O: October; N: November; D: December

CONCLUSION

In conclusion, there is no significant relationship between viability of the lambs and age of ewes, litter size and origin of dystocia (except for Feto-maternal disproportions). On the other hand, all methods of intervention in dystocia have a significant and highly effect on the viability of lambs.

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