

Application of Endometrial Biopsy in the Horse

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Abstract : Endometrial biopsy in the horse is an important technique for maintaining breeding soundness by detecting changes related with reduced fertility and monitoring response to specific uterine therapy. A 13-year-old thoroughbred mare had been in trouble with repeated breeding for getting pregnant before the sample of endometrial biopsy was offered to investigate the possibility of pregnancy in the future. Based on the tissue sections examined, the prognosis for this mare to conceive and successfully carry a foal to term was estimated to be 10 to 50%.

Key words : breeding, endometrial biopsy, fibrosis, thoroughbred.

Introduction

Endometrial biopsy is an important technique not only for terminating linear decline infertility potential but for preventing from economical loss that is found in Thoroughbred and other broodmares at breeding farms. In comparison with normal endometrial section from reproductively sound mare (Fig 1), glandular degeneration, lymphatic lacunae, endometrial atrophy and cellular infiltrations were observed on histologic examination of endometrial regions from any nonpregnant mares in which uterine disease is suspected (5,7,8). Histopathological changes examined from endometrial biopsy specimens would be understood to be reliable indications which help interpretation of how possible the uterus carry a foal to term not just until getting pregnant.

Case

A 13-year-old thoroughbred mare had been in trouble with repeated breeding for getting pregnant before the sample of endometrial biopsy was offered to investigate the possibility of pregnancy in the future.

The samples were 5 H&E-stained tissue sections identified as endometrium (total endometrial length of approximately 52 mm). The luminal epithelium was predominantly tall columnar with occasional pseudostratification. Several dilated lymphatics and small lymphatic lacunae were noted.

Among mild to moderate edema, there were low to moderate numbers of mononuclear inflammatory cells and a few neutrophils present in the superficial lamina propria (stratum compactum). Inflammatory cells occasionally extend into and were diffusely distributed throughout the deeper regions of the lamina propria (stratum spongiosum). There were occa-

sional small to moderately-sized perivascular and/or periglandular foci of predominantly mononuclear inflammatory cells. Several glandular lumina contain inflammatory cells and cellular debris.

Glands were predominantly scattered individually within the lamina propria. Occasionally, there was a loss of the random distribution of glandular ducts, and nonfibrotic nests consisting of 3 to 10 mildly to moderately dilated glands and surrounded by mild to moderate fibrosis (2 to 6 layers of fibroblasts) was observed per 5 mm field (total of 21 fibrotic nests).

The submitted endometrial samples were overall classified as a Modified Kenney Category IIB. Endometrium was based on the inflammatory (IIA inflammation) as well as the fibrotic changes (IIB fibrosis) observed in the submitted sample. The observed inflammatory changes were severe enough to warrant therapeutic intervention but, precluding uncorrected anatomical abnormalities, should improve with treatment and/or repro-

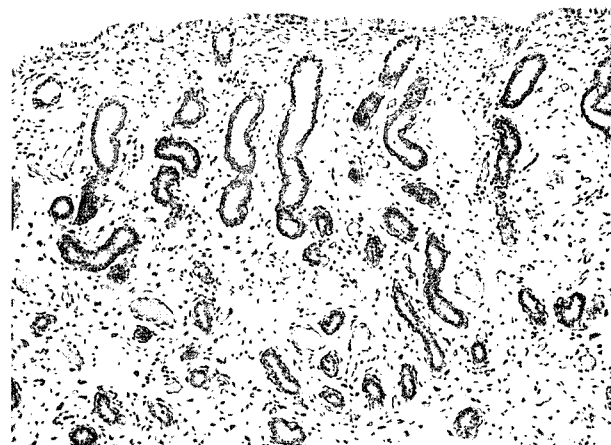


Fig 1. Endometrial section from a seasonally anestrous mare. Luminal and glandular epithelial cells are mostly cuboidal, and the inactive glands have contracted lumina (200 X).

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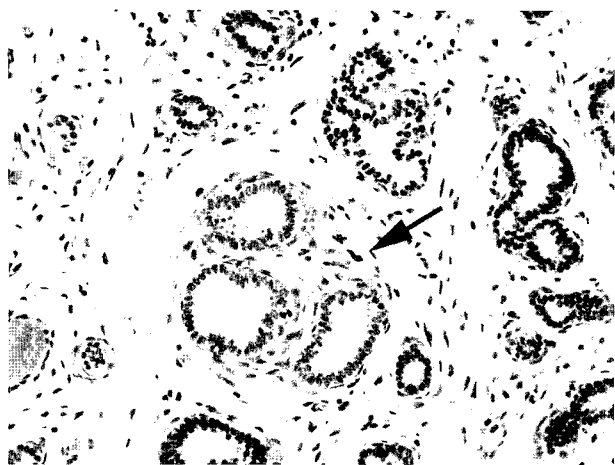


Fig 2. A small nest (arrow) of 3 to 4 glandular branches is surrounded by 1 to 3 layers of fibrosis. Glandular distention is moderate (400 X).

ductive rest. Fibrosis is generally refractory to treatment and would be expected to negatively impact the reproductive function of this mare. Based on the tissue sections examined by the four-category prognostic system of Kenney and Doig (6), the prognosis for this mare to conceive and successfully carry a foal to term was estimated to be 10 to 50%.

Discussion

The main value of endometrial biopsy has been to provide a basis for predicting future ability of the uterus to carry a foal to term. The technique is also useful in detecting changes associated with reduced fertility that are not easily diagnosed by other methods and for monitoring response to specific uterine therapy.

Endometrial biopsy is needed in any nonpregnant mares especially in barren mares, repeat breeder mares, mares with a history of early embryonic death or abortion, behaviorally anestrous nonpregnant mares, mares requiring genital surgery, pyometra or mucometra and for fertility evaluation.

The usual time for evaluating endometrial biopsy is just before or during the physiologic breeding season, when mares are presented for prebreeding evaluation.

Fibrosis is one pathologic change in the uterine endometrium. Periglandular fibrosis, cystic glandular dilatation, and fibrotic endometrial nests are common changes seen in fibrotic endometrial degeneration (2,3,10). These conditions are considered to be permanent and not amenable to therapy, although excellent breeding management may overcome much of their negative influence on fertility (1). The amount of fibrosis associated with

a gland is scored to be slight if it is 1 to 3 cell layers, moderate if 4 to 10 cell layers, and severe if 11 or more cell layers thick (Fig 2).

However, inflammation is not always associated with the isolation of infectious agents from the uterus (9). Recovery of bacteria is all too often due to improper sampling techniques. Care must be taken to interpret these results together. Inflammation associated with infection is considered to be treatable and to have less of a permanent influence on fertility than fibrosis (1,4).

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말에서의 자궁내막생검

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요 약 : 말에서 자궁내막생검기술은 저하된 번식력과 관련된 자궁내막의 변화상을 관찰하고 자궁치료의 효과를 체크 하는데 있어 중요한 산과적 기술이라 할 수 있다. 13세령의 더러브레드종의 암말은 오랜 동안 임신에 실패하였으며 이로 인해 차후의 임신가능성 진단을 위하여 자궁내막생검 의뢰를 받았다. 조직 생검을 통해서 이 말이 앞으로 성공적인 임신과 출산을 할 확률은 10-50%로 진단되었다.

주요어 : 번식, 자궁내막생검, 섬유증, 더러브레드