The Iraqi J. Vet. Med. 19 & 20, No. (2) , 1995-1996

THE USE OF OXYTOCIN IN COMBINATION WITH UTERINE LAVAGE AS A POST-MATING TREATMENT FOR INFERTILE MARES WITH ENDOMETRITIS

Abdul-Aziz F.R.

Department of Surgery & Obstetrics , Collage of Veterinary Medicine , University of Baghdad . Baghdad , Iraq.

SUMMARY

Eighteen infertile multiparous mares were used in this study. They had been barren for at least 2 years and had been bred repeatedly during those years, and were 8-20 years of age. Clinical genital, and endometrial cytology and histopathological examinations revealed that the mares suffered from acute endometritis. Each mare was subjected to an intrauterine lavage with 500-1000 ml of sterile saline solution in combination with an intravenous injection of 20 I.U. of oxytocin within 12-24 hours after mating. The mares expelled most of the flushed fluid within 20 -30 minutes of oxytocin injection. Eighteen of the treated mares, 13 (72%) conceived after mating on one estrous period.

Results of this study indicates that removing intrauterine fluid containing inflammatory by-products by saline lavage and inducing uterine contractions with oxytocin after mating improved conception rates in infertile mares.

INTRODUCTION

Marse susceptible to recurrent endometritis that occur after mating represent the majority of infertility problems in equine pratice (1,2). Infertile mares due to endometritis lack the ability to clear bacterial contamination of the uterus spontaneously , resulting in a persistent inflammation that interfers with fertility (3,4). A delay in

the physical clearance of intrauterine inflammatory debris and bacteria through the cervix is implicated as a cause of recurrent endometritis (5), and those mares that accumulate uterine fluid after mating have decreased fertility (4,6).

Treatment designed to improve physical clearance of intrauterine bacteria and fluids by uterine lavage with saline and inducing uterine contractions with oxytocin after mating may be the preferred method of treatment and may improve conception rates in mares suspectible to post-service endometritis (7). In the present study uterine lavage with saline followed by oxytocin injection after mating was used in an attempt to enhance physical uterine clearance and improve pregnancy rate in mares suffering from recurrent acute endometritis.

MATERIALS AND METHODS

Eighteen multiparous mares used in this study were selected from cases presented to the Theriogenology Department , College of Veterinary Medicine, University of Baghdad, for reproductive problems during the period from April 1994 to April 1995. Their clinical history was that they had been barren for at least 2 years and had bred repeatedly during those years and they were 8-20 years old.

The procedures used to study the pathogenesis of endometritis of these mares included clinical examinations, endometerial cytology and biopsies. Clinical examination consisted of a visual inspection of the vulva and perineum, vaginoscopy and rectal palpation. Endometial swabs for cytological examination were taken from each mare according to the method of Knudsen (8) and the smears were stained with Wright-Giemsa. The endometrial biospy specimens were obtained with a punch biopsy instrument, having an alligator-type jaw with a basket 20x4x3 mm and a handle 60 cm long. The specimens wer fixed in 10% formalin solution and processed and stained with hematoxylin-eosin. The treatment protocol of mares consisted of breeding them on the second or third day of their estrus and then

every other day until the stallion was rejected by the mares. Then, each mare recieved an intrauterine lavage, within 12-24 hours after her last mating, with (500-1000) ml of warm sterile normal saline solution until the fluid retrieved is clear. Immediately after flushing, the mares were injected 20 I.U. of oxytocin intravenously. Finally, the mares were examined for pregnancy detection by rectal palpation within 35-45 afetr their last mating.

RESULTS

The results of clinical genital examination revealed that all the mares studied suffered from acute endometritis. Vaginscopy showed moderate congestion of the vaginal mucosa and external uterine os as well as to the presence of scanty vaginal exudate. Rectal palpation showed slightly distended, atonic and thick-walled uterus. Endometrial cytological smears were characterized by moderate to sever polymorpho-nuclear neutrophilic (PMN) infiltration with the presence of variable amounts of mucus in some smears (Fig. 1 and 2). Meanwhile, hisopathological study of the endometrial tissues showed oedema and PMN infiltrations of luminal epithelium and stromal tissue (Fig. 3 and 4).

All the 18 mares flushed with saline solution in this work, expelled most of the fluid within (20-30) minutes of oxytocin injection. The mares tolerated the oxytocin injections well apart from evidence of sweating on the neck and flanks of few mares but the majority showed no outward signs of discomfort other than active expulsion of lavage fluids.

Of the 18 mares mated in this experiment, 13 (72%) became pregnant on the first oestrus cycle. Two of those 13 mares have lost their foetuses after 90 days of gestation.

DISCUSSION

The results obtained in this study showed the role of cytological examination as an important and a rapid diagnostic aids,

since its results was correlated well with the findings of clinical , and histological examinations of uterine biopsies in the diagnosis of acute endometritis in the mares. Endometrial cytological study showed slight to moderate PMN infiltration of the luminal and stromal endometrium and finding is comparable to the earlier studies of Rozzel and Freeman (9). Also, the results of endometrial histolgogical examination obtained in this study was similar to those reported by Ricketts (10) .

Mares that accumulate intrauterine fluid after mating have decreased fertility (6), the fluid may be present due to a delay in physical clearance through the cervix or due to decreased reabsorption by lympahtic vessels after the cervix closses (7). The accumulated intrauterine fluid, espeacially in multiparous mares with poor uterine tone and in mares that are susceptible to endometritis, originates from the excess and watery endometrial gland secretions of oestrus and, although initially sterile, it acts as a perfect medium for opportunist bacteria that may gain entry, into the uterus at mating (11).

Until recently, oxytocin was not considered to be an appropriate treatment for endometritis and the consensus was that oxytocin induced strong uterine contraction in mares only after foaling, and then within the first 24-48 hours (7). Recent work showed that oxytocin enhances uterine clearance of radiocolloid infused into the uterine lumen in mares resistant and susceptible for endometritis during oestrus and 48 hours after ovulation (12). Also, it is known that oxytocin stimulates myometrial contractions in non-pregnant mares. (13).

In this present study, the marse expelled actively most of the flushed saline fluid within 20-30 minutes of oxytocin injection through its contractile action on the myometrium since myometrial contractions have been recorded in non-pregnant mares after an I.V. dose of oxytocin dose of oxytocin as low as 2.5 I.U. (13). The dose of oxytocine (20 I.U.) used in the present study may be above

physiological concentrations and it could have induced strong myometrial contractions leading to rapid expulsion of the flushed saline and emptying the uterus.

Oxytocin dose not appear to influence adveresely the transport and function of gametes in the oviduct (7). When 10 I.U. oxytocin were given to 15 pony mares around the time of ovulation, the mares expelled intraluminal fluid and 67% conceived (14). In the present work, the adminstration of oxytocin in combination with saline uterine lavage after mating to 18 mares resulted in conceptions of 13 mares (72%) during one oestrus period. The two mares which have lost their foetuses after 90 days of gestation in this study, could be attributed to endometrial fibrosis or lymphatic lacunae rather than endometritis (11).

It is concluded that removing intrauterine fluid containing inflammatory debris by saline uterine lavage and inducing uterine contractions with oxytocin enhanced uterine emptying and improved pregnancy rates in infertile mares exhibiting acute endometritis.

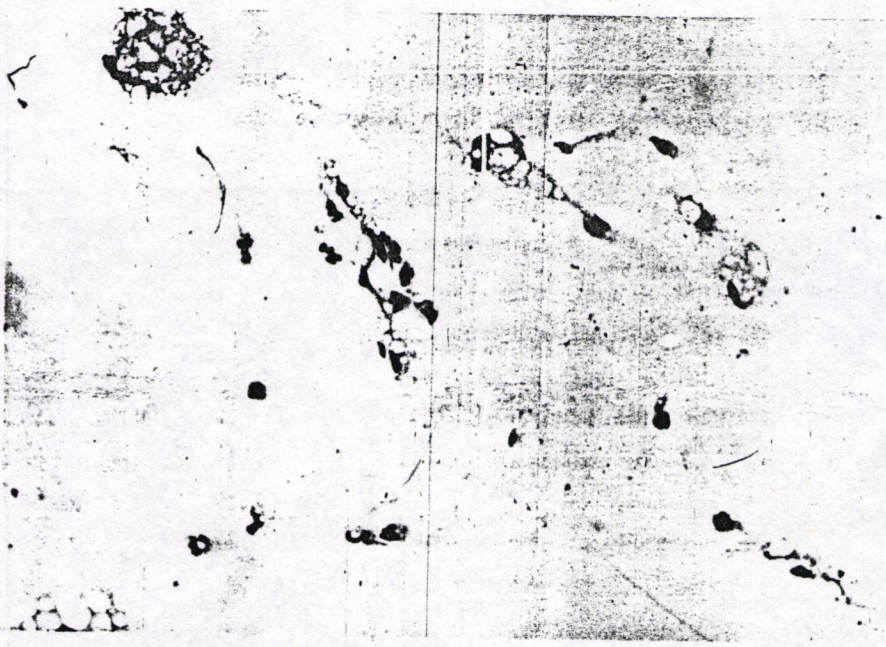

Fig. 1 : Photomicrograph of an endometrial smear containing numerous PMN and few epithelial cells taken from a mare with acute endometritis (X100).

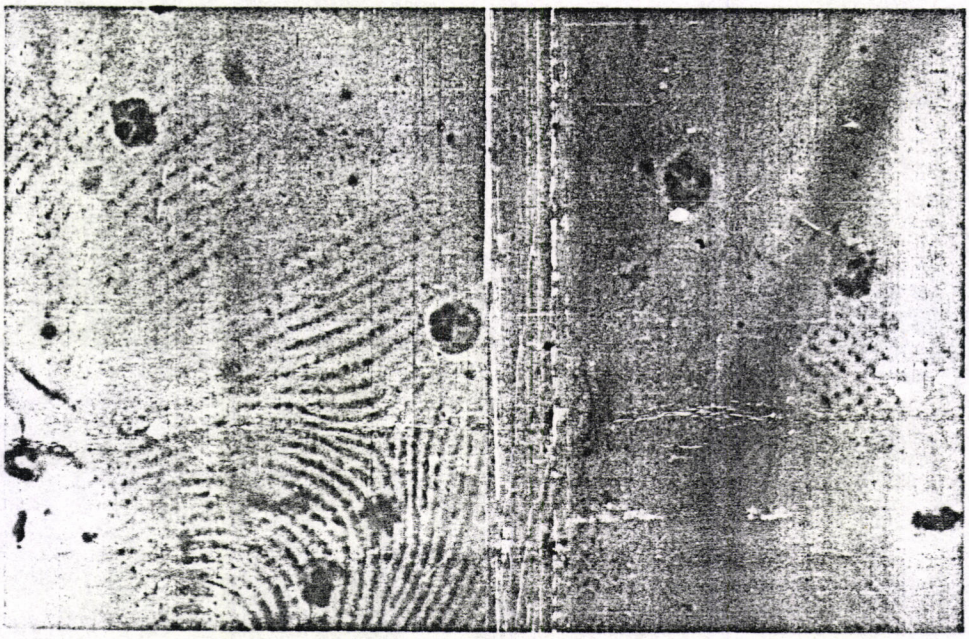

Fig. 2 : Photomicrograph of an endometrial smear showing many PMN from a mare with acute endometritis (X200).

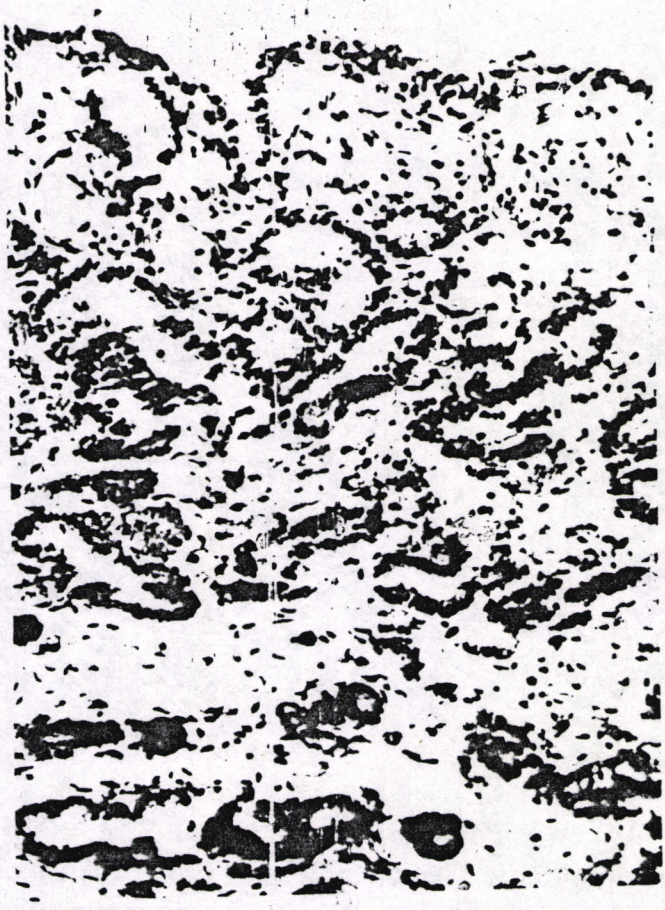

Fig. 3 : An endometrial biopsy specimen of a mare showing acute endometritis. Note congesttion and inflammatory PMN cell infiltration (X100).

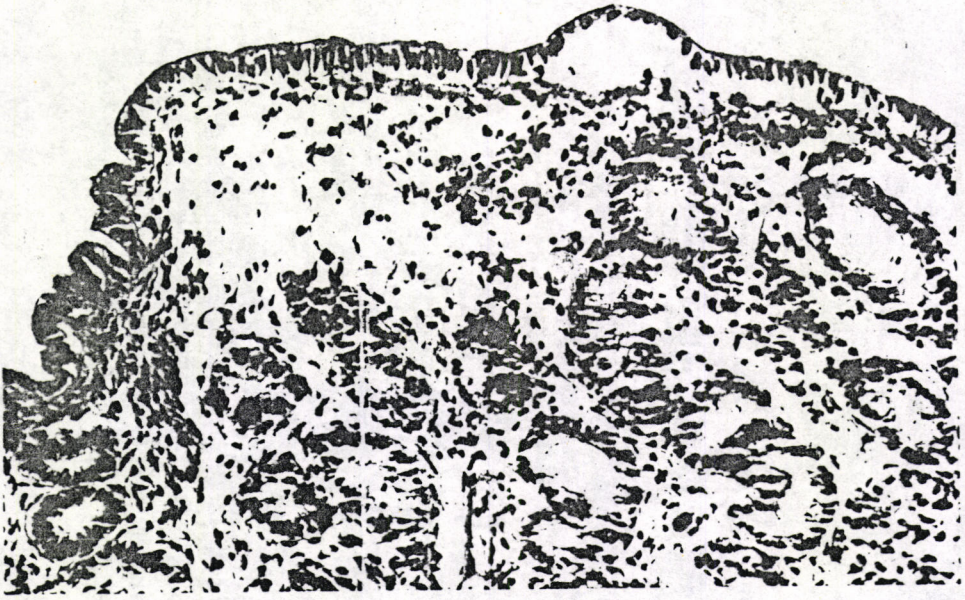

Fig. 4 : An endometrial biopsy tissue of a mare with acute endometritis. Note hyperemia and diffuse cellular PMN infiltration. Also notice a local area of luminal and glandular epithelium sloughing (X200).

REFERENCES

1. Hughes,J.P. and Loy,R.G.(1969). Invetigations on the effect of intrauterine inoculations of Streptococcus Zooepidemicus in the mare. Proc.Am.Ass.equine practnrs. 15:289-292.
2. Peterson,F.B., McFeely,R.A. and David,J.S.E.(1969). Studies on the pathogenesis of endometritis in the mare. Proc.Am.Ass.equine practnrs. 15:279-287.
3. Alen,W.E. and Pycock,J.F.(1988) . Cyclical accumulation of uterine fluid in mares with lowered resistance to endometritis. Vet.Rec.,122:489-490.
4. LeBlanc,M.M., Asbury,A.C. and Lyle,S.K.(1989). Uterine clearance mechanisms during the early postovulatory period in mares. Am.J.Vet.Res.50:864-867.
5. Evans,M.J., Hamer,J.M., Gason,L.M. and Irvine,C.H.G.(1987). Factors affecting uterine clearance of inoculated materials in mares. J.Reprod.Fert.,Suppl. 35:327-334.
6. Adams,G.P.,Kaselic,J.P., Bergfelt, and Ginther,O.J. (1987). Effect of uterine inflammation and ultrasonically -detected uterine pathology on fertility in the mare. J.Reprod.Fert.,Suppl. 35: 445-454.
7. LeBlanc,M.M. (1994). Oxytocin-the new wonder drug for treatment of endometritis. Equine Vet.Educ. 6(1):39-43.
8. Knudson,A.(1964). Endometrial cytology as a diagnostic aid in mares. Cornell Vet. 54:415-422.
9. Rozzel,J.F. and Freeman,K.P.(1988). Equine endometerial cytology. Vet.Clinics.Nor.Am. 4:247-262.
10. Ricketts,S.W.(1975). The technique and clinical application of endometerial biopsy in the mare. Equine Vet.J. 7:102.
11. Hughes,J.P.(1993).Equine endometritis: International workshop. Equine Vet.J. 25(3):184-194.
12. LeBlanc,M.M., Neuwirth,L.,Asbury,A.C.,Tran,T.,Mauragis,D. and Klapstein,E.(1994). Scintigraphic measurement of uterine

clearance in normal mares and mares with recurrent endometritis. Equine Vet.J. 26: 109-113.

13. Goddard,P.J. and Allen,W.E.(1985). Genital tract pressures in mares II. Changes induced by oxytocin and prostaglandin F2α. Theriogenology 24:35-44.
14. Allen,W.E.(1991). Investigations into the use of exogenous oxytocin for promoting uterine drainage in mares susceptible to endometritis. Vet.Rec.128:593-594.

The Iraqi J. Vet. Med. 19 & 20, No. (2) , 1995-1996

استخدام هرمون الاوكسيتوسين مع الغسل الرحمي كعلاج بعد التسفيد للافراس العقيمة والمصابة بالتهاب بطانة الرحم الحاد

فخري رشيد عبد العزيز

فرع الجراحة والتوليد ، كلية الطب البيطري، العامرية ، بغداد ، العراق

الخلاصة

شملت الدراسة (18) فرسا ذات ولادات متعددة كانت تعاني من العقم الوقتي لمدة لاتقل عن سنتين وسبق لها ان سفدت لمرات عديدة خلال هذه الفترة وتراوحت اعمار هذه الافراس بين (8-20) سنة. اظهرت نتائج الفحوصات السريرية والدراسات الخلوية والنسيجية لمسحات وخزع بطانة الرحم اصابة هذه الافراس بالتهاب بطانة الرحم الحاد. عولجت ارحام هذه الافراس بالغسل الرحمي باستخدام ما بين (0.5 - 1) لتر من محلول ماء الملح الفسيولوجي المعقم اعقبه حقن (20) وحدة دولية من هرمون الاوكسيتوسين بالوريد مباشرة بعد عملية الغسل وفي غضون (12-24) ساعة من اخر سفاد لها. اظهرت الافراس قابلية كبيرة في طرح وتفريغ محتوى الرحم من معظم كمية السائل المحقون في غضون (20-30) دقيقة من الحقن. بينت نتائج الفحص المستقيمي فيما بعد لهذه الافراس ، ان (13) فرسا منها كانت حاملا وبنسبة (72٪) بعد تسفيدها لدورة شبق واحدة. اظهرت نتائج هذه الدراسة بان ازالة وتفريغ السوائل الرحمية والحاوية على مستخرجات خميجية من خلال الغسل الرحمي بماء الملح الفسيولوجي واحداث التقلصات الرحمية بالاوكسيتوسين بعد عملية التسفيد قد ادى الى زيادة معدلات الاخصاب والحمل في الافراس العقيمة بسبب اصابتها بالتهاب بطانة الرحم الحاد.