CAN OVARIECTOMY BE JUSTIFIED ON GROUNDS OF BEHAVIOUR?

Author: JAMES CRABTREE

Categories: Vets

Date: September 8, 2014

JAMES CRABTREE BVM&S, CertEM(StudMed), MRCVS considers the evidence on whether unwanted equine behaviour can be improved by surgery, as well as looking at long-term management options.

THE equine ovary can affect behaviour in a variety of ways.

Oestrogen-driven oestrous behaviour is normal for the equine species, but such behaviour is not always appropriate or convenient in domesticated horses – especially those used for competition. Oestrogen, in the absence of progesterone, drives reproductive behaviour, however progesterone can be regarded as the dominant partner in this hormone relationship and the presence of a patent corpus luteum will result in the non-receptive state of dioestrus. In the domesticated horse, overt reproductive behaviours are generally inconvenient and can affect performance. This is often described by owners as anything from a lack of concentration or frequent urination and “winking” during oestrus, to aversive behaviours such as bucking, kicking, and rearing. In extreme cases, owners may describe horses as being unmanageable or dangerously aggressive during oestrus.

A pathologic ovary can be hormonally active, producing variable amounts of testosterone, oestrogen, inhibin and anti-Müllerian hormone. As a general rule, it does not have functional luteal tissue and therefore has low progesterone concentrations. The granulosa cell tumour (GCT) is the most common ovarian tumour in the mare. It is either comprised primarily of granulosa cells, or granulosa and theca cells – the latter being termed a granulosa theca cell tumour. The tumour is predominantly slow growing and benign. The mean age of affected mares is 10.6 years and ranges
from two to 20 years. GCTs have been detected in maiden, barren, pregnant and foaling mares. Ultrasound examination of the affected ovary usually reveals an enlarged multicystic structure, but can be in the form of a solid mass or single large fluid-filled cyst (Figure 1). They are usually unilateral and present with a small and inactive contralateral ovary. Approximately 30 per cent of mares with GCT will demonstrate stallion-like behaviour, which is associated with elevated testosterone concentrations (Crabtree, 2011).

In addition to the physiologically normal mare with undesirable behaviour and the mare with pathology, the author recognises a small percentage of mares that demonstrate subtle behavioural abnormalities while under progesterone dominance. There appears to be a tendency for these mares to develop large dioestrous follicles and it is not unusual for these mares to have dioestrus ovulations and demonstrate pain on palpation of the ovaries. It is important to note that in mares, unlike the cow, progestogens will not suppress ovarian function in terms of follicular development. So large dioestrous follicles and dioestrus ovulations are commonly encountered. There tends to be an assumption, by the majority of the horse owning and riding public, that the ovaries of their mare(s) are painful structures when in season. So the author would like to clarify it is his opinion that, in the vast majority of mares, the ovaries are not a source of pain and mares that have ovarian pain detectable by the rider are rare.

**Correct diagnosis**

When considering these behavioural problems, the behaviour in question must first be confirmed by the clinician to be either temporarily associated with the oestrous cycle or with ovarian pain and not musculoskeletal, soft tissue, gastric or dental pain. This generally involves the mare being examined by trans-rectal palpation and ultrasound when it is considered by the owner that the horse is behaving badly; further weight of evidence can be gained by examining the mare when it is behaving well. Trial therapy with the synthetic progestogen altrenogest 0.044mg/kg to 0.088mg/kg is often useful in demonstrating that the oestrogen derived behaviour can be abolished by the dominant progestogen.

If progestogens abolish the unwanted behaviour then it can be considered to have been caused by oestrogen.

**Long term**

The question is then, what options are there for long-term management of these cases? One can simply keep the mare on altrenogest if the competition discipline allows, but the hormone is not licensed for the treatment of mares for longer than 10 days. Cost implications, regulatory controls and human exposure to altrenogest are all considerations in treatment. The author is presented with cases that have been constantly on altrenogest for the whole or multiple seasons. The author recommends mares are periodically allowed to have a cycle off altrenogest and are screened for uterine infection. Techniques to prolong the lifespan of the primary corpus luteum are well
documented, but all have pros and cons. In our practice, the intrauterine sphere (Nie et al, 2001) is considered a valuable tool, as is the use of intrauterine coconut oil (Wilsher and Allen, 2011). Intrauterine glass balls or “marebles” may have the potential for complication over time. Glass is a porous compound and in the uterus, over time, becomes rough (Figure 2) and it is not difficult to understand how a chronic localised inflammatory response can lead to problems. There are no long-term studies in the use of intrauterine glass balls, therefore it is the author’s recommendation they should be removed at the end of the breeding season. Polymethyl methacrylate spheres are utilised in the author’s practice in place of the traditional glass ball (Figure 3). When using intrauterine infusion of oil, it is important for one to remember the oil should be sterile and infused in a sterile manner. Infusion is performed on or around day 10 post-ovulation when introduction of bacteria would likely result in luteolysis of the corpus luteum and a short cycle, rather than the desired prolongation of the luteal phase. The author uses a 22?m bacterial grade filter and medical grade coconut oil. Pneumovagina should not be dismissed as a cause of unwanted behaviour or an exacerbating factor in their behavioural manifestations; therefore, in cases where this is evident, a Caslick procedure is recommended.

An equine gonadotropin-releasing hormone (GnRH) vaccination has been used with success in down-regulating the hypothalamic-pituitary-ovarian axis, hence overcoming unwanted behaviours due to oestrogenic stimulation. Some clinicians have used the pig GnRH vaccine, one assumes because of the easy availability and low cost, but this vaccine has an oil-based adjuvant and is associated with injection site reactions and granulomas. On this basis, the author would not recommend its use in the equine patient. This approach does have regulatory implications also; the rules of racing do not allow the use of this vaccine in Thoroughbreds and the author is unable to confirm the position of the International Federation for Equestrian Sports on the subject. Nevertheless, this approach does, in the author’s experience, aid in the management of those behaviours caused by oestrogens and ovarian pain.

The assumption ovariectomy would be a more reliable and longer-term solution to the problem of unwanted behaviour may not necessarily be correct. The major confounding factor in this is ovariectomised mares are used as mount mares for semen collection and it has long been recognised such mares need little or no exogenous oestrogen stimulation to allow themselves to be mounted by the stallion. For this reason, it was thought important to critically appraise the question; assessing the evidence to guide our clinical decisions. The question is not an ethical one, rather whether behaviour can be improved with surgery (Figure 4a and 4b).

The answer will be provided by the author at his BEVA Congress session on Saturday, September 13 in Hall 5 at 5.25pm.

References

Figure 1. Ultrasound examination.
**Figure 2.** A rough glass ball, which can lead to localised inflammation.
Figure 3. Polymethyl methacrylate spheres are utilised in the author’s practice in place of the
Figures 4a and 4b. The author will discuss improvement of behaviour via surgery at BEVA Congress.