THE CLINICAL EVALUATION OF THE EFFECT OF XYLAZINE IN PREGNANT BUFFALOEs AND CATTLE

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ABSTRACT

The object of this study was to investigate the effect of xylazine administration at dose of (0.05 mg/kg BW) intravenously in late pregnancy of buffaloes and cattle. Under xylazine as sedation and analgesia, accompanied with local anesthesia, rumenatomy were implemented on three hundred seventy two buffaloes and sixty four cattle. Eighty two and thirty five of these buffaloes and cattle were in late pregnancy respectively. The results of this study revealed that xylazine did not effect the buffaloes in late stage of pregnancy, but it cause abortion in late pregnancy in cattle at a percentage of 3.65%. Also there was individual variation of response to xylazine in both buffaloes and cattle. The latter appeared to be more sensitive to xylazine than buffaloes.

INTRODUETION

α 2- agonists are used in large animals for standing restraint that includes analgesia and sedation although there is evidence to suggest that the sedation last longer than analgesia. Xylazine hydrochloride is undoubtedly the most widely used agent for chemical restraint in the bovine species. This drug is generally regarded as a relatively safe agent in the bovine (1). It is an α 2-adrenergic drug with sedative, analgesic and muscle relaxing properties, which act via the central nervous system. In cattle lower doses of xylazine can provide excellent activity standing sedation (2 and 3). Also other worker revealed that at appropriate doses, xylazine has been reported to be a suitable agent for providing analgesia without excessive ataxia and recumbency (4). Its muscle relaxant effect is based on inhibitions of the intraneural transmission of impulses in the central nervous system (2 and 5). The principle pharmacological activities develop with three to five minutes following intravenous administration (6 and 7). The combination of 4-aminopyridine (0.3 mg/kg B.W) and yohimbine (0.125 mg/kg B.W.) intramuscularly produced marked antagonism of xylazine (0.2-0.3 mg/kg B.W.) intramuscularly as sedation in cattle (8). Xylazine (0.1 mg/kg B.W.) intravenously in goats increase the frequency and intensity of uterine contraction (9). The myometrial activity doubled in the first 60 minutes after administration of xylazine and did not return to preinjection level for three hours. The observed changes in uterine activity and fetal breathing may have been direct effects of xylazine it self or the effects of increase uterine activity (10).α2-agonists can increase myometrial activity of the pregnant uterus and xylazine can cause abortion when given to ruminant in late pregnancy (2).

The effect of xylazine in late pregnancy were registered in most ruminants especially goats, sheep and cattle, but the available literature not refer to study the effect of xylazine in late pregnancy in buffaloes. This study aimed to investigate the effects of xylazine administration intravenously in late pregnancy in buffaloes and comparison with late pregnancy in cattle.

MATERIALS AND METHODS

The study were extended from 2000-2004 AD, three hundred seventy two clinical cases of 4-15 years old buffaloes of local breed and sixty four clinical cases of 3-10 years old cattle of local and cross breed were admitted to the special Veterinary clinic in Bab-sinjar, Mosul province to examination for foreign body syndrome. The diagnosis were carried out by stethoscope to check heart, lungs and motility of fore stomach particularly the rumen, metal detector to detect if there is metallic foreign bodies, hand to pressure on rumen and left lower flank to check if non metallic foreign bodies. In addition to that observation of jugular vein, arch of the back and abduction of elbow. Further more, case history such as recurrent tympany, loss of appetites, decrease milk production, pain, grinding of teeth, regurgitation, pregnancy, movement, decrease body weight and nature of nutrition. All these information's was helped to reach the diagnosis and to decision the type of treatment.

Rumenatomay had been done under xylazine at standard doses (0.05 mg/kg B.W) intravenously (11). While some fractious animals especially buffaloes may require half doses as well as to standard doses, according to the degree of sedation which required to perform the operating and accompany with local anesthesia at the site of operation of the left flank. The effect of xylazine such as sedation, analgesia, and muscle relaxant, reduction of heart and respiratory rates, salivation, polyuria and bloat were recorded. After laparatomy, direct palpation of the uterus to determine the period of gestation or in some time check the uterus by rectal palpation before operation. Weingarths ring method was used, and all steps of operation were to be done as a routine manner. Post-operative care using penicillin-streptomycin at a dose of 10000 IU, 20 mg/ B.W intramuscularly respectively for four days. After operation, the animals which in late pregnancy were follow until parturition to observe the effects of xylazine in pregnancy.

RESULTS

The results of this study indicated that the standard doses of xylazine in buffaloes and cattle were produced marked sedation on all occasions, which compensate with local anesthetic drug to perform rumenatomy under standing position. Some buffaloes and cattle were exhibited deep sedation with sternal recumbency, which needed electrical stimulation or splashing of cold water over the head to return into standing position. The observed clinical signs on most of the animals were; sedation, analgesia, muscle relaxant, decrease heart and respiratory rates, salivation, polyuria, bloat and in rare cases regurgitation occurred which were particularly associated with history of severe frothy tympany mainly in buffaloes. The data on the signs and symptoms of the effects of xylazine on buffaloes and cattle were not tabulated because there was a wide variation in ages of the investigated animals. Also some animals were in poor condition, due to penetration by foreign bodies, while other animals were apparently healthy; in addition to that, some of the cattle were from local breed while others were of cross breed. All these factors may not give the real signs and symptoms of the effects of xylazine on the experimental animals.

The animals were appeared in wide range of variation for response to xylazine, some required standard doses, while other needs more than standard doses to achieved the same sedation as happen in standard doses. On other hands it was observed that cattle were more sensitive to xylazine than buffaloes. The actions of xylazine appeared at a range of 4-8 minutes after intravenous administration. The pregnancy diagnosis were implemented before operation by rectal palpation and/or by direct palpation of uterus after laparotomy and before opening of rumen. It was recorded that eighty two of buffaloes and thirty five of cattle in late pregnancy from the animals of this study (table, 1). The results

were appeared that no effects of xylazine in pregnancy in buffaloes, while abortion recorded in late stage of pregnancy in cattle at a percentage of 3.65 % as the following in (table 1):

(Table, 1): Shows number of clinical animals used in this study, number of animals in late pregnancy and percentage of abortion.

DISCUSSION

Xylazine was widely used as a sedative, analgesic and muscle relaxant in Veterinary practice especially in ruminants. Most of the minor surgical operations can be done under xylazine sedation, while major surgical operations were required in addition to xylazine injection, administration of local

Animals	No. of operated animal's	No. of animals in late stage of Pregnancy	No. of aborted animals	Percentage of aborted animals
Buffaloes	372	82	-----	-----
Cattle	64	35	2	3.65

Table 1: Show the number of pregnant and aborted animals

anesthetic agents to provide sufficient analgesia at the site of operation. Sedation and analgesia produced by xylazine may be related to the central nervous system depression. (2, 6, 7 and 12). In rare cases, buffaloes and cattle were exhibited mild or deep sedation with sternal or lateral recumbency in spite of using standard doses of xylazine. This phenomena might be due to the individual variation of response to xylazine. Muscle relaxation properties produce by xylazine might be due to the inhibition of the intraneural transmission of impulses in the central nervous system (2 and 5). The observed decrease in heart rate may be results from decrease of sympathetic tone and increase in vagal tone. This bradycardia inducing effect of xylazine has been previously reported in cattle (13, 14, 15 and 16). The decrease in respiratory rate following xylazine injection is in agreement with others finding (16 and 17). Increase salivation after administration of xylazine may be due to reduction of swallowing which permit to drooling of saliva, while polyuria probably as a result of decrease production of vasopressin (5, 18 and 19). Bloat mostly occurred after completion of the operation. This might be due to inhibition of reticulorumenal motility which lead to ruminal atony. Such results also confirmed by others (11), whom said that xylazine could inhibited reticulorumenal motility in cattle.

The results of this study indicated that, xylazine can increase myometrial activity of the pregnant uterus and cause abortion in late pregnancy in cattle (table, 1). This observation fully confirm the findings of other workers (2 and 5), whom said that xylazine can increase myometrial activity when given to ruminant in late pregnancy. So, it should be generally noted that not to be used in the last trimester of pregnancy particularly in cattle. Also agree with other findings (9 and 20) that said that xylazine cause induction of uterine contraction in pregnant goats. The present study documented an

important scientific facts, which revealed that, xylazine did not effect on myometrial activity of the pregnant uterus in buffaloes, so that abortion did not occurred in late pregnancy. In this observation it was found that cattle were more sensitive to xylazine than buffaloes. This study could be considered the first reported on the effects of xylazine in late pregnancy in buffaloes and more work needed to improve this suggestion.

In conclusion, the study indicated cattle and buffaloes were exhibited individual variation of response to xylazine, and cattle are more sensitive to xylazine than buffaloes. Xylazine when given in late pregnancy may cause abortion in cattle, but not in buffaloes.

التقييم السريري لتأثيرالزايلازين على الحوامل في الجاموس والابقار

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الخلاصة

ان اهداف هذة الدراسة هو معرفة تأثير حقن الزايلازين بالوريد وبجرعة(0,05ملغم/كغم) من وزن الجسم في المرحلة الاخيرة من الحمل للجاموس والابقار.حيث تم تحت تأثير الزايلازين كمسكن ومسدر وبمساعده المخدر الموضعي،اجراء عمليه فتح الكرش 372 من الجاموس و64 من الابقار،وكانت 82و35 من الجاموس والابقار على التوالي في المراحل الاخيرةمن الحمل. بينت نتائج الدراسة ان الزايلازين لم يحدث تاثير على الحمل في الجاموس ولكن سجلت حالتين للأجهاض وبنسبه 3,65% في الابقار.وكذلك فأن هنالك اختلافات واضحه للاستجابة للزايلازين في كلا من الجاموس والابقار و تبين بأن الاخيرة اكثر حساسيه للزايلازين من الجاموس.

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