PAPER 290. EVALUATION OF THE USE OF THE PROGESTAGEN ALLYL TRENBOLONE TO PREVENT PREMATURE PARTURITION IN THE SOW AND IN RELATION TO THE INCIDENCE OF STILLBIRTHS AND THE VIABILITY OF LIVEBORN PIGS

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Introduction

Sows farrowing larger litters tend to have a shorter gestation period and individual birthweights are smaller (English, Smith and MacLean, 1977). Piglets born prematurely are also likely to have lower glycogen reserves at birth since liver glycogen content increases 15-fold during the last 15 days of foetal life (Elliot and Lodge, 1977). Piglet mortality is normally higher in such large litters, particularly those born prematurely, because piglets of low birthweight are more liable to die through starvation and overlying (Carroll, Krider and Andrews, 1962; English and Smith, 1975).

Any attempt to prolong gestation may be associated with more difficult parturition and a higher stillbirth rate because of higher mean piglet birthweights or because of the failure of the treatment imposed to simulate all desirable hormonal changes which facilitate parturition when this is allowed to occur naturally. Progestagens have been used in past studies to prolong gestation with somewhat conflicting results in terms of the effect on the incidence of stillbirths. An increased incidence of stillbirths per litter from progestagen treated sows has been noted by Coggins et al. (1977), Curtis et al. (1969), First and Staigmillar (1973) and by Nellor et al. (1975). However, more recently Varley and Brooking (1981) and Gooneratne et al. (1979) found that while stillbirth rate tended to be higher in progestagen treated relative to control sows, these differences were not statistically significant.

All the above studies involved a relatively small number of sows and stillbirths were not classified according to Type I (prepartum) or Type II (intrapartum) deaths.

In the present study, the progestagen allyl trenbolone (Hoechst UK Ltd.), which has been developed to control reproduction in gilts, was examined to evaluate its effect on prolonging gestation, on stillbirth rate, birth weight and survival of livebirths.

Methods and Results

The study was carried out on a 600 sow commercial unit with Large White x Landrace sows in which the average herd gestation length was 115.4 days. The experiment had a matched pair design with 45 sows on each of the control and progestagen treatments. Sows were given daily 2.3 kg of a commercial sow diet (14 per cent crude protein, 0.7 per cent lysine and 12.5 MJ DE per kg) throughout pregnancy. For a period of 5 days between day 111 and day 115 of gestation, 17 mg allyl trenbolone was added to the daily ration of the experimental sows.

The mean gestation length of progestagen treated and control sows was 116.75 and 115.08 days respectively, the difference being statistically significant ($P < 0.001$). The range in gestation length for progestagen treated and control sows was 115 to 118 and 112 to 118 days respectively. Forty per cent of the control sows farrowed before the 115th day of gestation. On day 117, 60 per cent of the progestagen treated sows but only 22 per cent of the control sows farrowed.

Total births, livebirths and stillbirths per litter were 10.22, 8.75 and 1.46 respectively for progestagen treated sows and 10.71, 10.40 and 0.31 respectively for control sows. Differences in total births was not significant whereas difference in livebirths ($P < 0.001$) and in stillbirths ($P < 0.001$) were highly significant. Over 80 percent of stillbirths born to progestagen treated sows were of the intrapartum type. In a sample of sows from each treatment it was found that the interval between births was considerably longer for progestagen treated sows.

For progestagen treated and control sows, mean piglet birth weight was 1343 and 1330 g respectively while mortality of livebirths to 7 days was 5.44 and 5.74 per cent respectively. Neither of these very small differences were statistically significant.

A higher incidence of milk 'let down' problems was associated with progestagen treated sows after farrowing. Litters were weaned between 14 and 21 days of age and no problems were experienced with rebreeding, the mean weaning to first service interval being 6.11 and 6.19 days for progestagen treated and control sows respectively.

The cause of the increased incidence of stillbirths may be related to the inappropriate timing of prostaglandin or relaxin release in late pregnancy (First, 1979; Sherwood et al. 1978). Since oxytocin production from the posterior lobe of the pituitary gland is inhibited by progesterone in pregnancy (Hafez, 1962), oxytocin inhibition may also be a contributing factor to the higher stillbirth rate and to the apparent problem of milk 'let down' after farrowing in the progestagen-treated sows.

Conclusions

1. Treatment with an oral progestagen from days 111 to 115 of gestation was associated with a significant increase in the incidence of intra-partum deaths.
2. No improvement in birthweight or in survival of livebirths associated with progestagen treatment was noticeable.
3. On the basis of weaning to first service interval, the subsequent breeding performance of progestagen treated sows was not adversely affected.

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