AN ATTEMPT FOR TREATMENT OF INFERTILITY IN MARES OF CROSS-BREED IN LYBIA
(With One Table)

By

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SUMMARY

A total number of 74 mares of Thoroughbred-Arabian cross breed, 3-5 years old, with problems of infertility, were clinically identified and classified into three groups. Following the only rectal massage for ovaries and uterus (subnormol group, 14 cases), administration of PGF2-Alpha (Subestrous group, 40 cases) and FSH, PGF2-Alphs and LH (Anestrus group, 20 cases). The rates of sexual response were 100, 72.50 and 75.00%, the rates of pregnancy were 78.57, 75.86 and 80.00% and the numbers of services per ocncception were 1.28 ± 0.12, 1.83 ± 0.13 and 1.56 ± 0.18 for the three groups, respectively. The present study indicated that fertility of mares is mainly improved by care attention during the breeding season.

Key words: Mares-Cross-breeds-Infertility-Lybia
INTRODUCTION

It is of importance to notice that the reproductive efficiency of horses is mainly coupled with their management, nutrition and care (Van-Nickerk & Van-Heerden, 1972; Kenney, et al., 1975; Baker & Kenney, 1986; Arhtur, et al., 1989). It has been found that the overall reproductive efficiency of mares is low with an average live foal of 58% per annum (Roche, 1986). This lowered rate is closely prone to the seasonal pattern of mares, the 11-month gestation interval, the problems of breeding mares at the foal heat, the difficulties of deciding the optimum time of covering the mare during estrus and to fertility of the stallion (Ginthert, 1974; Kenney, et al., 1975; Roche, 1986; Clay, et al., 1989). Thereby, high rate of infertility in horses might be anticipated. With the great attention of owners and sporting clubs in Libya to horse breeding for the racing object, the present study aimed at elucidating some trials for treatment of infertility problems in mares.

MATERIAL and METHODS

The present study was conducted on a total number of 74 mares aged 3-5 years during the period from March to July, 1995. Mares were belonged to special owners at El-Zawia Centre, 40 km western to Tripoli. They possessed good feeding status, management and care by the owners. From the clinical point of view, as described by Arthur, et al. (1989), and from the owner's complaint, mares were identified and classified into three groups. The first subnormal group showed cyclically normal ovarian changes, corpus luteum or graffian follicles in the ovulation fossa, with history of regular estrous cycle and recurrent mating without conception. Mares in this group were allowed only a rectal massage for their ovaries and uterus. The second subestrus group revealed the presence of corpus luteum centrally located in the ovulation fossa with absence of the behavioral signs of estrus and history of foaling over two months. Two successive rectal examinations with 10 days intervals were given to identify nature of the corpus luteum, either periodical or persistent. After the second examination, each mare was injected i.m. by a single dose of 2ml PGF2-Alpha (500ug Cloprostenol, Coopers). The third anestrus group characterized by considerably inactive ovaries which were small in size, firm in texture and structureless in ovulation fossa, with absence of estrus. Mares were treated by i.m. injection of 5000 i.u. FSH (Folligon, Intervet, Holland) followed by 2ml PGF2-Alpha 5 days later and 3000 i.u. LH (Chorulon, Intervet, Holland) on the 2nd day.
of estrus. All mares in the three groups were kept under continual observation for the onset of estrus and covered by known fertile stallions on the 3rd day then day-to-day till the end of estrus. Pregnancy was checked 60 days after last mating by the rectal examination. Data obtained were statistically analysed according to Spiegel (1972).

RESULTS

Regarding the history of breeding and results of the clinical examination, from the total number of 74 mares, there were 14 cases (18.92%) in subnormal, 40 cases (54.05%) in subestrus and 20 cases (27.03%) in anestrus conditions.

Following the treatment, the rate of sexual response-exhibited by the onset of heat- for the first subnormal group was 100%, whereas for the second subestrus group was 72.50% and for the third anestrus group was 75.00%.

The rate of pregnancy for the sexually responded mares was 78.57% in the subnormal, 75.86% in the subestrus and 80.00% in the anestrus groups.

The number of services required per conception appeared to lowered in the subnormal group (1.28 ± 0.12) significantly (P< 0.01) than that in the subestrus group (1.83 ± 0.013) and nonsignificantly than that in the anestrus group (1.56 ± 0.18).

Table (1): Rate of sexual response and pregnancy and number of service per conception following treatment of subnormal, subestrus and anestrus mares.

<table>
<thead>
<tr>
<th>Group</th>
<th>Total No.</th>
<th>Responded No.</th>
<th>Rate of Response (%)</th>
<th>Pregnant No.</th>
<th>Rate of Pregnancy</th>
<th>No. of S/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subnormal</td>
<td>14(18.92)</td>
<td>14(24.14)</td>
<td>100.00</td>
<td>11(24.44)</td>
<td>78.57</td>
<td>1.28bc±0.12</td>
</tr>
<tr>
<td>Subestrus</td>
<td>40(54.05)</td>
<td>29(50.00)</td>
<td>72.50</td>
<td>22(48.89)</td>
<td>75.86</td>
<td>1.83±0.13</td>
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<td>Anestrus</td>
<td>20(27.03)</td>
<td>15(25.86)</td>
<td>75.00</td>
<td>12(26.67)</td>
<td>80.00</td>
<td>1.56abc±0.18</td>
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<tr>
<td>Overall</td>
<td>74</td>
<td>58</td>
<td>78.38</td>
<td>48(100)</td>
<td>82.76</td>
<td>1.63±0.09</td>
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Values between brackets are percentage from total
S/C : Service per conception.
Different letters within the same column are significant at P < 0.05.
DISCUSSION

The ovarian and uterine massage per rectum, allowed for mares of subnormal condition, was preceded by 100% onset of estrus, as indicated from the regularity of the estrous cycle. So, the rectal massage seems to have no contribution for heat stimulation in this condition. However, the ovarian and uterine palpation per rectum was helpful to decide the reproductive status of the animal involving the stage of the estrous cycle and expected dates of estrus, ovulation and service by which the owner should be advised to take his care. Thereby, when mares were covered by known fertile stallions at the expected times, 78.56% pregnancy rate was attained. This finding might confirm the importance of care and management to achieve maximum reproductive efficiency in mares (Kenney, et al., 1975; Baker & Kenney, 1986 and Roche, 1986).

From the present results, 54.05% of the total number showed subestrus possibly due to the presence of either persistent or periodical corpus luteum. When PGF2-Alpha was injected, 72.50% of the subestrous mares displayed an external signs of estrus, a finding which appeared lower than 74% (Rieb, et al., 1985) and 78.95% (Veselinovic, et al., 1985). Herein the responded mares in the present study were anticipated to have a persistent corpus luteum in their ovaries synchronized mainly with suckling and lactation after foaling. However, there was 27.50% of PGF2-Alpha treated mares failed to exhibit signs of estrus. It has been suggested that the possibility of detecting a periodical corpus luteum and administration of PGF2-Alpha too early or too late of the luteal phase in insufficient dose by unsuitable route result in failure of response to PGF2-Alpha treatment (Hafez, 1980). In the mean time, 75.86% of the responded mares to PGF2-Alpha treatment became pregnant after increased number of service per conception, a finding which appeared between 70% (Rieb, et al., 1985) and 86.67% (Veselinovic, et al., 1985) in mares and much higher than 36.36% (Line, 1983) and 52.60% (Arriola & Duran, 1979) in cows. This difference was attributed to the good tolerance of mares to PGF2-Alpha treatment (Rieb, et al., 1985).

The present study revealed 27.03% of the total mares to have deep anestrus. This finding may be due to effects of the individual tendency, the age, the physiological status during the preceding season and the body condition of the mare (Van-Nickerk & Van-Heerden, 1972; Palmer, et al., 1982; Bour, et al., 1985 and Thompson, et al., 1987). On the treatment by FSH and PGF2-Alpha 5 days afterwards, the onset of heat displayed in
72.50% of total anestrous mares. This evidence might be attributed mainly to action of FSH as growth promoting factor to the ovarian follicles. It has been noticed that deep anestrus and early transition stimulations in mares need for exogenous FSH (Bour, et al., 1985), and the level of FSH remains high for several days in blood following ovulation (Baker & Kenney, 1986). However, the role of PGF2-Alpha for the onset of heat in this condition is questionable due to absence of its luteolytic function. Otherwise, the hypothesis that sensitization of the ovarian receptors by PGF2-Alpha to action of FSH for the follicular growth and the consequent sexual response might be suggested. On the other hand, when LH was administered on the 3rd day of estrus, after FSH and PGF2-Alpha administration, a rate of 80% pregnancy was attained. This finding appeared nonsignificantly higher than a rate of 75-86% in the subestrus group and 70% (Rieb, et al., 1985) but lower than that of 86.67% (Veselinovic, et al., 1985) when PGF2-Alpha was only injected. In this respect, as the mare has naturally a high level of LH during the breeding season (Freedman, et al., 1979; Silvia, et al., 1986) and LH is the limiting factor for seasonal initiation of cyclicity in mares (Bour, et al., 1985), the need for exogenous LH is not recommended, particularly if the pregnancy rate is not significantly improved as shown from the present results.

REFERENCES

Arriola, J. & Duran, E.M. (1979) : Treatment of anestrus in dairy cattle with PGF2-Alpha and their subsequent fertility. Veterinaria, Mexico, 10(1); 1-12.


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