

Short communication

Interpretation of Endometrial Lesions and Infertility in Mares

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Summary

During 1993 to 1999, 28 endometrial biopsies of infertile mares were examined. The tissue samples were fixed in 10% of buffered formalin, sectioned and stained with H&E method. The appropriate categorization based upon Kenney (1986) technique was used. Also in histopathological examination, there were acute and chronic endometritis, periglandular and interstitial fibrosis, hemorrhage, glandular atrophy, cystic glands, lymphatic dilation, hypertrophy and hyperplasia of endometrial glands. In proportional frequency acute and chronic endometritis were 21.4% and 10.7%, respectively. Other lesions such as endometrosis and normal endometrium were 25% and 42.9%. Edema, hemorrhage and fibrosis were the most frequent lesions. 14 cases (50%) were type I, 9 cases (31.2%) were type IIA, 5 cases (17.8%) were type IIB and no case was in type III. It has been calculated that about 50% of infertile mares had a normal endometrium.

Keywords: endometrium, mare, infertility, endometritis, endometrosis

Introduction

Endometrial biopsy is indicated in barren mares with a clinically evident reproductive tract abnormality and early embryonic death or cyclic failure during the breeding season, as a part of fertility evaluation (Allen 1993, Flores *et al* 1990, Yomini 1997). It also helps the diagnosis of endometritis when clinical findings and culture results are not definite (Colahan 1999). Endometrial lesions are such as hypoplasia, atrophy, hyperplasia, fibrosis, endometritis, adenomyosis, lymphatic stasis, glandular cystic

formation, polyps and tumors (Squires 1992, Vancamp 1993, Watson 1993). These factors could be the causes of infertility in mares (Vancamp 1993).

Uterine infection and chronic endometritis do not have great relationship (Doig 1993). The aim of this study is to finding the relationship between endometrial lesions and infertility in mares.

Materials and Methods

During 1993 to 1999, 28 endometrium of infertile mares due to infertility were examined. The mares were physically and chemically restrained. Some of drugs such as acepromazine (1%) with 0.2mg/kg BW accompany by xylazine (Rompun) 2% with 0.66mg/kg BW were administered in IV route. In rectal examination, cervix, uterus and ovaries were examined to determine the estrogenic or progestronic phase. Biopsy samples were taken from bifurcation zone of uterine body by biopsy forceps (Yeoman, Basked Jawed) and then fixed in 10% of buffered formalin or bouin's solutions. After processing, the tissue samples were sectioned with 5micron thickness and stained by H&E and Masson trichrome staining routes. Finally the endometrial lesions were diagnosed and classified by Kenney (1986) technique.

Results and Discussion

Endometrial biopsies were histopathologically examined. The route of categorization of endometrial lesions was upon the way of Kenney (1986). 14 cases (50%) with 80% to 90%, 9 cases (31.2%) with 50% to 80% and 5 cases (17.8%) with 10% to 50% of foaling rates were in types I, IIA and IIB respectively. There was no case in type III with <10% of foaling rate. The endometrial lesions were acute endometritis (21.4%) (Figure 1), chronic endometritis (10.7%), and 42.9% of endometrium of infertile mares were normal. Interstitial and periglandular fibrosis (Figure 2), glandular atrophy, cystic formation of gland, hypertrophy and hyperplasia of glands, dilatation of lymphatics and hemorrhage were the other histopathological findings.

Edema, hemorrhage and fibrosis were the most frequent lesions. Some of changes are normal in estrous phase (Flores 1995). From 13 cases with hemorrhage, 6 cases

(46%) were physiologic due to estrous phase and 7 cases (53.8%) were in diestrous, which were due to biopsy technique. From 17 cases with edema, 11 cases (64.7%) were physiologic due to estrous cycle, but in other cases, they are produced by inflammatory reactions. Endometrial fibrosis is the result of uterine infections and maltreatments. It could interfere with endometrial gland and epithelial function, which could cause infertility in mares (Flores 1995, Yomini 1997).

Figure 1. *Acute lymphoplasmacytic endometritis (200x)*

Figure 2. *Interstitial and periglandular fibrosis (Trichrom 400x)*

Endometrial fibrosis was not in category I, but it was founded in 14 cases (50%) of mares in category IIA and IIB. In 23.8% of endometrial lesions, periglandular and interstitial fibrosis was existed which could produce infertility (Figure 2). Glandular hypertrophy and hyperplasia are probably due to estrogens administration (Squires *et al* 1992, Vancamp 1993). Also these changes may be due to foaling heat about two weeks after parturition. Cystic dilatation of endometrial glands was accompanied by

secretion. These changes are the results of endometrial fibrosis, which disturb embryonic implantation or endurance, and could cause infertility (Vancamp 1993). Prostaglandins production especially $PGf_2\alpha$ could be disturbed by chronic endometritis. This so would be causative factor for producing infertility.

In a survey on the 87 biopsy cases of 377 mares, endometrosis was diagnosed (Flores 1995, Flores *et al* 1990). In this study, 21.4% of endometrial lesions was acute and 10.6% was chronic endometritis (Figure 2). And as a result, it indicates that some other factors could cause infertility. Our findings were similar to the Power's study (1998) in Colorado on the 1686 biopsy samples. Finally it was proved that about 50% of barren mares had a normal endometrial tissue and therefore other factors for infertility must be considered.

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