Proceedings of the
18th Annual Meeting of the
Italian Association of Equine Veterinarians
SIVE

Feb. 3-5, 2012 - Bologna, Italy

Next SIVE Meeting:

Feb. 1-3, 2013 – Arezzo, Italy

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A client who is considering buying a mare for breeding purposes calls you to request a pre-purchase exam. Consider these scenarios:

- The mare is a 3 year old Thoroughbred mare that suffered an injury and now can’t race, but has good blood lines.
- The mare is a 12 year old Warmblood mare that has never been bred.
- The mare is a 2 year old Arabian mare.
- The mare is a 18 year old champion barrel racer Quarter Horse mare.
- The mare is a 16 year old Thoroughbred that has had 9 foals, and her last foal is now running as a 3 year old.

Is there a standard pre-purchase exam that would suffice for all these situations? No. The details of a pre-purchase reproductive exam can vary depending on the expectations for the mare. Will she be required to be bred by natural service, (i.e. Thoroughbred), or can she be bred using artificial insemination? Can she be used as an oocyte donor for GIFT (gamete intrafallopian transfer), OT (oocyte transfer), ICSI, or other assisted reproductive techniques? Is she from a bloodline that has shown some inherited disorders?

To begin with, a complete, honest and accurate history is absolutely essential. How has the mare been used? Has her cycle been monitored? Has she ever been bred, and if so, by natural cover or artificial insemination? (and was the stallion fertile?) Was there any indication of Delayed Uterine Clearance? Has she gotten pregnant? Did she carry a foal to term and deliver a live foal? If she aborted, at what stage of gestation was she? If she delivered a foal, was there dystocia and was it corrected so that vaginal delivery was possible or was a fetotomy or Cesarean section necessary? Was the placenta passed in normal fashion and time frame?

Twenty five years ago, a complete reproductive examination might consist of examination of the perineal conformation, palpation per rectum, ultrasound exam, vaginal speculum exam, culture & cytology of the uterus, and a uterine biopsy. While these routine, standard procedures should be conducted in all case where a pre-purchase exam for a mare intended for breeding purposes is requested, research in recent years has given us additional tools that might be employed depending on the particular circumstances. Additional tests, which are not routine but may be included depending on the particular situation include hysteroscopy, karyotyping and genetic analysis for genes associated with inherited disorders.

There are a number of known inherited disorders, some of which are lethal, others debilitating. Tests are available for an increasing number of them. For example, Animal Genetics, Inc. (http://www.horsetesting.com/equine.asp) offers testing services for Hyperkalemic Periodic Paralysis Disease (HYPP), Glycogen Branching Enzyme Deficiency, Polysaccharide Storage Myopathy, Junctional Epidermolysis Bullosa and Hereditary Equine Regional Dermal Asthenia (HERDA) (also known as Hyperelastosis Cutis). Tests are also available for Severe Combined Immunodeficiency Disorder (SCID), Cerebellar Abiotrophy (indirect marker test) and Lavender Foal Syndrome. If the mare being examined is of a breed in...
which the disorder is a concern, and especially if the mare has certain individuals in her pedigree that have been identified as important carriers of the gene, testing may be considered a necessary part of the pre-purchase exam.

Another area of the history to be sure to explore is what hormonal treatments the mare may have received early in life. For example, it is not uncommon for performance horses in certain sports to receive anabolic steroids during training at a pre-pubertal age which can affect their reproductive performance later in life1-3. Similarly, with the advent of a GnRH vaccine, concerns have arisen about long term effects when administered to pre-pubertal animals4. Although proven safe when administered to adult animals, reports have surfaced of long-term, potentially permanent, effects when given to younger animals.

As previously mentioned, the intended use of a mare is an important factor to consider. A Thoroughbred mare that is intended to be used to produce Thoroughbred foals intended for racing must be held to much more stringent standards because she will need to be bred by natural service, carry her own foal to term and deliver a live foal. A cervix damaged during a previous delivery may need surgical correction to restore reproductive integrity. Cervical damage often has a poor prognosis for repair and can signal the end of a reproductive life if assisted reproduction is not an option. Alternatively, an ‘old’ maiden mare that has never delivered a foal can also present with a cervical problem that negatively impacts her reproductive potential. Oftentimes the cervix of an older maiden mare does not properly relax during estrus and can interfere with semen deposition and uterine clearance5.

On the other hand, if the breed association permits all levels of assisted reproduction techniques, the mare does not need to be able to carry a foal to term, or even establish a pregnancy. Artificial insemination followed by embryo transfer to a suitable recipient is widely used for a variety of reasons, including with a mare that is unable to carry a pregnancy to term. For some breed associations, transvaginal aspiration of oocytes can be performed, followed by OT or GIFT to a recipient, and pregnancy rates can approach those achieved with traditional embryo transfer. Another assisted reproduction technique, IC-SI, may also be an alternative for the mare that cannot support conception and pregnancy. However, proximity to a facility that can successfully perform ICSI and the cost of the procedure are factors to include in the deliberation of whether or not it is an option.

Hysteroscopy, while not quite considered routine, is an important tool which can reveal otherwise unsuspected problems such as transluminal adhesions, foreign bodies, or bacterial plaques on the endometrium6. A thorough ultrasound examination or complete history may point one towards considering a hysteroscopic examination in certain cases.

Uterine culture, long a part of a breeding soundness examination, has been the subject of recent reports seeking to improve its diagnostic usefulness. Nielsen et al.,7 found that using an endometrial biopsy to prepare the culture and cytology was superior to the standard swabbing technique. More recently, Leblanc et al., used a small volume lavage to obtain a sample for culture and cytology8-9. Small volume lavage has the advantage of sampling much more of the endometrial surface than does the use of a swab. Therefore, the sensitivity is improved and the number of false negatives is reduced.

How does this apply to the mares listed earlier? For example, it may be worthwhile to test the Quarter Horse and Arabian mares for genetic disorders. The “old maiden” Warmblood and the Thoroughbred mare that has not been pregnant for a few years should have their cervixes examined, possibly during diestrus, under the influence of progesterone, and also during estrus. While a standard swabbing technique may be sufficient to get a uterine culture and cytology in the younger Thoroughbred and the Arabian, a low volume flush would be preferable in the older Thoroughbred.

One thing to remember and stress to the client is that there can be no guarantees. The exam is
evaluating the mare at that point in time to the best of your abilities and things can change. Information omitted from the history, or conditions that change over the course of a breeding season would not be known at the time of doing the evaluation. For example, a mare with little to no apparent problem with uterine clearance at the beginning of the breeding season could have significant delayed uterine clearance by the end of the season. Similarly, if asked to evaluate a mare during the winter that is in seasonal anestrus, one may not be able to gather the same amount of information that you would during the summer when the mare is cycling. Interpretation of your findings must take into account factors such as seasonality and cycle stage.

REFERENCE LIST

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