Advanced Equine Theriogenology Course

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Equine Herpesvirus 1 (EHV-1) Immunization

Question: Two mares in a small closed herd have each aborted 1 ½ weeks following equine herpes virus (EHV-1, killed product) vaccination at approximately 8 ½ months of gestation. The pathology report was negative for any discernible cause from the first abortion (second report pending). Has anybody been observing anything similar following EHV-1 vaccinations this year? The owner reports that an acquaintance of hers with an Andalusian herd (these are Andalusians also) has had a large number of abortions following EHV-1 vaccination and has brought the subject up.

Response: I have done an extended search of peer reviewed journal articles to check for any problems with EHV vaccines particularly in Andalusians. I found no information leading me in this direction. Actually I found no case of abortion following vaccination with an inactivated vaccine.

One closely regulated scientific study was done in a group of pony mares. The mares (along with non-pregnant animals) were vaccinated with an inactivated equine herpesvirus 1 vaccine then challenged with a subtype 1 virus. An important finding was that there were no adverse reactions. There was a slight increase in virus neutralizing and compliment fixing antibody titers unrelated to the vaccine. This indicated recrudescence of the virus.*(3)* This is an interesting finding since it has been found that reactivation of the virus (by the stress of pregnancy?) may result in mild clinical signs and viral shedding *(4)*. Also known is that cell mediated immunity is a significant means of protection and is decreased by pregnancy *(4)*. This translates to a clinically normal animal harboring latent virus that may infect susceptible animals. The consequence is unpredictable abortions even in mares with high VN titers. Other findings include: approximately the same percentage of foals was aborted from the vaccinated group as were from the non-vaccinated group; there was a decrease in the clinical signs and virus recovered from the vaccinated group.*(3)*

Another study that evaluated the efficacy of an inactivated EHV-1 vaccine found that SN and CF antibody titers were boosted after first and second vaccinations. However, antibody levels never reached the levels induced after virus challenge. This study did report that abortions were drastically reduced in vaccinated mares. Again, there were no findings of adverse reactions.*(1)*

Two commercial vaccines were used in a trial, the killed vaccine being Pneumabort K. In this study, it was found that higher titers were obtained with the inactivated product than with the live virus vaccine. No obvious differences were found between the two vaccines and their ability to prevent disease. Fifty percent of the pregnant mares aborted after vaccination and challenge. No adverse effects due to the vaccine were noted.*(5)*

In another study, not even the modified live vaccine given to pregnant mares caused abortions. This trial was long term in that it lasted for eight breeding/foaling seasons. The data was compared to information from five prior seasons. It included six different farms and 6660 pregnancies. The study found that although both sporadic and epizootic EHV-1 abortions occurred in immunized mares, the numbers of fetal and neonatal foal losses decreased significantly from 11.8% to 8.9%.*(2)*

I would be curious to know if the friends, both having Andalusians, happen to use the same stallion(s). It has been demonstrated that EHV-1 may cause genital disease *(4)*. Possibly an infected male may be a source for viral shedding. (This is not uncommon.)

Other factors to consider before placing blame on the vaccine would be other causes of abortion. It could be coincidence that the mares aborted around the time of vaccination. There are many infectious and toxic causes of late term abortions in mares, such as EHV-4 (although rare). A more likely cause other than the vaccine might be a toxic plant from the pasture such as fescue. This would depend on the area where the horses are found assuming that both herds are in the same area.

A thorough history is very important in this case. I would also be curious to know if the vaccines were being given by the owners themselves or a veterinarian. Either way human error should be considered. Perhaps the wrong vaccine was given or the proper vaccine was used but not appropriately administered or stored before injection.

Identification of the virus should be possible from the fetal tissue but is not always found. If nothing is found in the second fetus, I would suggest culture or PCR of nasal swabs, or blood buffy coat. This should be done on the mares that aborted and possibly random mares that have not yet aborted. A positive finding especially from the fetus would confirm EHV-1 infection.*(4)* Even with this confirmed, I would still be doubtful that the vaccine is at fault. However, there could be a slight chance that the vaccine was improperly inactivated. The only way to confirm this would be to find other mares which have also aborted after given the vaccine by the same maker with the same serial and lot numbers. Hopefully, if the vaccine was given by a veterinarian, these numbers will be on record. The information can then be compared to other data (if there have been any problems) from that same company and lot.

Identification of the cause of the abortions is most certainly the first step. If herpesvirus is found to be the cause, then recrudescence or viral introduction should be considered as the source for infections. Management strategies should be carefully considered before looking at the vaccine as a cause of the abortions. I am convinced that any efficacy resulting from vaccination is helpful if there are no adverse side effects. Because some of the studies claim to prove efficacy, (while others did not,) and the coinciding evidence that the inactivated vaccine is not harmful, I recommend that all brood mares should be routinely vaccinated for EHV-1.

References:

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