Induction of Parturition Using Bromocriptine, Prosolvin, Dexamethasone in Iraqi Goats

D. J. Khammas[*], T. M. Al-Hamedawi[*], N.A.K. Mohammed Ali[**] and I.M. Al-Timimi[*]
[*]Dep. of Surgery and Obstetrics- College of Veterinary Medicine/ University of Baghdad
[**]Dep. of Pharmacology- College of Medicine/ Hawler Medical University

Abstract

Thirty six pregnant Iraqi goats at gestation period ranged from 143-145 days were used in this study. The animals were divided randomly into 4 groups according to type of treatment given, G1 (9goats) given a single dose of 2.5 mg /Kg B.W bromocriptine IM, G2 (11 goats) given a single dose of prosolvin (PGF2α) 7.5 mg IM, G3 (8 goats) given a single dose of 16 mg dexamethasone IM, G4 (8 goats) given a single injection of D.W. and used as control. Results of table (1) showed that the response to bromocriptine and prosolvin were 77.7% and 81.8% and both were significant at $p<0.01$compare to 62% of dexamethasone. The induction period was recorded as 2.17±1.54 days and 2.29±1.14 days to prosolvin and dexamethasone compared to 4.36±2.29 days and 4.50±1.10 days of bromocriptine and controls both were significant at $p<0.01$. Table (2) number of goats delivered twins in bromocriptine group and prosolvin group were 5\7 and 6\8, both were significant at $p<0.01$compared to dexamethasone group and controls which were 3\5 and 4\8.

The number of dead kids in all groups was insignificant to lives. The number of goats suffered from retained fetal membranes and subsequent uterine infection were 2\7 in bromocriptine group, 3\8 in prosolvin group, 1 retained placenta and 2 uterine infections \5 in dexamethasone group and 0\8 in control group, with no significances recorded between the groups.

استحداث الولادة في الماعز العراقي باستخدام البروموكربتين، البروسولفين، الدكساميثازون

ضياء جعفر خماس[*]، طالب موسى الحميداوي[*]، نضال عبد القادر محمد علي[**] وإحسان حمودي التميمي[*]
[*] فرع الجراحة والتوليد– كلية الطب البيطري/ جامعة بغداد
[**] فرع الأدوية– كلية الطب/ جامعة هولير الطبية

الخلاصة

أجريت الدراسة على ستة وثلاثون معزة حامل تراوحت فترة الحمل فيها بين 143–145 يوم اعتمادا على تاريخ التلقيح وقد قسمت بصورة عشوائية إلى أربعة مجاميع اعتمادا على نوع الدواء أو الهرمون الذي استخدم لإحداث الولادة المبكرة فيها.

المجموعة الأولى (9 معزات) أعطيت جرعة واحدة من البروموكربتين 2.5 ملغم/كغم وزن حي بالعضل، والمجموعة الثانية (11 معزة) أعطيت جرعة واحدة من البروسولفين (من مماثلات البروستكلاندين F2α) 7.5 ملغم

بالعضل، والمجموعة الثالثة (8 معزات) أعطيت جرعة واحدة من الدكساميثازون 16 ملغم بالعضل، أما المجموعة الرابعة (8 معزات) فقد أعطيت 2 ملل من الماء المقطر واستخدمت كحيوانات سيطرة.

أظهرت نتائج جدول رقم (1) إن نسبة الاستجابة للبروموكريتين والبروسولفين كانت 77.7% و 81.8% وهي نتيجة معنوية ($p< 0.01$) مقارنة مع 62.5% للدكساميثازون وصفر للسيطرة. أما فترة الاستجابة فكانت 2.29 ± 1.14 يوم و2.17 ± 1.54 يوم للبروسولفين والدكساميثازون مقارنة مع 4.36 ±2.26 يوم و4.50 ±1.10 يوم للبروموكريتين والسيطرة وهي نتيجة معنوية ($p< 0.01$). في الجدول رقم (2) كان عدد الماعز اللواتي أنجبن توائم في مجموعة البروموكريتين والبروسولفين هي 7\5 و8\6 وكلاهما معنوية ($p< 0.01$) مقارنة مع مجموعة الدكساميثازون والسيطرة وهي 3\5 و4\8 . كان عدد المواليد الميتة في كل المجاميع غير معنوي قياسا للأحياء. كان عدد الماعز اللاتي اظهرن احتباس الأغشية الجنينية ثم أعقبها التهابات رحمية هي 2\7 في مجموعة البروموكريتين و3\8 في مجموعة البروسولفين و(1 و2) \5 (احتباس والتهابات) في مجموعة الكساميثازون و0\8 في مجموعة السيطرة، ولم تسجل فروقا معنوية بين جميع المجاميع.

Introduction

Induction of parturition in does is performed some times to terminate too young breeding, pregnancy toxemia & prolonged gestation (1). Parturition can be induced prematurely by corticosteroids. The fetal corticosteroids can induce placental aromatizing enzymes to boost the synthesis of estrogen (2). Dexamethasone at the rate of 20 mg I.M. On day 145 of gestation has been used to synchronize parturition in dairy goats (within 2-3 days).This treatment is inefficient if given more than 10 days before normal termination(1).

Bromocriptine has not been used previously to induce parturition in goats, but it was used in combination with PGF2α to prevent pregnancy in bitches (3). Bromocriptine dopamine receptor agonist derived from ergot alkaloids (4), it has a vasoconstriction effect that may leads to abortion or miscarrhage early in pregnancy (5).

And in human being bromocriptine can produce marked contraction on uterus during pregnancy (5). This study was conducted to determine the effect of induction of parturition on Iraqi goats and the comparative efficiency of the three treatments used.

Materials and Methods

Thirty six pregnant goats aged between 3-5 years were used in this study, their gestation period ranged between 143 – 145 days. The goats were divided randomly into four groups according to type of treatment given:

G1 = Nine goats given a single dose of 2.5 mg / kg B.W. bromocriptine I.M.

G2 = Eleven goats given a single dose of prosolvin (PGF2α analogue) 7.5 mg I.M.

G3 = Eight goats given a single dose of 16 mg dexamethasone I.M.

G4 = Eight goats given a single injection of 2 c.c. distal water I.M. and used as control.

Statistical analysis was conducted according to (6).

Results

Results in table (1) showed that 7 out of 9 goats in (G1) responded (significant at $p<0.01$) and delivered within 4.36±2.26 days of injection (significant at $p< 0.01$), one of them showed dystocia. In (G2) 9 0ut of 11 goats responded (significant at $p< 0.01$) and delivered within 2.29±1.14 days of injection, one of them showed dystocia. In (G3) 5 out of

8 goats responded and delivered within 2.17±1.54 days of injection, one of them needed assistance. In (G4) all the goats delivered at their due time of parturition without complications. Results in table (2) showed that in (G1) 5 out of the 7 responded goats delivered twins (significant at p< 0.01), 10 of the 12 kids born remains alive (significant at p< 0.01), 7 out of the 12 kids were female and 2 out of the 7 responded goats had retained fetal membranes and subsequent uterine infection. In (G2) 5 out of the 9 responded goats delivered twins While the 6^{th} delivered triple (significant at p< 0.01), 13 of the 16 kids born remains alive (significant at p< 0.01), 8 of the 16 were male and 3 of the nine responded goats had retained fetal membranes and subsequent uterine infection. In (G3) 3 out of the 5 responded goats delivered twins, 7 out of the 8 kids remains alive (significant at p< 0.01)), 6 out of the 8 kids were male (significant at p< 0.01) and one of the 5 responded goats had showed retained fetal membranes and 2 had suffered from uterine infection. In (G4) 4 out the 8 control goats delivered twins, 11 out of the 12 kids were alive (significant at p< 0.01), 6 out of the 12 kids were male, Neither retention of placenta nor uterine infection was recorded.

Note = dead kids were either delivered dead or they died soon after delivery.

Table (1) Represents number and duration of response to different treatments

Group No	No of goats used	Type/dose of treatment	No of goats responded	Duration of response (days)	parturition Nature of	
					Normal	Dystocia
G1	9	Bromocriptine 2.5mg/Kg B.W IM	7 (77.7%) a	4.36±2.26 a	6	1
G2	11	Prosolvin 7.5 mg I.M	9 (81.8%) a	2.29±1.14 b	8	1
G3	8	Dexamethasone 16 mg I.M	5 (62.5%) b	2.17±1.54 b	4	1
G4	8	Distil water	(0%) b−	4.50±1.10 a	8	-

- a= significant at (p< 0.01).
- b= insignificant.

Table (2) Represent type of parturition, fetal viability, fetal sex and postpartum complications

Group No.	No. of Responded goats	Type of parturition		Fetal viability		Fetal sex		Complications	
		single	twins	live	dead	male	female	Retained placenta	Uterine infection
G1	7 (77.7%)	2 b	5 a	10 a	2 b	5 b	7 b	2	2
G2	9 (81.8%)	3 b	5 twins 1 triple a	13 a	3 b	8 b	8 b	3 b	3 b
G3	5 (62.5%)	2 b	3 b	7 a	1 b	6 a	2 b	1 b	2 b
G4	8	4 b	4 b	11 a	1 b	6 b	6 b	-	-

- a =significant at (p< 0.01).
- b=insignificant.

Discussion

In spite of good and significant percentage of response achieved by bromocriptine (Tab. 1), but it's duration of action was significantly long (p< 0.01). The delay in response could be related to the indirect role of bromocriptine in inducing parturition (7).

Corpus luteum is the main source of progesterone throughout pregnancy (8), however (9) had suggested a time of response to induce parturition ranged from 24 – 76 hours after PGF2α injection and this period agrees with our results. Thus the better percentage of response recorded to prosolvin was also significant at ($p< 0.01$) for the same reason mentioned above.

The effect of external dexamethasone can mimic the normal action of natural steroid produced during normal parturition (10). In this respect our results agrees with the findings obtained by (11) and its duration of action was significantly short at ($p< 0.01$). Fetal viability and complications associated with delivery and postpartum period in Tab.2 are the items which can be affected by the various types of treatments. The percentage of twining was reasonable in goats, nevertheless most of the insignificant numbers of dead kids recorded were born either co-twins to lived kids which may indicate the underdevelopment or weakness of some neonatal twins or premature singles (12 and 13.).

The complications of puerperium are usually associated with dystocia, premature delivery or abortion (14 and 15). In our study the postpartum complications recorded were almost related to cases which needed assistance during delivery and\or dystocia.

In conclusion, induction of parturition has no significant effect on kid viability and does health condition and this agrees with the findings of (16). We also recommend prosolvin for its significant effect in response of induction and duration of action.

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