NOTE

The Vaginal Lesions of a Bitch with a History of Canine Herpesvirus Infection

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Canine herpesvirus (CHV) causes both fatal systemic infection in newborn pups and inapparent or relatively mild infection in older dogs [2–4]. Vesicular lesions in the genital tract of female dogs, and mild or severe vaginitis in the bitches inoculated intravaginally with CHV have also been described [2, 6, 8]. However, pathologic changes in the genital tract associated with natural or recurrent CHV infection have not been described. The present paper deals with the pathologic changes observed in the vagina of a bitch with a history of CHV infection.

Seven months before the present episode, a purebred 3-year-old Afghan bitch had delivered of 11 pups that died of neonatal CHV infection [4, 5]. In the second (present) episode, the same bitch whelped seven pups at full term. Intrauterine infection was suspected [5]. By chance, several papulo-vesicular lesions, 2 to 3 mm in size, were observed on the mucosa of the vestibulum vaginae and at the mucodermal junction of the vulva of the bitch on day 22 after parturition (Fig. 1). The centers of the vesicles were concaved and ulcerated and had a pock-like appearance. Three portions representative of the lesion areas were removed by biopsy 9 days after the first observation of the lesions. Specimens were prepared for both light and electron microscopic examinations and for viral isolation. Two pieces of each specimen for microscopic study were then divided; one portion was fixed in 10% buffered-formalin and the other one in 1% buffered osmium tetroxide. Light and electron microscopic observations were carried out by routine procedures [4]. For viral isolation, supernatants of the swabs taken from the vaginal canal at the time of biopsy and of the homogenized biopsy specimen were inoculated onto monolayers of dog kidney cells prepared by the procedures described previously [4].

Histopathologic examinations located a focal lesion in the epidermis in the superficial layer of the dermis. Several vesicles of variable sizes were observed immediately beneath the thin cornified layer (Fig. 2). A large number of neutrophils together with a few mononuclear cells had infiltrated in and around these vesicles. Beneath the vesicular lesions, there was focal proliferation of epithelioid cells (Fig. 2). Cystic spaces of variable sizes surrounded by the prolif-
erated epithelioid cells were also seen (Fig. 3). Some of these formed a structure histologically resembling the cross section of the hair follicle (Fig. 3). Marked ballooning degeneration was characteristics of some of the epithelioid cells (Fig. 4). In the peripheral area of the latter lesion, an inflammatory cell reaction with hemorrhages was observed.

CHV was not isolated from the swabs nor the biopsy specimens and viral particles were not detected in the lesions by electron microscopy. The remaining vaginal lesions of the bitch disappeared within a month after the first observation.

Distribution, location and macroscopic appearance of the vaginal lesions of the present case were similar to those described by Poste and King [8], who reported association of infertility, abortion and stillbirths with CHV genital infections. Microscopic findings of the present case had morphologic characteristics typical of viral dermatitis [1]. Moreover, it seemed that histopathologic changes of the lesions were essentially the same as those seen in the vaginal mucosa of women with herpes simplex virus infection [9]. It seems likely, therefore, that the vaginal lesions presented here were induced by CHV infection, although the virus was not isolated from the lesions nor observed by electron microscopy. Since this is a case of naturally occurring possible recurrent CHV infection, the absence of severe lesions and the failure to isolate the virus do not preclude reactivation of persistent CHV. Reactivation is usually not accompanied by severe clinical signs, such as those seen in primary infections, and shedding CHV in nasal secretion after artificial reactivation following treatment with corticosteroids or antithymocytes serum was brief (2–5 days) and the amount of the virus recovered was small, usually detectable only in undiluted or a 1:10 dilutions of nasal swab fluid (Dr. Carmichael, personal communication).

The histopathologic appearance of the lesions observed in the present case differed from that reported by Hill and Maré [6], who described severe vaginitis characterized by petechial and submucosal hemorrhages and multiple lymphoid nodules in the vaginas of the bitches inoculated intravaginally with CHV. The difference between the lesions of the present case and the experimentally induced lesions may be ascribed to the different severities of primary and recurrent infections. Hill and Maré [6] postulated that different pathogenicities of genital and respiratory isolates for the genital tract of dogs may be related to the pathologic changes of the vaginal lesions. Further studies are still needed to elucidate the pathogenesis of the vaginal lesions associated with CHV infection.

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References

EXPLANATION OF FIGURES

Fig. 1. A papulo-vesicle (Arrow) is observed on the mucocutaneous junction of the vulva. The lesion is somewhat elongated by owner’s hands.

Fig. 2. Microscopic appearance of a papulo-vesicle. Vesicles of various sizes associated with inflammatory cell reaction are seen beneath the thin cornified layer. The arrow indicates the depressed part of the lesion seen grossly as the papulo-vesicle. Hematoxylin and eosin (H-E) stain. ×115.

Fig. 3. Higher magnification of the middle part of Fig. 2. Focal proliferation of epithelialoid cells is seen. A part of these cell-masses shows a structure resembling the cross section of the hair follicle (Arrow). A space in the upper right corner of the photograph is an artifact. (H-E) stain. ×230.

Fig. 4. Higher magnification of the lower part of Fig. 2. Ballooning degeneration of the epithelialoid cells is characteristic. (H-E) stain. ×230.

要　約

犬ヘルペスウイルス（CHV）感染の病歴を持つ母犬の膣病変について（短報）：橋本　晃・平井克哉1）・福士秀人1）・藤本　耕2）（岐阜大学農学部附属家畜病院 1）家畜総合生物学教室, 北海道大学獣医学部比較病理学教室）——新生仔CHV感染の病歴を持つ3歳のAfghan犬の2回目の出産後に認められた膣病変を生検し、病理学的検索とウイルス分離を併用した。肉眼的には、数個の膣疹ないし疣疹様病巣が、膣前庭の粘膜および外陰部の粘膜皮膚移行部に散在していた。組織学的には、上皮有核細胞の空胞変性、上皮直下の水胞形成と多数の好中球浸潤及び上皮様細胞の巣状増殖と顕著な異形様変性が認められた。変異からのウイルス分離は成功しなかったが、CHV罹患犬の膣病変の意義について考察した。