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## Effect of Oxytocin on Parturition in Sows

Guy H. Kiracofe and R.H. Hines

The hormone oxytocin (a hypothalamic neurosecretion that is stored in the posterior pituitary gland) stimulates uterine contractions during natural parturition. Commercial oxytocin has been used to induce labor or to intensify uterine contractions during difficult or prolonged labor in sows. This test evaluated use of one level of a commercial oxytocin during normal parturition.

### Procedure:

Sows were observed in farrowing pens several days before expected parturition. Only data from sows observed in labor with one pig born and with litters of at least seven were used. Alternate sows observed received a subcutaneous injection of 40 units (2 cc) of oxytocin\*. Every other sow served as an uninjected control. Time of birth of each pig was recorded.

### Results:

The average time between birth of first and last pigs was less for oxytocin-treated sows than for controls (Table 21). Oxytocin injections reduced time between pigs, but not until after the second pig was born (Table 22). The injections

\*Oxytocin Synthetic, Haver-Lockhart Laboratories, Kansas City, Mo.

seemed to hasten births of third and fourth pigs of a litter. Oxytocin treated sows averaged 31.6 minutes from birth of first to fourth pig compared with 63.1 minutes by control sows (Table 22). The data may be biased by control sows having fever and smaller pigs; however, litter size and size of pig did not greatly effect the length of parturition in either group.

Table 22. Effect of oxytocin on length of parturition

| Treatment        | No. sows | Av. no. pigs | Av. wt. (lbs) | Time part. (Min) | Av. interval (Min) | Av. shortest interval | Av. longest interval |
|------------------|----------|--------------|---------------|------------------|--------------------|-----------------------|----------------------|
| Controls         | 7        | 9.6          | 2.8           | 147              | 15.4               | 3.6                   | 47.0                 |
| Oxytocin-treated | 7        | 12.1         | 3.0           | 117              | 9.7                | 2.0                   | 39.1                 |

Table 23. Time interval between pigs born from control and oxytocin-treated sows

| <u>Minutes between successive pig births*</u> |            |            |            |            |            |            |            |            |             |              |              |
|-----------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|--------------|--------------|
|                                               | <u>1-2</u> | <u>2-3</u> | <u>3-4</u> | <u>4-5</u> | <u>5-6</u> | <u>6-7</u> | <u>7-8</u> | <u>8-9</u> | <u>9-10</u> | <u>10-11</u> | <u>11-12</u> |
| Controls                                      | 19.9       | 29.0       | 14.2       | 13.1       | 9.7        | 14.4       | 23.5       | 10.8       | 13.3        | 9.0          | 15.5         |
| Oxytocin-treated                              | 22.1       | 5.5        | 4.0        | 11.7       | 18.4       | 7.4        | 4.4        | 4.0        | 3.0         | 6.4          | 8.3          |

\* Seven sows in each group had at least seven pigs. For 8, 9, 10, 11, and 12 pigs control sows numbered 6, 4, 3, 2, 2, respectively; treated sows, 7, 6, 5 and 1, respectively.

The latent effect of oxytocin on parturition was an unexpected result since the half-life of oxytocin in vivo is thought to be very short (less than 30 minutes). This result may lend support to the theory that fetus expulsion is an indirect rather than a direct result of oxytocin action.

Summary:

A single injection of oxytocin to sows after one pig was born shortened average parturition time 30 minutes. The injections did not change average longest interval between birth of pigs or prevent difficult deliveries. Birth of the first pig after injection was not hastened but subsequent pigs were born more rapidly. Oxytocin as an aid during normal parturition is questionable. Obviously needed are more studies for better understanding of the mechanisms involved in parturition.