Hormonal therapy for older, pregnant horses?

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Some horses have a history of early miscarriages and it has become customary to treat them with altrenogest, a type of progestin. The group of Christine Aurich at the University of Veterinary Medicine, Vienna now for the first time showed that the foetus developed significantly more slowly in older mares compared with younger animals. The difference disappeared in horses treated with altrenogest. The results are published in the journal *Theriogenology*.

Most miscarriages in horses results at very early stages of pregnancy (within about three weeks) and it is generally believed that the primary cause is that the foetus grows or develops too slowly: smaller than normal embryos have a higher chance of being lost then normally sized ones. It is not clear whether low concentrations of progesterone lead to slower embryonic development but nevertheless the progestin altrenogest is routinely used to treat mares that frequently suffer miscarriages. Aurich's group has now found that altrenogest treatment has no effect on the levels of luteinizing hormone (LH) or progesterone, hormones that are known to be important in maintaining pregnancy. Furthermore, treatment does not influence the ease with which the mares became pregnant, nor does it affect the size of the vesicles housing the embryos, at least for the first 22 days after conception. However, the researchers did notice that at 20 days after conception the embryonic vesicles are smaller if the mares are older. They also found that the foetuses of older mares grow significantly more slowly after this period, although if the mares are treated with altrenogest their foetuses grow at the normal rate.

The smaller size of the foetuses in older mares provides a nice explanation for the higher rate of pregnancy losses as horses grow older. Smaller foetuses in these animals may result from a reduced quality of the eggs as the horses age, making the mares more susceptible to miscarriage. Encouragingly, treatment with altrenogest appeared to enable the smaller foetuses to recover and to grow at a normal rate during the second crucial period in the animals' development, when the embryonic organs are formed and the mare's placenta is generated (from 35 to 45 days after conception). It seems conceivable that altrenogest encourages the formation of the placenta.

The results show that altrenogest treatment does have an effect in reducing the risk of miscarriage in horses, although not the one that might have been expected. It does not seem able to prevent miscarriages in early pregnancy but instead to compensate for later problems in foetal development that are more frequently encountered as mares grow older. As Aurich says, "We are now well used to the idea of a hormonal therapy in humans to prevent osteoporosis. Perhaps horses cold also benefit from the same type of treatment to help them avoid miscarriages."

More information: The paper Effect of age and altrenogest treatment on conceptus development and secretion of LH, progesterone and eCG in early-pregnant mares by Conrad Willmann, Gerhard Schuler, Bernd Hoffmann, Nahid Parvizi and Christine Aurich is published in the 75th issue of the journal *Theriogenology* (2011, Vol. 75(3), 421-428). Link to the article's abstract online: www.theriojournal.com/article/S0093-691X%2810%2900263-3/abstract

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