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Chronic uterine degeneration: When to retire?

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Introduction and aetiology

The glandular branches in normal endometrial tissue are not normally surrounded by stromal collagen. It is however in several papers anticipated that the stromal cells in the lamina propria can produce collagen in response to stimuli or injury such as trauma and infection (Kenney 1978; Schoon et al. 1997; Hoffman et al. 2009). It has been described that chronic degeneration and fibrosis of the uterine tissue is more associated with age and pathological status of the uterine tissue than with parity (Held and Rohrbach 1992). The relationship between the degree of uterine degeneration and the ability of a mare to carry a foal to term have been described by several authors (Kenney and Doig 1986; Ricketts and Alonso 1991; Ricketts and Barrelet 1997) as well as the relationship between early fetal death and pathology of the endometrium (Darenius 1992). The full mechanism of chronic uterine degeneration or endometrosis, as it is named in recent literature, however is still not fully understood and needs to be investigated further.

Diagnostic methods and procedures

The basis for how we diagnose chronic uterine degeneration or endometrosis comes from the papers by Kenney (1975) and Ricketts (1975) and the introduction of histological examination of a uterine biopsy. The technique of collecting tissue from the uterus for further diagnosis and creation of a breeding prognosis out of the findings is today a routine tool in studfarm practice all over the world. The technique has been reviewed in a recent paper (Snider et al. 2011) and the results always have to be interpreted in relation to physical findings and from rectal palpation, ultrasound examination and endoscopy of the uterine lumen.

Histopathological parameters

The diagnosis of endometrosis by endometrial biopsy is mostly based on the findings in haematoxylin and eosin stained histological slides. The degree of fibrosis and glandular degeneration is assessed and interpreted in combination with the degree of inflammation, the amount of lymphatic lacunaes, the glandular branches in normal endometrial tissue are not and the finding of infectious agents as well as the possibility of endometrial maldifferentiation.

Several grading schemes have been proposed over the years. Today, the most widely used is, however, still the original proposed by Kenney and Doig (1986) with 4 different groups (I, Ia, IIb, III) which relate to the chance of a mare carrying a foal to term.

Discussion

Even with the above displayed results in mind, it is however not possible to tell that the mare definitively will not be able to carry a foal to term. The more fibrosis and uterine degenerative disease that is discovered in a histological examination, the more unlikely it is that the individual mare will produce a foal. It is, however, impossible to say that it will never happen. This still leaves us in the hands of personal feelings about the individual mare and economic willingness from the owner more than solid facts and mind blowing science, when the decision to cover a mare or not is taken.

Degeneration of the uterine tissue must, with the knowledge we have today, be considered permanent and irreversible. It is not amenable to current therapeutic techniques. The fibrosis itself, however, should in the uterus, like in any other tissue containing fibroblasts, be able to reduce over time if the inducing factors and inflammation mediators are removed from the tissue. The fact that the foaling percentage is so closely related to only one parameter – the endometrium – still makes the endometrial biopsy our most valuable tool when predicting the potential breeding prognosis of a mare.

Results

In a recent evaluation of the grading system proposed by Kenney and Doig (1986) at the author's own laboratory foaling rates of a total of 261 mares were compared with evaluation of endometrial histology. Foaling rates of the 4 groups (I, Ia, IIb, and III) were found to be 88, 59, 52 and 42% respectively. This means that a mare in category I with no significant pathology found in the endometrium is respectively 5.5, 7 and 11 times more likely to carry a foal to term compared with a category IIa, IIb or III mare.


