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STUDIES ON THE USES OF GnRH AND PROSTAGLANDIN FOR INDUCTION OF OESTRUS AND OVULATION IN OLD BARREN MARES

BY

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INTRODUCTION

The majourity of non-pregnant mares pass through late Fall and early Winter in reproductive quiescence or anoestrus. The length of anoestrus differs according to the breed and management and may extend to seven or eight months (Ginther, 1974). It sometimes persists into normal breeding season, especially in mares in poor physical conditions (Allen, 1977).

Researches on gonadotrophin releasing hormone (GnRH) have indicated that administration of GnRH causaed an increase in blood level of both L.H. and F.S.H. (Evans and Irvine, 1977 and 1979).

Induction of oestrus and ovulation in anoestrus animals by administration of GnRH and $PGF_2\alpha$ were reported by Allen and Rossdale (1973); Heinize and Klug (1975); Minoia et al. (1983) and (1984); Penzhorn and Gilbert (1985) and Minoia and Mastronardi (1987).

The presentwork concerns a clinical trial undertaken to induce oestrus by administration of GnRH and PGF_2 & in anoestrus mares.

MATERIALS AND METHODS

Twenty eight anoestrus Barren mixed breed mares aged between 5 and 19 years of the Police Stud at El-Darrasa, Cairo-Egypt. All mares were subjected to rectal palpation and classified into two groups. Group (A): 18 mares which had small hard ovaries and flaccied uterus. Group (B): 10 mares which had big ovaries. Mares of group (A) were injected by 1 mg (Ceva Gonadorelin-Cystorelin) "Abbott Lab." on days 1.10 and 20 of the treatment regime. Mares on group (B) were treated by single injection of 5 mg $PGF_2\alpha$ (Lutalyse-Upjohn). All treated mares in both groups were teased daily after the end of treatment by active stallions and natural service was allowed every other day throughout the oestrous period.

Pregnancy was diagnosed by rectal palpation 2-3 months after mating.

RESULTS

As shown in **Table (1)**, fifteen out of 18 mares (83.3%) from group (A) showed signs of oestrus after the end of treatment by GnRH (Gonadorelin). The mean interval between treatment and oestrus was 6.2 ± 0.64 days (3-12 days) and the duration of oestrus ranged between 3-9 days with a mean of 5.46 ± 0.46 days. Nine mares (60 %) out of 15 mares which responded to GnRH were found pregnant by rectal examination 2-3 monthes after mating.

Seven mares (70 %) out of 10 mares from group (B) responded to PGF_2 & treatment. The mean interval between injection of PGF_2 & and oestrus was $2.83 \pm o.47$ days (1 - 4 days). The oestrous period ranged between 3 - 8 days with a mean of 5.61 ± 0.98 days. Pregnancy was confirmed in 3 mares (42.85 %) out of 7 mares which respond to PGF_2 & treatment.

Table (1): Response of mares to GnRH and PGF_2 & treatment.

Animal groups	No. of mares	No. of mares responded	%	Mean interval between treatment and onset of oestrus	No.of pregnant mares at induced heat	%
Group (A)	18	15	83.3	6.2 ± 0.64 days	9	60
Group (B)	10	7	70	2.83 ± 0.47 days	3	42.35

DISCUSSION

The present work showed that the injection of gonadorlein (GnRH) in anoestrus Barren mares will result in growth maturation of follicles and appearance of oestrus sigha within 3 - 12 days with a mean of 6.2 ± 0.64 days Heinze and Klug (1975) and Evans and Irvine (1976 b and 1979) demonstrated that injection of Gn RH causes an increase in both FSH and LH in anoestrus mares, and oestrus appeared 3 days after the end of treatment. The duration of oestrus ranged between 4 and 8 days, which was nearly the same as our findings.

The regime of repeated injections of GnRH in this work agreed with the regime used by Arbeiter (1973); Heinze and Klug (1975); Evans and Irvine (1976 a, 1977 and 1979); Bosu et al., 1982 and Alexander and Irvine (1984) Also Hughes Stabenfeldt (1977) found that the single injection of GnRH was ineffective in anoestrus mares to induce follicular development and ovulation.

The interval between treatment and onset of oestrus was 3 - 12 days. Minoia and Mastronardi (1987) claimed difference in this interval may be related to depth of anoestrus at the start of treatment.

The percentage of mares that conceived to mating at induced oestrus by GnRH treatment herein was higher than those reported by Minoia and Mastronardi (1987). They found that the conceptions to matings at induced oestrus by GnRH injection were around 50%.

The induction of oestrus in anoestrous mares due to persistant corpus lutuem by injection of 5 mg PGF_2 & (Lutalyse) in this work was 70%. Nearly similar results were reported by Ragab et al., (1987). They found 76% response to PGF_2 & treatment in anoestrus mares after first injection.

The interval between treatment by PGF_2 & and start of oestrus was 1-4 days with a mean of 2.83 ± 0.47 days

and the oestrus phase occupied 3 - 8 days with a mean of 5.61 ± 0.98 days. These findings were similar to those reported by Wallen and Copeland (1982); Penzhorn and Gibert (1985) and Ragab et al. (1987). They found that the induced oestrus appeared within 3 days after PGF_2 & treatment, and the oestrus phase occuoied 5-6 days.

The conception rate at induced oestrus by PGF_2 & treatment reported herein was 42.85% which was close to 37-50 and 43.5% given by Martin et al., (1981) and Ragab et al. (1987), respectively. Higher conception rates than our findings of 65.7% and 56.8% were reported by Bethelon and Rampin (1975) and Wallen and Copeland (1982), respectively.

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SUMMARY

Twenty eight anoestrus Barren mares were classified according to their ovarian size into two groups. Group (A) 18 mares had small inactive ovaries and the mares were injected by 1 mg GnRH 3 times at 10 days intervals. Fifteen mares showed oestrus within 3 - 12 days after the end of treatment. These mares were mated by fertile stallion and the conception rate at induced oestrus was 60%.

Group (B), 10 anoestrus Barren mares, had big ovaries. The mares were treated by 5 mg PGF_2 & single injection, mares responded to treatment and showed oestrus within 1-4 days. The conception rate at the induced oestrus was 42.8%.

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