EFFECT OF THE METHOD OF POSTPARTUM ADMINISTRATION OF OXYTOCIN OR PGF2AON THE DROP OF RETAINED PLACENTA IN COWS AND SUBSEQUENT REPRODUCTIVE AND REPRODUCTIVE PERFORMANCE

Abou-Aiana[2], R. M, Hammad[1], M. E. R. Sh. A. Gabr.[1], A. M. Amer[2], E.A.A.Ahmadi2 and A. H. A. Alharoon[2]

[1]Animal Production Department, Faculty of Agriculture, Tanta University, Egypt

[2]Animal Production Research Institute, Dokki, Giza, Egypt

ABSTRACT

Fourty Friesian cows(about 5-7 years and 450- 550 kg weight) with dystocia and retained placenta were used in the present study. The experimental animals (n=40) were divided into five groups,(8 each). The first group was intramuscularly (I.M) injected with saline solution and kept as a control group, second group was I.M injected with 50 IU of oxytocin, third group was I.M injected with 500 µg of $PGF_{2\alpha}$ analogue, fourth group was administered 50 IU oxytocin then10mL 0.9% NaCl via intra-umbilical artery. The fifth group was administered500 µg PGF2α then 10mL 0.9% NaCl via intra-umbilical artery . All animals in the different groups (control and treated) were administeredafter1-2 hours of calving. Time (h) of placenta expulsion, Time (d) of uterine involution, Postpartum first estrus/service interval(PPFEI),Service period (SP), Daysopen (DO), Number of services per conception (NSC), conception rate (CR)were recorded. The obtained results showed that, the time for expulsion of placenta and uterine involution, PPFEI, PPFSI, DO, SP, NSC were significantly (P <0.05) shorter in $PGF_{2\alpha}$ (IUA) treatment group compared other groups while, all treatment groups were significantly (P <0.05) shorter than the control group. The conception rate was significantly the highest in $PGF_{2\alpha}$ (IUA) group and significantly higher (P<0.05) in treatment groups than that in control group. Milk yield in 90 days was significantly (P<0.05) the highest in $PGF_{2\alpha}$ (IUA) group and significantly higher (P<0.05) in treatment groups than that in control group. In conclusion, administration of 500 µg PGF2α then 10mL 0.9% NaCl via umbilical artery immediately after expulsion of the fetus induce early expulsion of fetal membrane and improving the reproductive and productive performance of Friesian cattle experienced retention of fetal membrane.

Key words: cow, $PGF_{2\alpha}$,oxytocin, umbilical cord, uterine involution

INTRODUCTION

Fetal membranes are normally expelled within 3 to 8h after parturition and their retention for more than12 to 24 h is considered retained placenta (RP). The incidence of RP in cows ranges from 2% to 6%, with an average of approximately 10% ***(Stephen., 2008)***. Dystocia increases the percentage of cows affected by RP. The economic impactof RPis reflected in loss of milk, impaired fertility, and high culling rate. The consequences of RP are an increase in the calving to first service interval, a reduction in the pregnancy rate to first service, an increase in the number of services per conception, and a longer calving interval ***(Laven and Peters, 1996)***. The normal drop of placenta after parturition requires adequate and regular uterine contractions. A deficiency in secretions of PGF2α, oxytocin, or serum Ca concentration, which maintain adequate contraction of the uterus, may cause RP, increase the risk of dystocia, and delay the involution of the uterus ***(Akar and Yildiz, 2005and Hurleyand Doane, 1989).*** High concentrations of PGF2α and PGE2 are produced by the uterus during the early postpartum period in cows and may play an important role in both placental separation and uterine involution ***(Slama et al., 1994)***. Many factors have been implicated in the production of RP and many of these are interrelated, such as uterine atony, abortion, delayed gestation, dystocia, high environmental temperatures, early parturition, infections, twin pregnancy, and vitamin and mineral deficiencies ***(Akar and Yildiz, 2005).*** For the treatment and prevention of RP, injections of ecbolic drugs and enzymes such as oxytocin, prostaglandin $F_{2\alpha}$ have been administered within 24h of *parturition* ***(Mollo et al., 1997).***

Guerin et al., (2004) have shown collagenase application via umbilical artery after parturition to reduce the time and increase the rate of fetal membrane removal in cows.If RP is left untreated in women, there is high risk of maternal death. However, manual removal of the placenta is an invasive procedure with its own serious complications of hemorrhage, infection, or genital tract trauma ***(Carroli and Bergel., 2001)***. Therefore, the injection of oxytocin, ergometrine, or PGF2α via the intra-umbilical vein has been suggested as an alternative treatment for women experiencing RP. The method relies on the injected solution passing down the umbilical cord and through the placental bed to contract the myometrium behind the placenta, thereby causing its detachment ***Weeks, (2003). Sivalingam and Surinder, (2001)*** suggested that intra-umbilical vein injections of oxytocin or PGF2α may be a beneficial, cheap, nonaggressive, nonsurgical method for treating RP in women.

The present study was carried out to evaluate the effect of injection via intra- umbilical artery of oxytocin and PGF2α on time and rate of placenta retention after parturition in Friesian cows and subsequent productive and reproductive performance.

MATERIALS AND METHODS

The present study was carried out in Private Farm, Al-Thoraya Farm for Animal Production in Kuniaysit Damsheet, Gharbiya Governorate during the period from December, 2016 to July, 2017. The study was performed on 40 cows of aged 5-7 years and weighed450- 550 kg .Most of the cows had dystocia in thecurrent calving and all animals had retained placenta in previous calving based on the farm records. The

experimental animals (n=40) were divided into five groups (8 cows each):**G1** where cows were intra-muscularly (I.M) injected with 10mL 0.9% NaCl and considered as a control group;**G2** where cows were intra-muscularly (I.M) injected with 50 IU (5 ml) of oxytocin (ADWIA Co. S.A.E., 10th of Ramadan City, Egypt). Each 1ml contains 10 IU of oxytocin; **G3** where cows were intra-muscularly (I.M) injected with 500 µg (2 ml) of prostaglandin analogue(Estromate, Novartis Pharm, S.A.E. Cairo, under license from Novartis pharm, AG. Basle, Switzerland). Each 1ml contains 250 µg of d-cloprostenol; **G4** wherecows were administered 50 IU (5 ml) oxytocin and 10mL 0.9% NaCl, respectively. Each 1ml contains 10 IU of oxytocin, via intra-umbilical artery immediately after expulsion of the fetus. Injection was applied to the umbilical cords, whose arteries and veins were massaged for 5 min for blood remnant removal. The injection to the umbilical cord artery was carried out as near as possible to the uterus using a spinal needle (22 G, 0.70 × 89 mm, Exelint International Co., Los Angeles, CA, USA). Additionally, in order to better introduce the injected substances (oxytocin, NaCl) to the uterus, the upward umbilical artery was massaged upwardly after each application and then the umbilical artery was clamped ***Akar et al. (2012)*****; G5** where cows were administered 500 µg (2 ml) Prostaglandin and 10mL 0.9% NaCl, respectively (Estromate, Novartis Pharm, S.A.E. Cairo, under license from Novartis pharm, AG. Basle, Switzerland). Each 1ml contains 250 µg of d-cloprostenol, via intra-umbilical artery immediately after expulsion of the fetus. Injection was applied to the umbilical cords. . Injection was applied to the umbilical cords, whose arteries and veins were massaged for 5 min for blood remnant removal. The injection to the umbilical cord artery was

carried out as near as possible to the uterus using a spinal needle (22 G, 0.70 × 89 mm, Exelint International Co., Los Angeles, CA, USA). Additionally, in order to better introduce the injected substances ($PGf_{2\alpha}$, NaCl) to the uterus, the upward umbilical artery was massaged upwardly after each application and then the umbilical artery was clamped ***Akar et al. (2012).***

Feeding and management systems:

Animals were fed on diet that met both maintenance and productionrequirement .The type of offered feed included concentrate feed mixture (CFM) plus fresh Egyptian clover (*Trifolium alixandrinum*, 2th-4th cut) and rice straw (RS).

Milking and sucking system:

During the 1st week post-partum, calves in all groups were left with their dams for 3-4 days to receive the colostrum, and then they were artificially suckled until weaning. Thereafter, all cows were artificially milked twice daily at 6:00 and 18:00 h by Automatic milking.

Reproductive performance:

1. Time (hr) for placenta expulsion:

The time (hours) from calving to full expulsion of placenta was recorded in all animals.

2. Time (d) required for uterine involution completion:

The interval (days) from calving for completion of uterine involution was recorded. Manual examination of the genitalia per rectum was performed in days 10, 15, 22, 25, 32, 40, 48, and 55 of postpartum until symmetry of both gravid and non-gravid horns.

3. Postpartum first estrus interval (PPEI):

The interval (days) from calving to first estrous activity was determined. Estrous was detected byvisual observation.

4. Post-partum first service interval (PPFSI):

The interval (days) from calving to first service of cows was recorded.

5. Conception rate (CR):

Conception rate (%) = {conceived animals (n) ÷ served animals (n)} × 100.

6. Days open (DO):

It was calculated by subtracting the date of calving from the date of fertile service

7. Number of services per conception (NSC):

The number of services per conception was calculated.

Productive performance:

1. Average (kg) Milk yield in 90 days after calving:

8-Statistical analysis:

Analyzed by Completely Randomized Block Design (CRBD) in the case of replicates are not equal and the case of replicates are equal. Data were represented in mean ± standard deviation values. (Least Significant Difference – LSD) test was performed for comparing values among the groups. $P<0.05$ was considered to be significant. The obtained data were statistically analyzed according to ***Snedecor and Cochran(1982)*** using computer program of ***SAS (2004)***.

RESULTS AND DISCUSSION

1. Time (hr) for expulsion of placenta (RP):

Thetime for expulsion of placenta in treatment groups was significantly (P <0.05) shorter than that in control group (Table 1).While within the treatment groups, it was significantly (P <0.05) the shortest in **G5** .Our results came in agreement with those of ***Alharoon (2018)***,***Khatri et al. (2013), Akar et al. (2012)*** and ***Rehametal. (2010)*** who reported that the mean time for fetal membrane drop inanimalstreated with PGF2α (IM) was shorter than those treated with oxytocin and control group (3.0, 4.45 and 6.30 hours) respectively. ***Molloet al. (1997)*** showed that the intramuscular administration of oxytocin immediately after delivery and again 2-4 h later reduced the incidence of RP significantly in Holstein cows and consequently the occurrence of endometritis post-RP. ***Stocker and Waelchli (1993)*** reported that intramuscular administration of 25 mg dinoprost immediately after parturition reduced the incidence of RP significantly in cows with dystocia. ***Haffner et al. (1998)*** concluded that intra-umbilical artery injection of collagenase was a safe and potentially effective treatment for RP in mares. ***Bider et al. (1996)*** reported that intra-umbilical vein injection of 20 mg PGF2α might be a beneficial method for treating RP. Although oxytocin and prostaglandin intra-umbilical artery administration, applied to cows with dystocia for the first time in this study, appeared to have a positive effect on the time and rate of drop of fetal membranes. In the present study, the time required for expulsion of fetal membranes was the shortest in PGF2α (IUA) treated animals compared with that in four other groups. These results fall in the range reported by ***Hussain (1983)*** in buffaloes and ***Alharoon, 2018*** and

Muhammad and Muhammad (2002) in cattle. Early expulsion of fetal membranes in the **G5** might have been due to prolonged uterine contraction induced by $PGF_{2\alpha}$.

2. Average time (d) required for completion of uterine involution in (RP):

The time for completion of uterine involution in treatment groups as shown in Table (1) was significantly ($P < 0.05$) shorter than that in control group, while within the treatment groups, it was significantly ($P < 0.05$) the shortest in **G5**.In agreement with the present results, ***Alharoon, 2018,Khatri et al. (2013)*** and ***Hanan (2015)*** reported that the intervalto uterine involution in PGF2α-treated cows was shorter than that recorded for either oxytocin-treated or control cows. Uterine Involution is normally completed between 26 to 52 days postpartum but changes after 20 to 25 days are often imperceptible ***(Drillich et al., 2006)***. Inadequate production of endogenous prostaglandin has been associated with delay in uterine involution. The beneficial effect of PGF2α administered postpartum is due to myometrium contraction thereby accelerated uterine involution ***(Hirsbrunner 2003)*.**

Table (1): Means ± SE of time required for placental drop and Days to uterine involution in G1, G2, G3, G4 and G5 cows.

Items	Treatments				
	G1	G2	G3	G4	G5
Time (hr) of placental repulsion	16.56^{a}±0.86	8.88^{b}±1.32	7.50^{b}±0.80	4.84^{c}±0.37	3.44^{c}±0.26
Days to uterine involution	51.75^{a}±1.39	38.63^{b}±0.75	30.13^{d}±0.97	35.13^{c}±1.78	29.63^{d}±0.89

a,b,c,d: Means with the different superscripts in the same row, differ significantly($P<0.05$).

Different letters on the same row indicate significance ($P < 0.05$)

3. Interval to first estrous:

The interval to first estrus was significantly (P<0.05) shorter in all treated groups compared with the control (P<0.05) ,while within the treatment groups, it was significantly (P <0.05) the shortest in PGF2α (IUA) group **Table (2).** In agreement with the present results, ***Alharoon, (2018), and Khatrietal., (2013)*** reported that animals which were treated with PGF2α (IM) showed shorter interval than that treated with oxytocin and control groups respectively. In contrast with the present results, ***Abdel-khalek et al., (2013)*** reported that PPFEI of multiparous cows was longer in treatment groups with Oxytocin and Prostaglandin (OXY and PG) than in control group respectively. That is consistent with the findings of ***Hanan (2015)*** who reported a short time (days) required for postpartum first estrous activityin 1st season cows which treated with oxytocin and PGF2α compared with control respectively.

4. Interval to first estrous service:

The intervalas shown in Table (2) was significantly (P<0.05) shorter in treatment groups than that in control, while within the treatment groups, it was numerically the shortest in PGF2α (IUA) group**.** These results are in agreement with ***Alharoon, (2018)****and* ***Hanan (2015)*** who indicated a shorter time that required for first servicein season 1st cows which were treated with oxytocin and PGF2α than in control group respectively. Disagree with the present results, ***Abdel-khalek et al., (2013)*** reported that PPFSI of multiparous cows was longer in treatment groups (oxytocin and PGF2α) than in control group respectively. This may be due to the time and dose of injection and number of treated cows. Changes in hormonal levels during post-partum period include pituitary gonadotrophins (FSH and LH), Oxytocin (oxy), Steroid hormones (E and

P4) and Prostaglandin (PGF2α) is essential to understand the factors responsible for initiation of cyclic ovarian activity following parturition. These changes have impact on postpartum reproductive activity ***(El-Wishy., 2007).*** An increased rate of uterine involution is associated with earlier resumption of ovarian activity ***(Mateus et al.,2002),*** which is in turn important for increasing pregnancy rate to first service ***Thatcher et al. (2006)*** in accordance with the present results of cows in G2.

5. Conception rate (%):

The conception rate as shown in table (2) was significantly ($P<0.05$) higher in treatment groups than that in control group, while within the treatment groups, it was significantly the highest in PGF2α (IUA) group. According to the present study, incidence of uterine involution was almost associated with early resumption of ovarian activity. In this respect, multiparous cows treated with oxytocin or PGF2α showed early uterine involution with the highest CR as compared to control ***Alharoon (2018)*** and ***Abdel-khalek et al.(2013).***

6. Average time (d) of open days:

The average time (D) of days openas shown in Table (2) was significantly lower ($P<0.05$) in treatment groups than that in control group, while within the treatment groups, it was numerically the shortest in PGF2α (IUA) group. In agreement with the present results ***Alharoon (2018)*** and ***Hanan (2015)*** found that days open of primiparous cows was shorter in treatment groups. Many factors may result in an increase in calving to conception intervals include inadequate nutrition, uterine infection , poor estrus detection or decision of the dairy man to delay the first service beyond 60- 80 days postpartum ***(Williamson et al., 1980).***

Table (2): Indices of reproductive performance in G1, G2, G3, G4 and G5 cows.

Items	Treatments				
	G1	**G2**	**G3**	**G4**	**G5**
Interval to firstestrus	72.00^{a}±06.98	55.00^{b}±00.96	48.63^{b}±00.78	47.63^{b}±01.49	37.25^{c}±00.70
Interval to first service	74.75^{a}±06.97	58.63^{b}±00.78	51.63^{bc}±00.75	49.50^{c}±01.30	38.25^{c}±00.96
Conception rate (%)	100^{a}	87.50^{b}	75.00^{d}	87.50^{b}	62.00^{c}
Days open	103.80^{a}±10.10	78.00^{b}±05.80	54.80^{c}±04.80	60.00^{bc}±08.10	45.10^{c}±03.80
Services perconception	03.00^{a}±00.31	02.00^{b}±00.21	01.30^{c}±00.21	01.50^{bc}±00.22	01.40^{c}±00.18
Milk yield in 90d (kg)	0553.50^{d}±09.60	0627.80^{c}±06.80	0634.10^{c}±05.80	0861.90^{b}±16.00	1010.30^{a}±19.90

a,b,c,: Means with the different superscripts in the same row, differ significantly($P<0.05$).

7. Number of services per conception (SPC):

The number of services per conception (SPC) as shown in Table (2) was significantly ($P<0.05$) lower in treatment groups than in control group, while within the treatment groups, it was numerically the lowest in PGF2α (IM) group. These results are in agreement with those of ***Alharoon, (2018)*** and ***Hanan (2015)*** who found that, the Services preconception **(SPC)** and Services period length **(SPL)** were significantly ($p< 0.05$) lower in oxytocin group than control group. The present results of **SPC** are within control values as reported in Fresian cows raised in Egypt, being 1.4 ***(Wafa, 2004, Ganah, 2000, Abdel-***

Razek et al. 2005) and 2.75 services /cow ***(Abdel-khalek, 2003)***. According to the present results, treatment of cows at calving with oxytocin shortened SPC, in association with higher conception rate.

8. Average (kg) Milk yield in 90 days after calving:

The average amount of milk yield in 90 days after calving as shown in **Table (2).**It was significantly higher ($P<0.05$) in treatment groups than that in control group.Within the treatment groups, it was significantly ($P<0.05$) the highest in $PGF_{2\alpha}$ (IUA) group. Retained placenta had a significant negative effect on milk yield. Thiscamein agreement withresults of ***Alharoon, (2018), Wafa., (2004) andBar-Peled et al. (2005)***who found that milk yield decreased by 172, 232 and 302 kg with retained placenta. The incidence of RFM can be reduced by administration of 500 µg $PGF_{2\alpha}$ or 50 IU oxytocin via umbilical artery after parturition. This will significantly improve the reproductive and productive performance of Fresian cattle experienced retention of fetal membranes compared to intra-muscular Injection of 500 µg $PGF_{2\alpha}$ or 50 IU oxytocin.

In conclusion, administeration of 500 µg $PGF_{2\alpha}$followed by 10mL 0.9% NaCl via intra-umbilical artery immediately after expulsion of the fetus induce early expulsion of fetal membrane and improving the reproductive and productive performance of Friesian cattle experienced retention of fetal membrane. Therefore, It can be recommend toadministered 500 µg PGF2α then 10mL 0.9% NaCl .

REFERENCES

- ***Alharoon, A. H. A.(2018).***Comparison between application of injection via umbilical artery and intra-muscular injection of oxytocin and prostaglandin$F_{2\alpha}$ on time and rate of placenta separation after parturition.M. Agri. Sci: Thesis, Animal Production Department, Faculty of Agriculture, Tanta University, Egypt.

- ***Abd El-Razek, I.M.; Mentally, A.M. and Shitta, A.A. (2005).*** Effect of monensin on reproductive performance and milk production in lactating dairy cows. J. Agric. Res., Tanta Univ., 31:15.

- ***Abdel-khalek, A.E. (2003).*** Productive and reproductive performance of primiparous and multiparous Friesian cows fed rations supplemented with yeast culture (Yea-sace1026).Egypt. J. Nutri. And Feeds, 6 (special Issue): 1095.

- ***Abdel-khalek, A.E.; El-Harairy, M. A.; Mehrez, A. F.; Foad, W.F. (2013).*** Uterine involution and reproductive performance of lactating Friesian cows at calving J. Anim. and poult. Prod., Mansoura University, 6:350-362.

- ***Akar, Y.and Yildiz,H. (2005).*** Concentrations of some minerals in cows with retained placenta and abortion Turki. J. Vet. Anim. Sci., 29:1157-1162.

- ***Akar, O.; Kizil, O. Saat, N. andYuksel, M. (2012).***The effect of Oxytocin and cloprostenol application via umbilical artery immediately after dystocia on time and rate of fetal membrane removal in cows. Turk. J. Vet. Anim. Sci.; 36(3): 275-281.

- ***Bar-Peled, U.; Maltz, E.; Bruckental, I.; Folman, Y.; Kali, Y.; Gacitua, H.; Lehrer, A.; Knight, C.; Robinzon, B.; Voet, H. and Tagar, H. (2005).*** Relationship between frequent milking or suckling in early lactation and milk production of high producing dairy cows. J. Dairy Sci. 78:2726-2736

- ***Bider, D.; Mordechani, D. and Mordechai, G. (1996).*** Intraumbilical vein injection of prostaglandin F2α in retained placenta. Europ. J. obstet. Gynecol. Reprod. boil. 64: 59-61.

- ***Carroli, G.; Belizan, J. M.; Grant, A.; Gonzalez, L.; Campodonico, L. and Bergel, E. (1998).*** Intra-umbilical vein injection and retained placenta: evidence from a collaborative large randomised controlled trial. Grupo Argentino de Estudio de Placenta Retenida. Br. J. Obstet. Gynaecol, 105: 179-185 .

- ***Carroli, G. and Bergel, E. (2001).*** Umbilical vein injection for management of retained placenta. Cochrane Datatbase syst. Rev., 4: 1337.

- ***El-Wishy, A.B .(2007).*** The postpartum buffalo: I. Endocrinological changes and uterine involution. Anim. Reprod. Sci., 97:201-215.

- ***Drillich, M. I.; Mahlstedt, M.; Reichert, U.; Tenhagen, B. A. and Euwieser, W. (2006).*** Strategies to improve the therapy of retained fetal membranes in Dairy cows. J. Dairy Sci., 82:27-635.

- ***Ganah, B.A.H. (2000).*** Effect of improved management systems on productivity of Fresian Cattle (A. study on improving postpartum reproductive performance). M.Agri. Sci.Thesis,Fac. Agric., Mansoura University., Egypt.

- ***Guerin, P.; Badinand, F.; Bosc, L.; Thiebault, J. J.; Delignette-Muller, M. L.; and Menezo, Y. (2004).*** Effect of injecting collagenase into the uterine artery during a caesarean section on the placental separation of cows induced to calve with dexamethasone. Vet. Rec., 154: 326-328.

- ***Haffner, J. C.; Fecteau, K. A.; Held, J. P.; and Eiler, H. (1998).*** Equine retained placenta: technique for and tolerance to umbilical artery injections of collagenase. Theriogenology, 49: 711-716.

- ***Hanan, I.E.I.(2015).*** Some hormonal treatments affecting uterine involution of primiparous cows. M. Agri. Sc. Thesis. Fac. Agric. Tanta Univ., Egypt.

- ***Hirsbrunner, G.; Knutti, B.; Kupfer, U.; Burkhardt, H.; and Steiner, A. (2003).*** Effect of prostaglandin E2, D-Cloprostenol and prostaglandin E2 in combination with D-cloprostenol on uterine motility during diestrus in experimental cows.Anim. Reprod. Sci. 79: 17-32.

- ***Hurley, W. L. and Doane, R.M .(1989).*** Recent developments in the roles of vitamins and minerals in reproduction. J. Dairy Sci., 72: 784-804.

- ***Hussain, S. O. (1983).*** Treatment and prevention of retained placenta in dairy cattle.15th FAO/SIDA International Postgraduate course on Anim. Reprod. 2:8-29.

- ***Khatri, P.; Tunio, S. A.; Kaka, I.; Samo, M. U.; Bhutto, B. and Memon, M. R. (2013).*** Effect of Exogenous PGF2α and Oxytocin on Postpartum Anestrus and Uterine Involution in Kundhi Buffaloes .J. Anim. Prod. Adv., 3(4): 158-163.

- ***Laven, R. A. and Peters, A. R. (1996).*** Bovine retained placenta: aetioligy, pathogensis, and economic loss. Vet. Rec. 139:465-471.

- ***Mateus, L.; Lopes, D, A.; Costa, L.; Bernardino, F. and Silva, J. (2002).*** Influence of puerperal uterine infection on uterine involution and postpartum ovarian activity in dairy cows. Reprod. Domest. Anim., 37:31-5.

- ***Mollo, A.; Veronesi, M. C.; Cairoli, F. and Soldano, F. (1997).*** The use of oxytocin for the reduction of cow placental retention, and subsequent endometritis. Anim. Reprod. Sci., 48: 47-51.

- ***Muhammad, M. A. and Muhammad, D. K .(2002).*** Treatment of retained fetal membranes in cattle. National conference on factors limiting on dairy production in Pakistan. University of Agriculture, Faisalabad, Punjab, 8-9 April.

- ***Waheeb, R. S.; Hussein, F. M.; El-Amrawi, G. A. and El-Hammady, E. A. (2010).*** Retained Fetal Membranes In Holstein Cows: Economical evaluation of different therapeutic protocols under Egyptian conditions" International Scientific Publications: Agriculture and Food Volume 2, ISSN 1314-8591.

- ***Sivalingam, N. and Surinder, S. (2001).*** Is there a place for intra-umbilical oxytocin for the management of retained placenta? Med. J. Malaysia, 56: 451-459.
- ***Slama, H.; Vaillancourt, D. and Goff, A.K. (1994).*** Control of in vitro prostaglandin F2 alpha and E2 synthesis by caruncular and all antochorionic tissues from cows that calved normally and those with retained fetal membranes. Dom. Anim. Endocr., 11: 175-185.
- ***Snedecor, G.W. and Cochran, W.G. (1982).*** Statistical Methods.7th d. Iowa Univ. Press, Ames. Iowa, USA.
- ***Stephen, J.L. (2008).*** A postpartum uterine disease and dairy herd reproductive performance: A review The Vet. J., 176: 102-114.
- ***Stocker, H. and Waelchli, R.O. (1993).*** A clinical trial on the effect of prostaglandin F2 alpha on placental expulsion in dairy cattle after caesarean operation. Vet. Rec., 132: 507-508.
- ***Thatcher, W.W.; Bilby, T.R.; Bartolome, J.A.and Silvestre, F; Staples, G.R. and Stambs, J.E.P. (2006).*** Strategies for improving fertility in the modern dairy cows. Theriogenology, 65:30-44.
- ***Wafa, W. M. (2004).*** Improvingthefertility in Friesian cattle. M.SC. Thesis, Fac. of Agricultural, Al-Azhar University., Egypt.
- ***Weeks, A. D. (2003).*** Umbilical oxytocin injection for the treatment of retained placentas. Tropical; 33: 162-163.
- ***Williamson, N. B.; Quinton, F. W. and Anderson, G.A. (1980).*** The effect of variations in the interval between calving and first service on the reproductive performance of normal dairy cows. Aust. Vet. J., 56: 477.

تأثير طريقة الحقن بالأوكسى توسين أو البروستاجلاندين **F2α** على إحتباس المشيمة في الأبقار
وأداءها التناسلي والإنتاجي فيما بعد

رجب ابو عيانه[2]ومحمد الفاتح حماد[1] وشريف عبد الونيس جبر[1]و احمد موسى عامر[2]

والسيد احمد ابو الفتوح احمدى[2] عبد الستار الحارون[2]

[1]قسم الإنتاج الحيواني-كلية الزراعة – جامعة طنطا – مصر.

[2]معهد بحوث الإنتاج الحيواني- مركز البحوث الزراعية – الدقى – الجيزة – مصر.

هذه الدراسة تم إجرائها في مزرعة الثريا للإنتاج الحيواني بكنيسة دمشيت مركز طنطا محافظة الغربية في الفترة من ديسمبر 2016 حتي يوليو 2017 علي 40بقرة فريزيان لديهااحتباس مشيمي مختلفة الأعمار ومواسم الإنتاج تتراوح أعمارهم من5-7 سنوات . قسمت الحيوانات إلى 5 مجموعات كل مجموعة تحتوى علي8 بقرات وعوملت علي النحو التالي : المجموعة الأولى كنترول تم إعطائها10سم محلول كلوريد الصوديوم 9% حقن في العضل والمجموعة الثانية تم إعطائها 50 وحده دولية من الأوكسيتوسين حقن في العضل والمجموعة الثالثة تم إعطائها 500 ميكروجرام من نظير البروستاجلاندين حقن في العضل والمجموعة الرابعة تم إعطائها 50 وحدة دولية من الأوكسيتوسين مع 10سم محلول كلوريد الصوديوم 9% في الشريان السري والمجموعة الخامسة تم إعطائها 500 ميكروجرام من نظير البروستاجلاندين مع 10سم محلول كلوريد الصوديوم 9% في الشريان السري وتمت المعاملات بعد الولادة بـ 2-3 ساعات وتم مقارنة تأثير الحقن العضلي والحقن في الشريان السري.

وقد بينت النتائج وجود تأثير على كلا منزمن انفصال المشيمة (بالساعة) وزمن عودة الرحم كلياً (باليوم) حيث كانت هناك فروق عالية المعنوية على مستوي معنوية ($P<0.05$) بين المعاملات والكونترول وأيضا بين الحيوانات حيث قل زمن انفصال المشيمة وعودة الرحم كليا فى المجموعات المعاملة مقارنة بمجموعة الكونترول وكانت المجموعة الأقل معنوية في زمن انفصال المشيمة وزمن عودة الرحم كلياً هى المجموعة المعاملة بالبروستاجلاندين حقن في الشريان السري وأثرت المعاملات على كلا من االفترة الفاصلة بين الشياع الأول والولادة والفترة الفاصلة بين التلقيح الأول والولادة والفترة من الولادة حتي التلقيح المخصب (باليوم) وعدد مرات التلقيح اللازمة للإخصاب حيث قلت جميع الفترات السابقة معنويا على مستوي معنوية ($P<0.05$) بين المعاملات والكونترول وأيضا بين الحيوانات.وكانت المجموعة الأقل معنويا ($P<0.05$) فى االفترة الفاصلة بين الشياع الأول والولادة والفترة الفاصلة بين التلقيح الأول والولادة والفترة من الولادة حتي التلقيح المخصب (باليوم) هى المجموعة المعاملة بالبروستاجلاندين حقن في الشريان السري بينما كانت المجموعة الأقل معنويا ($P<0.05$) فى طول فترة الأخصاب وعدد مرات التلقيح اللازمة للإخصاب هي المجموعة المعاملة بالبروستاجلاندين فى العضل مقارنة بالمجموعات الاخرى. أما معدل الإخصاب (%): فقد كانت هناك فروق معنوية على مستوي معنوية ($P<0.05$) بين المعاملات والكونترول وكان البروستاجلاندين حقن سري الأعلى في معدل الإخصاب مقارنة بباقى المجموعات.

خلصت الدراسة إلي أن حقن البروستاجلاندين متبوعاً بعشرة مل من محلول كلوريد الصوديوم 0,9% في شريان الحبل السري بعد الولادة مباشرة يسرع من نزول المشيمة ويحسن كل من الأداء التناسلي والإنتاجي للأبقار.