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Peripartum Beta Endorphin levels in Relation to Labor Disorders and Post-Calving Reproductive Performance of Buffaloes.

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ABSTRACT

The aim of this study was determine the relationship between plasma β-endorphin profiles in the peripheral blood circulation and cortisol concentrations during peri-partum **(**pre- and post-partum periods) of buffalo cows severed from dystocia, retained placenta or delayed heat (oestrus) and long calving interval in the previous parity. Blood samples were collected from 20 buffalo cow in late pregnancy period (2 months before expected parturition date) until 100 days after calving. Twenty buffalo cows were divided into four groups according to parturition disorders, 5 animals in each. Animals showed normal calving (group A), suffering from dystocia (group B), with retained placenta (group C) and having long calving interval in the previous parity (group D). At parturition, results showed that buffalo cows suffering from calving disorders groups B, C and D had higher β-endorphin concentrations than that in group A. Whereas, β-endorphin concentrations were (110.15±3.21, 124.08±2.84, 104.09±2.45 and 96.53±0.94) respectively, at one month before parturition. Average β-endorphin concentration in buffalo cows with retained placenta, dystocia and delayed heat during peri-parturient period was higher ($P<0.01$) than in group A. Peak of β-endorphin at the time of parturition was noticed in all buffalo groups especially in group C. Both of β-endorphin and cortisol secretion showed the concomitant trend during peri-parturient period, showing gradually decrease after parturition till two months of delivery. Finally, buffalo cows which had calving disorders showed a clear impact on blood plasma β-endorphin concentration at late pregnancy, time of delivery and post-partum periods.

Keywords: *Buffaloes, Beta-endorphin, cortisol, peri-partum, post-partum*.

INTRODUCTIN

β-endorphin is a one of derived endogenous opioid peptide hormones from proopiomelanocortin (POMC), consisting of 31 C-terminal amino acids and its immediate precursor is β-lipotropin (Mains *et al.,* 1977). POMC is found in the hypothalamus, pituitary and placenta. The mRNA for POMC is also found in the ovary and uterus of mice, monkeys and hamsters (Jin *et al.,* 1988), rats (Sanders *et al.,* 1990) and fertile women (Galinelli *et al.,* 1995).

β-endorphin as well as other opioid peptides (OP) which bind to specific opiate receptors in the central nervous system (CNS) serve as neurotransmitters mediating the integration of sensory information which pertains to pain perception and emotional behavior (Krieger and Martin, 1981). It has been found in the female reproductive system of several species, including sheep (Lim *et al.,* 1983) and human (Aleem*et al.,* 1986) ovaries, and in luteal cells of mice (Shaha *et al.,* 1984) and in granulosa and interstitial cells of rodents (Lolait *et al*., 1986).

The role of endogenous opioids in females appears to be complex, and many studies revealed that β-endorphin synthesis occurs in ovarian follicles, but the relatively low concentrations were found in reproductive tissues indicating that it exerts autocrine or paracrine in the ovary (Hamada *et al.,* 1995). In addition, Faletti *et al*. (1999) reported that the ovulation rate and the ovarian production of preovulatory prostaglandins were inhibited by β-endorphin and stimulated by naltrexone and it may affect ovarian function both directly and indirectly, by modulating secretion of luteinizing hormone, LH (Kaminski *et al.,* 2000) and follicle-stimulating hormone, FSH by exerting an inhibiting effect on GnRH secretion in human and experimental animals (Rasmussen *et al.,* 1983). In animals, calving time is considered one of important event in animal life that involves stress and pain for the mother, periparturient defect and under nutrition due to milk yield are considered a various stressors surrounding animals. So, levels of stress hormones measured during parturition could reflect levels reached in response to severe discomfort and pain of other kinds as well. Although there is a relationship between calving and changes in plasma cortisol concentrations (stress hormones) which used a marker for the quantification of stress in cows and endogenous OP have been shown to regulate hypothalamo-pituitary-adrenal functions in cattle (Nanda et *al.,* 1992).

Higher levels of plasma β-endorphin concentrations were found associated with a different types of stress such as hemorrhage, and hypoglycemia in sheep (Tsuma *et al.,* 1995). Till now, studies on buffalo about relationship between plasma β-endorphin profile and cortisol release around parturition is not enough.

It is generally accepted that the perception of pain is similar in human beings and other mammals; therefore it can be assumed that what is painful in humans is also painful in animals Kitchell (1987). In women, Bacigalupo *et al*. (1990) reported that pain intensity, scored by women during spontaneous labor, correlated positively with the concentration of plasma β-endorphin and cortisol, and both levels are elevated during labour in goats (Hydbring *et al.,* 1999).

In cattle a continued increase in plasma β-endorphin concentration was recorded during the last trimester of pregnancy period and parturition, assumed that there is no relation between labor pain and plasma β-endorphin levels and β-endorphin concentration don't affected by delivery stress Aurich *et al*. (1990 and 1993).

In cattle, around parturition period some reproductive disorders like dystocia and retained placenta can be considered a stress factors on animals and can be affected on delay the resumption of pituitary and ovarian functions. In beef cows, Cross *et al*. (1987) reported that endogenous OP relatively adjusted secretion LH during the early post-partum period.

(Djemali *et al.,* 1987; Lee *et al.,* 1989; Elmalky, 2007) mentioned that reproductive disorders like dystocia, retained placenta and delayed heat can be significant affected on days open in buffalo or dairy cows. It would be necessary to study the impact of dystocia, retained placenta and delayed heat on stimulate β-endorphin release and its response to these factors is involved in the delay of first ovulation.

Therefore, the objective of the present study is estimation of blood plasma β-endorphin and cortisol profile around parturition in buffalo cows affected by dystocia, retained placenta and delayed heat and long calving interval in the previous parity.

MATERIALS AND METHODS

The experimental work was conducted at the Animal Production Research Station of Mehallet Mousa, belonging to Animal Production Research Institute (APRI), Agricultural Research Center, located in the North center part of the Nile Delta, Kafr El-Sheikh Governorate, Egypt.

Animals:

Twenty multiparous Egyptian buffaloes weighing 500–640 kg, aging 5-7 years and having 3-5 parities at late pregnancy period were utilized for two months before parturition (pre-partum period). Through the last two weeks of pregnancy, animals were examined and monitored by rectal and vaginal palpations to predict the probably time of birth (Osawa *et al.,* 1998). All animals were housed in semi-shaded open pens, then they were transferred to the maternity unit before one or two days of the parturition date.

Water was offered freely in water troughs. After delivery, all buffaloes were allowed to nurse the newborn calves for only one week (colostrum intake), thereafter dams were transferred to the milking unit and milked twice daily at 7 a.m. and 5 p.m. and subjected to the regular managerial practices of the breeding stock.

Feeding system:

All buffaloes were fed a ration consisted of concentrate feed mixture (CFM), berseem or berseem hay and rice straw. The CFM contained 37% yellow corn, 30% undecortecated cotton seed, 20% wheat bran, 6.5% rice bran, 3% molasses, 2.5% limestone, 1% common salt. All animals did not receive any hormonal treatment during pregnancy, and before or after parturition.

Experimental groups:

Follow-up using ultrasound sonar for examine ovarian activity after calving to study the growth of ovarian follicles and 1st ovulation occurrence and its associated heat.

Dystocia is defined as the case of calving that require assistance (Stevenson and Call, 1988), and retained placenta is defined as presence of the placenta more 12 h after calving **(Laven and Peters, 1996)**. According to this definition, animals were divided into four experimental groups, five animals in each as the following:

Group (A): delivered spontaneously at term with no obstetrical assistance.

Group (B): delivery was at term but was accompanied by dystocia.

Group (C): delivery was at term but was accompanied by retained placenta.

Group (D): delivery was at term but animals showed delayed heat and long calving interval more than 16 months in the previous parity.

Blood sampling:

Blood samples were collected from the jugular vein from pregnant buffaloes as follows:

- During the third trimester (8 months) of pregnancy, a weekly one blood sample was collected from each animal till parturition.
- Once a day at 9:00 h, during preparatory stage beginning at -2 and-1 days before the expected date of parturition.
- During the expulsive stage, directly after the rupture of the amniotic sac, at once after calving (0 time of parturition) and 3 h after parturition.
- At 1, 3 and 5 days of parturition and every 10 days after that during the postpartum period until the formation of the corpus luteum following first ovulation.

Oestrous cycle was classified as metoestrus (days 1-4), early (days 5-10), and late dioestrus (day 11-17) and follicular phase (days 18-21). Time of the first postpartum ovulation (defined as the time three days before the first day when P4 concentration was ≥ 1.0ng/ml) was determine by progesterone (P4) concentrations (Nakao, 1980).

Blood samples (10 ml) was collected into clean dried and heparinized evacuated tubes, kept on ice, centrifuged at 3000 rpm for 15-30 minutes to obtain the plasma immediately and kept at -20°C till extract of β-endorphin and determined by radioimmunoassay (RIA) as explained by (Osawa *et al.,* 1998).

Quantify of cortisol concentrations were determined by enzyme immunoassay (EIA), as described by Nakao *et al.* (1981). Minimum detection values of the assay sensitivities defined as twice the standard deviation away from the buffer control was 70 pg/tube. Coefficients of variation for the intra- and inter-assay precision were 6.1 and 16.0%, respectively.

Statistical analysis:

Data was analyzed using the General Linear Model Program (GLM) of **SAS (2000).** Data were analyzed using the following model:

$$\mathbf{Y_{ijk} = \mu + G_i + T_j + e_{ijk}}$$

Where μ = overall mean, G_i = fixed effect of groups, T_j=fixed effect of time and eijk = Error.

RESULTS AND DISCUSSION

Pregnancy periods and pain of birth:

All of the experimental groups of buffalo cows give a birth through a period varied from 310 to 312 days. Group B (dystocia group) needed assistance, parturition took longer time due to the period required to appearing amniotic membrane and exit the feet of the calf was significantly prolonged comparison with the other groups which calves were in the normal position.

Concentration of β-endorphin and cortisol in blood plasma:

During the last trimester of pregnancy period:

Results illustrated in Figs. (1 and 2) show the alterations in plasma β-endorphin and cortisol levels during the third trimester of pregnancy in buffalo cows of the experimental groups. Results showed that plasma β-endorphin concentration significantly increased reaching a maximum level during the end of the third trimester in association with labour pains. β-endorphin concentration was significantly ($P<0.01$) higher in groups (B, C and D) than in group (A) during this period. Group C (suffering retained placenta) showed higher β-endorphin concentration (124.08±2.84 pg/ml) during the end of the third trimester (late pregnancy period), followed by group B (suffering dystocia, 110.15±3.21 pg /ml), group D (suffering delayed heat, 104.09±2.45 pg/ml) and control group (96.53±0.94 pg/ml), respectively (Fig. 1). The differences among groups were highly significant ($P<0.01$).

Also, there were a significant ($P<0.01$) changes in plasma cortisol concentrations during this period in normal and abnormal buffalo cows (Fig. 2). Groups (B and C) showed an increased cortisol level at the end of this period close to parturition as compared to other groups. A highly significant differences ($P<0.01$) among groups (B and C) needing assistance and normal one (group A) in cortisol concentration were noticed.

In late pregnancy period (Evans *et al*,.1985) reported that the increased activity of β-endorphin producing cells either in the pituitary gland, from placenta or due to a direct fetal input into whole blood β-endorphin concentration may be related to the observed increase in β-endorphin concentration. Also, (Haulse and Coleman, 1984) attributed increasing β-endorphin concentration to the high circulating level of steroid hormones which exerts a positive effect on the β-endorphin contents of both pituitary lobes. This may suggest the importance of β-endorphin in keeping pregnancy and aiding the action of P4. They add that, maternal pituitary gland may be originates most of the β-endorphin in the maternal blood circulation which reaches to the hypothalamus via the vascular system of the pituitary stalk as demonstrated in experimental animals. They also added that this rout increased the secretion of β-endorphin in response to stress (Page and Bergland, 1978).

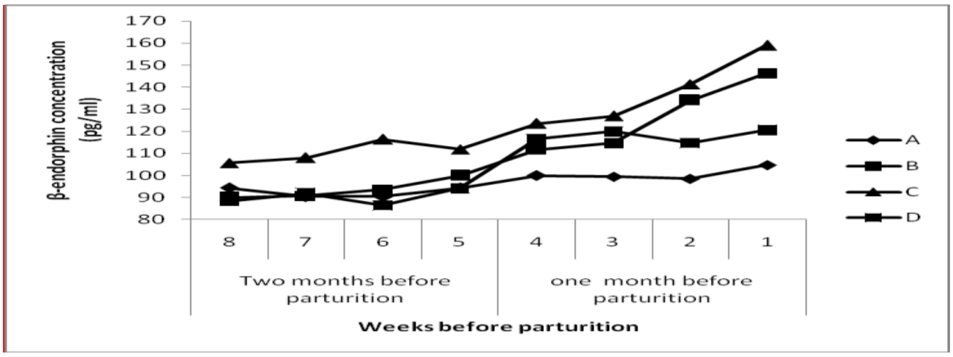
Uterine diseases such as uterine inertia is an important negative factor of the loosening mechanism in the placentome and the separation process of the cotyledons remains incomplete due to the inadequate uterine contractions. Uterine atony due to blockage of oxytocin may therefore be of greater importance as a cause of retained placenta than previously thought. The blockage of oxytocin may be provoked by an increased synthesis of endorphins due to stress and pain (Ehrenreich, 1981). In addition, it has been established that β-endorphin like immune-reactivity in blood elevated during labour and directly related to the number and intensity of uterine contractions, and also duration of labour (Thomas *et al.*, 1982).

In the present study, β-endorphin levels were higher in retained placenta group (C) than in the other groups. In the light of these results, Ehrenreich *et al.* (1985) administrated endorphin antagonist to cows with and without postpartum uterine atony to induce and stimulate uterine contractility. So, it could be deduced that endorphin resulting from stress (retention of placenta) can block oxytocin release in the buffaloes with retained placenta which in turn inhibit the oxytocin induced contractions occurring during the third stage of parturition. Therefore, oxytocin is clearly important in maintaining uterine contractions during parturition, expelling the fetus, delivering the placenta, contracting and involution the postpartum uterus (Fuchs *et al.*, 1982). Hence, this regulation mechanism can vary in its influence on the pain associated with parturition in each individual.

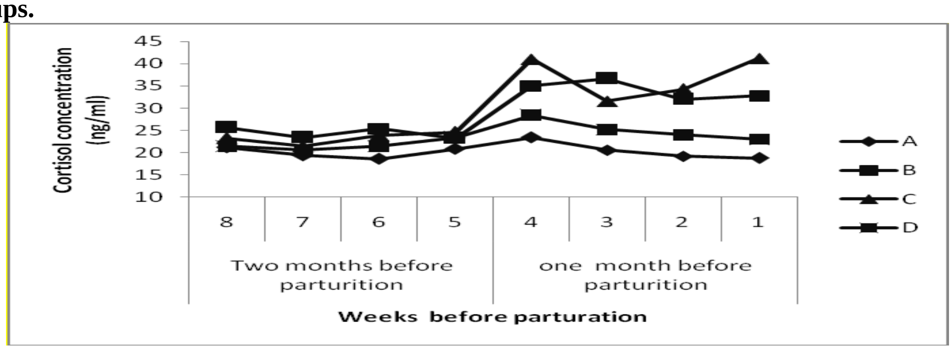
Assisted parturition can completely halt oxytocin release, resulting in total stoppage of oxytocin induced contractions during the expulsion of the fetal membranes (Rüsse, 1982). In this respect, Leng *et al.* (1985) reported that the source of β-endorphin released during parturition either from placenta or neuronal origin, may act in a negative feedback mechanisms to diminish the pulse of oxytocin released at birth. This lends great support to the findings of Rüsse (1982), who established that oxytocin injection following calving reduced the incidence of retained placenta especially after difficult calving.

In accordance with the present results, El-Azab *et al.* (1988) found significantly ($P<0.01$) higher plasma levels of β-endorphin in both buffaloes and cows with retained placenta than that with normal drop of placenta. They suggested that β-endorphin would be considered as a factor which probably influences the retention of placenta in farm animals. Also, Ismail *et al.* (1997) found that the levels of β-endorphin increased gradually through gestation period recording the highest level during the third trimester of pregnancy in buffaloes. Moreover, at parturition Osawa *et al.* (2000) found that concentrations of β-endorphin were higher in cows suffering from dystocia and retained placenta (79%) comparison with normal one (42%).

In sheep, Shutt *et al.* (1988) found that a significant correlation between intensive stress, plasma β-endorphin concentration, cortisol levels and adreno-cortico-trophic hormone. They found that β-endorphin level rises and thereafter declined due to rapidly degeneration of this hormone or extra pituitary sources, e.g. lymphocytes may be share in synthesis of β-endorphin (Weigent and Blalock, 1997). Therefore, a close contact may be found between extra pituitary sources of β- endorphin and immune/stress status, and that may have participate to the disagreement of circulating cortisol and β- endorphin at calving.



Fig(1): Change in β-endorphin concentration (pg/ml) during late pregnancy period in different expermintal groups.



Fig(2): Change in cortisol concentration (ng/ml) during late pregnancy period in different expermintal groups.

In spite of the two hormones, β-endorphin and ACTH are generally known to be excreted simultaneously. In cows (Guillemin *et al.,* 1977) reported that both hormones may show different profiles under certain conditions such as calving time.

On the other hand, in cows at parturition Aurich *et al.* (1990) reported that no correlation was found between β-endorphin concentration and type of calving. Whereas, β-endorphin values in dystocia group tended to be higher than that normal group. It is possible that cows with abnormal calving have more stress than that normal one, leading to an increase of peripheral β-endorphin level. Add to that, there was a concomitantly trend between both of plasma β-endorphin and cortisol profile. In according to the present results, Osawa *et al.* (2000) found that plasma cortisol level increased in both of cows showed or don't showed higher levels of β-endorphin nearest and/ or at calving.

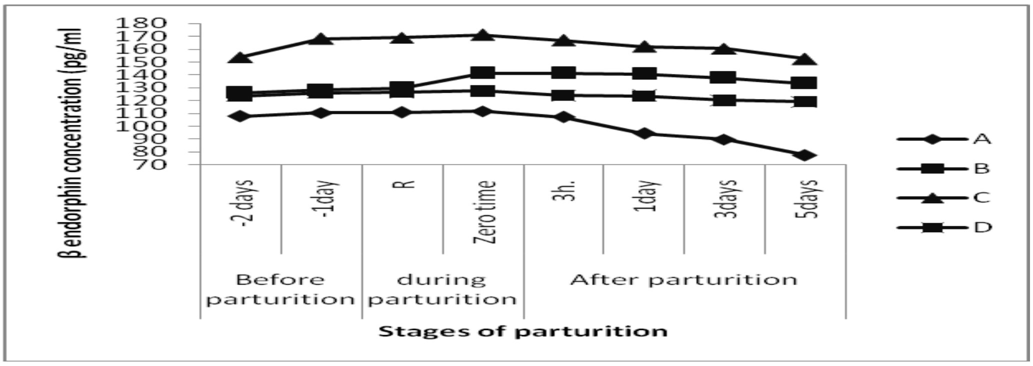
In the periparturient period, Osawa *et al.* (1998) found a significant alteration in both of β-endorphin and cortisol levels. Cows with normal parturition were reached a highest levels of both two hormones after rupture of the amniotic sac directly, while, dystocia group were seen just after parturition. Suggesting that dystocia cows may have suffer intensive stress at the time of parturition rather than any other time resulting in excretion of β-endorphin into plasma at parturition time. Furthermore, in normal parturition cases a distinguish of β-endorphin excretion was noticed when the uterine constriction and labour pain increased as a result to amniorrhexis. Adding to that, during periparturient period β-endorphin and cortisol concentrations were higher in dystocia group comparison to normal parturition one and there are no significant differences between groups.

Around parturition process (before, at and after):

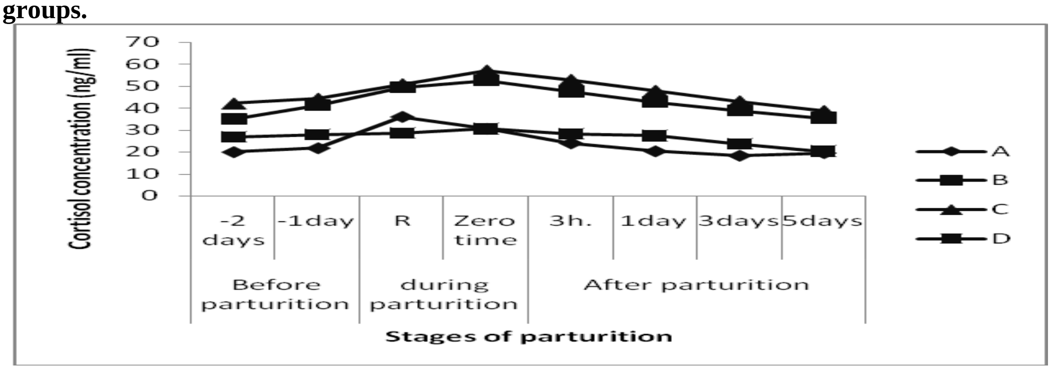
Data in Figs.(3 and 4) showed that plasma β-endorphin and cortisol levels are gradually increased during the different stages of parturition (-2 and -1 days before parturition up to rupture of the amnion and delivery) in groups C, B, D and A, respectively. In abnormal groups, the highest values of both hormones were significantly ($P<0.01$) recorded during the parturition. After parturition (3 h; 1, 3 and 5 days), both β-endorphin and cortisol concentrations gradually reduced. Group C showed the significantly ($P<0.01$) the highest value followed by groups B, D and A. These results showed a close association between β- endorphin and cortisol levels in buffalo cows through a few days after parturition. In accordance with the present trend, Ismail *et al.* (1997) found that the level of β-endorphin had the prominent peak at parturition. Also, Hydbring *et al.* (1999) studied concentrations of β-endorphin in both goats and heifers. Frist in goats, they found that a gradually increased in β-endorphin concentration with the progress labour process. Second in heifers suffering from dystocia, they found that a higher concentration of β-endorphin after 1h of parturition and retain upside evidence that a significant correlation between β-endorphin concentration and labour difficulties. Comparing with human, intensive pain was found to be related significantly with the concentration of β-endorphin in the plasma (Bacigalupo *et al.*, 1990), but there was no change in β-endorphin concentration in heifers that did not need assistance.

Regarding to cortisol concentration in both goats and heifers, they found that an increased in cortisol concentration during delivery process, with a highly significant correlation with the stages of delivery. Higher levels of cortisol nearly calving time may be due to the increased need for glucocorticoids, to meeting a rapidly mammary growth and starting lactation, and the fact that oestrogens reduce the metabolic clearance rate of cortisol (Kitts, 1985). Also, there is no significant differences were found in cortisol concentrations between heifers that have dystocia and the normal one, so the high cortisol values was found to be accompany with stress and pain in animals suffering from or exposure to labour difficulties. In goats, (Olsson and Dahlborn, 1989) found that cortisol concentration showed a higher values above that could be elucidate by daily variation in prenatal day, while a gradually increase was observed in cortisol concentration when initiation of calving. The values are identical with those obtained when stimulate stress inclose the discomfort of having water administered by stomach tube. In that situation, a mean value of cortisol increased reach 160 nmol/ l (Eriksson *et al.*,1994), which is considerably lower than the mean value here of around (270 nmol/l).

Previously, (Aurich *et al.*, 1993a) have been reported an increased in β-endorphin concentrations around parturition in cows. Some authors pointed to, it is unclear whether the elevation of the plasma β-endorphin level is able to modulate pain perception during labour because β-endorphin penetrates the blood brain barrier(Meisenberg *et al.*, 1983).Whereas, Stark and Frantz (1983) suggested that β-endorphin may exert a pain modulating role during parturition as it has been shown to produce a potent analgesia in stressful situations.On another hand, Osawa *et al.* (2000) Compared levels of β-endorphin concentrations at calving between two groups of cows suffering from difficulties parturient. One of them had no higher levels of β-endorphin concentrations at parturition and the other was contrary to it. They found that first group had higher β-endorphin levels prior to the initiation of parturition compared to the other one attributed that to β-endorphin response to a severe stress can be attenuated by prior exposure to a milder form of stress (Fordham *et al.*, 1989). So that first group may have been exposed to severe stress before initiation of parturition, and the sensitivity to pain in these cows might have reduced by the time of labor.



Fig(3): Change in concentration of β-endorphin (pg/ml) during stages of parturition in different expermintal groups.



Fig(4): Change in concentration of cortisol (ng/ml) during stages of parturition in different expermintal groups.

During the postpartum period:

Figs. (5 and 6) showed plasma β-endorphin and cortisol concentrations in postpartum period of buffalo cows. Plasma β-endorphin concentration during postpartum period was lower in animals that came in oestrus within 60 days postpartum (group A) than in those failed to come in oestrus within the same period in groups B, C and D. Generally, postpartum β-endorphin concentration in plasma of buffalos decreased in all groups after parturition directly and rise again in days 60, 90, 100 and 80 in groups A, B, C and D, respectively.

Through the period extended from 10 days after parturition till the first ovulation mean concentrations of plasma β-endorphin were significantly ($P<0.01$) higher in all groups beginning with groups B, C, D and A

(103.52, 121.71, 111.45 and 81.79 pg/ml, respectively). However, cortisol concentration showed fluctuated values in postpartum days, being the highest in group C, then groups B, D and A, respectively and the differences were highly significant (P<0.01) among groups. In both normal and abnormal groups, at the end of postpartum days a similar trend of increase was observed in plasma β-endorphin and cortisol levels.

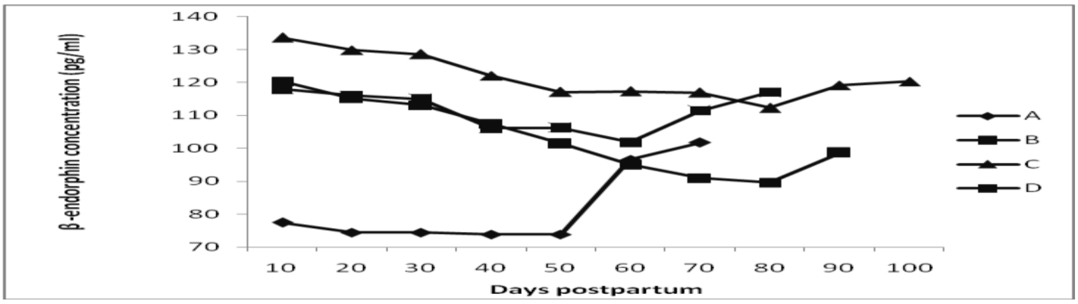


Fig. (5): Change in concentration of β-endorphin (pg/ml) during postpartum days in different expermintal groups.

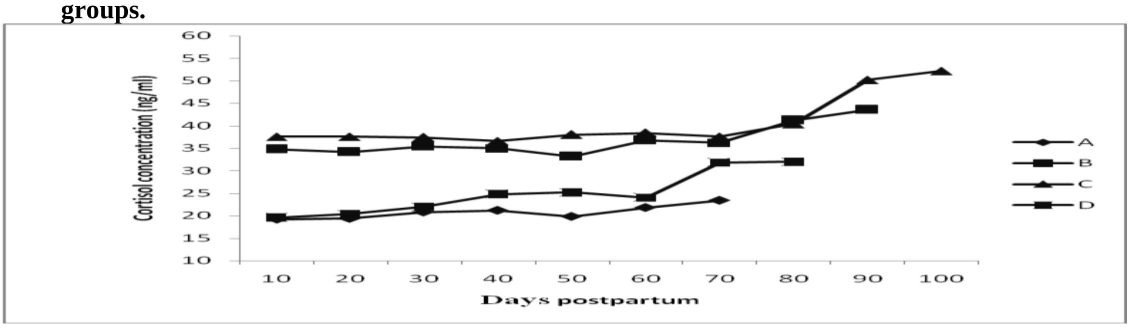


Fig. (6): Change in concentration of cortisol (ng/ml) during postpartum days in different expermintal groups.

During oestrous cycle stages:

Figs. (7 and 8) showed plasma concentrations of β-endorphin and cortisol in buffalo cows through oestrous cycle stages. Present results revealed that plasma β-endorphin concentration during oestrous cycle stages gradual decreased as compared to that found at parturition period. Data showed that β-endorphin concentration was significantly higher (P<0.01) in groups C and D than in group A during oestrous cycle stages. Also, cortisol concentration was higher in groups B, C and D than in group A during the same stages. Overview, the study showed that concentrations of β-endorphin and cortisol gradual increase in associated with the provision of oestrous cycle. The differences among the experimental groups were highly significant (P<0.01). Animals in group C showed higher β-endorphin and cortisol concentrations than in other groups. In accordance of these results, in postpartum period Ismail *et al.* (1997) found that a gradually decreased in plasma β-endorphin concentrations showing lower values in buffalo cows which came in oestrus earlier and suggesting that this picture is responsible in favouring gonadotropin release and consequent stimulation of follicular growth. And/ Or seems to be a result of gradual decrease in oestrogen level favouring FSH release and consequent stimulation of follicular growth re-establishment of oestrous cycle Radwan *et al.* (1988).

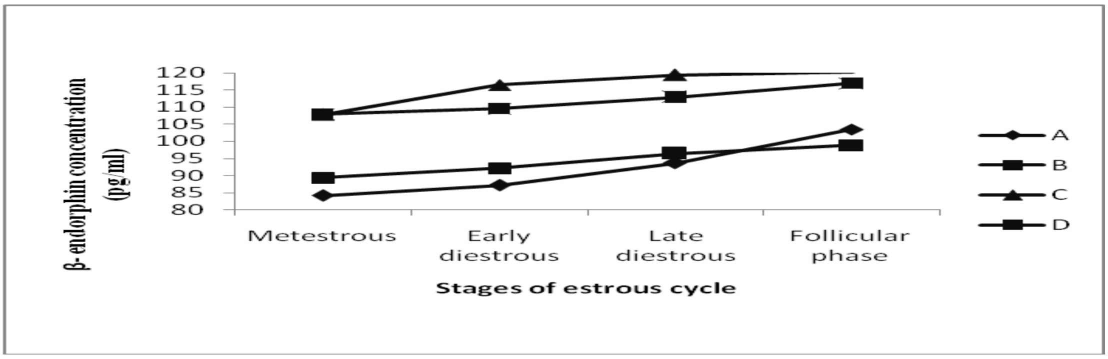


Fig. (7): Change in Concentration of β-endorphin (pg/ml) during oestrous cycle stages in different expermintal groups.

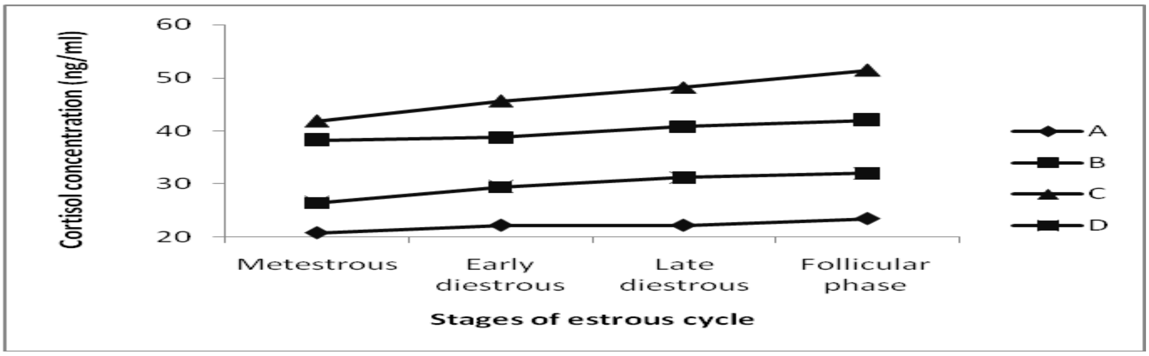


Fig. (8): Change in concentration of cortisol (ng/ml) during oestrous cycle stages in different expermintal groups.

In cows, Osawa *et al.* (2000) reported that there is no significant differences were found between postpartum β-endorphin concentrations and initiation of first ovulation in both of difficulties parturition and normal calving groups. These results may suggest that difficult parturient shares with anther as a stress factors on animal following parturition directly, although it causes an increases in plasma β-endorphin concentrations during last trimester of pregnancy period and at calving. They assume that there is a relation between response of β-endorphin to some stress factors such as difficulties parturition or shortage food and delay in first ovulation.

Barb *et al.* (1990) reported that luteinizing hormone secretion from pituitary may be suppressed by β-endorphin and that naloxone, an opioid antagonist increased pulsatile luteinizing hormone release after parturition in beef cows (Whisnant *et al.*, 1986).

Osawa *et al.* (1998) referred to a high significant correlation was found between both average β-endorphin concentrations and a period required for incidence of first ovulation. Point out possibility participation of β-endorphin in the resumption of ovarian function by modulating the hypothalamo-resumption of ovarian cyclicity whereas, β-endorphin may not play an important role in LH responsiveness to exogenous GnRH but may be involved in regulating LH secretion in postpartum dairy cows.

Adding that, sometimes an opposite relationship was found between concentrations of β-endorphin and cortisol during the postpartum period. These results are corroborative by Fordham *et al.* (1991) in sheep and Tsuma *et al.* (1995) in sows which came the same results. Only certain forms of stress may act as natural inputs to endogenous OP analgesia system Lewis *et al.* (1980).

In conclusion, results indicated selective changes in β-endorphin concentration which have an important role during pregnancy. Plasma β-endorphin concentration increased recording the highest level nearest parturition, so pregnancy constitutes a stress factor on the animal and so β-endorphin accommodates the animal to this stressful state. During parturition level of β–endorphin had the prominent peak indicating its analgesic action. During postpartum period, level of β-endorphin decreased, demonstrating that responsibility for favouring gonadotropin release and consequent stimulation of follicular growth. Also, β-endorphin can be considered an additive factor affecting the incidence of retention of placenta in farm animals due to a relation between increased plasma β-endorphin and retention of placenta.

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مستويات هرمون بيتا اندروفين خلال مرحلتي ما قبل وبعد الولادة وعلاقته ببعض اضطرابات الولادة والاداء التناسلي للجاموس

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تهدف تلك الدراسة الى تحديد مستوى هرمون البيتا اندورفين فى دم الجاموس وعلاقته بتركيزات الكورتيزول في فترات قبل وبعد الولادة. وايضا دراسة تأثير كل من عسر الولادة واحتباس المشيمة وتأخر الشبق وطول الفترة ما بين ولادتين في الموسم السابق على مستوى تركيز هرمون البيتا اندورفين. تم جمع عينات دم من عدد ٢٠ جاموسة في الفترة الاخيرة من الحمل (شهرين قبل الولادة المتوقعة) وحتى ١٠٠ يوم بعد الولادة. قسمت الحيوانات الى اربع مجاميع كالتالي: خمس حيوانات ذات ولادة طبيعية (مجموعه A) ،خمسة تعانى عسر الولادة (مجموعه B)، خمسة تعانى احتباس مشيمة (مجموعه C) وخمسة تعانى تأخر في ظهور علامات الشبق وطول الفترة ما بين ولادتين في الموسم السابق (مجموعه D). أظهرت النتائج ارتفاع مستوى تركيز هرمون البيتا اندورفين اثناء الولادة في المجاميع (C,B and D) مقارنة بالمجموعة (A). سجلت المجاميع (C,B and D) تركيزات مرتفعة من هرمون البيتا اندورفين طوال الفترة التجريبية مقارنة بالمجموعة (A) وكانت الاختلافات عالية المعنوية. وصل مستوى تركيز هرمون البيتا اندورفين أعلى قيمة له اثناء الولادة فى كل المجاميع وخاصة المجموعة (C). اظهرت النتائج ان هناك توافق بين افراز كل من البيتا اندروفين والكورتيزول في فترة ما قبل الولادة مع حدوث انخفاض في مستوى كل منهما بعد الولادة مباشرة وحتى شهرين من الولادة. نستنتج من ذلك ان مستوى تركيز هرمون البيتا اندورفين يتأثر في الفترات المتأخرة من الحمل والولادة وما بعدها في الحيوانات التي تعانى عسر الولادة واحتباس المشيمة وتأخر الشبق وطول الفترة ما بين ولادتين في الموسم السابق.