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Hedgehog Oral Viral Papilloma

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Here we describe the histological lesion of a viral fibro-papilloma in a hedgehog. After surgical removal from maxilla, the solitary swollen mass was round to oval, yellowish with rough surface and measuring 6×3×2mm approximately. The tumor mass was submitted to the laboratory of pathology, college of veterinary medicine, Kyungpook National University for pathological diagnosis. Pathological examination of the tumor was established, the tumor was described grossly and sample was trimmed, sectioned and routinely prepared for histopathological evaluation. The tumor mass was diagnosed as viral fibro-papilloma, as the histological picture showed characteristic features of warts caused by papillomaviruses. The tumor characterized by thickening of the stratum spinosum (acanthosis) and basale, koilocytosis, intra-nuclear inclusion bodies in keratinocytes and fibrosis of submucosa. Further, viral inclusion bodies were demonstrated by Machiavello stain giving red color to the nuclei. No lymphocytes that responsible for regression of the wart could be detected, suggesting the poor possibility of spontaneous regression of the tumor. Papillomatosis is a disease of young animals, but in our case the infected Hedgehog was 5 years old, that maybe due to an impaired immune system, which is also shown by absence of lymphocytes. To the best knowledge of the author, this case presents the first report of viral fibropapillomatosis in Hedgehog.

Key words : Fibro-papilloma, hedgehog, oral, pathology, viral

Introduction

Papillomatosis is a viral disease characterized by proliferation of keratinocytes in the skin and mucosal surfaces of mouth, rumen, urinary bladder, cornea and cervix. There are 189 types in 29 Genera of Papillomaviruses which contributed to papillomatosis infection in a broad range of species [1]. papillomatosis lesions appear as round, oval or cauliflower like keratinized raised masses or nodules that could show a neck (pedunculated) or with a broad base in cutaneous and mucosal surfaces. Oral papillomas associated with papillomaviruses were reported in oral cavity such as cheeks, tongue, palate or pharynx but do not extend bellow the epiglottis or into the esophagus [6, 8, 9].

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Papillomavirus was isolated from hair follicles in European Hedgehog and was designated as EHPV [11]. The genomic organization was determined and the location of the virus within the family Papillomaviridae was determined using phylogeny. However, the pathological description of the disease has not yet been reported. Here we describe the pathological lesions of oral papillomatosis in Hedgehog for the first time.

Materials and Methods

Wart location on body, size and gross appearance were determined. Then sample was trimmed, serially dehydrated, paraffin embedded, sectioned at 5 μm thickness and stained with H&E and Macchiavello stain.

Results and Discussion

Surgical removal of a tumor from gums in a hedgehog was carried out and the biopsy was sent to the laboratory of pathology, college of veterinary medicine, Kyungpook

National University for histopathological examination. The tumor was observed in the gum of maxilla as swelling that was growing slowly for a period of 3 weeks until suddenly increased in size dramatically. The tumor was round to oval, yellowish with rough surface measures 6×3×2 mm approximately (Fig. 1).

Histopathologically, the tumor mass was consisting of moderate proliferation of stratified squamous epithelium covering the gingiva with fibrosis of submucosa (Fig. 2). Three changes in cellular level summarize the progress of the disease in keratinocytes. Changes started when cells in stratum basale showed round, swollen nuclei with faint stain and scant cytoplasm. In this level, some nuclei of stratum basale showed round discrete amphophilic intranuclear inclusion bodies. Then cytoplasm of some epithelial cells in stratum spinosum became more eosinophilic indicative of necrosis and the nuclei showed pyknosis and some of them appeared with crescent like dark nuclei. At the last stage, keratinocytes underwent hydropic degeneration as some cells showed cytoplasmic vacuolation, the so called koilocytosis. Nuclei with vesicular manifestation were also observed. Presence of intra-nuclear inclusion bodies inside stratum spinosum and basale was confirmed by Machiavello special stain. Due to aforementioned alterations the tumor was diagnosed as Hedgehog viral oral fibropapilloma.

Fig. 1. Yellowish mass in maxilla of Hedgehog.

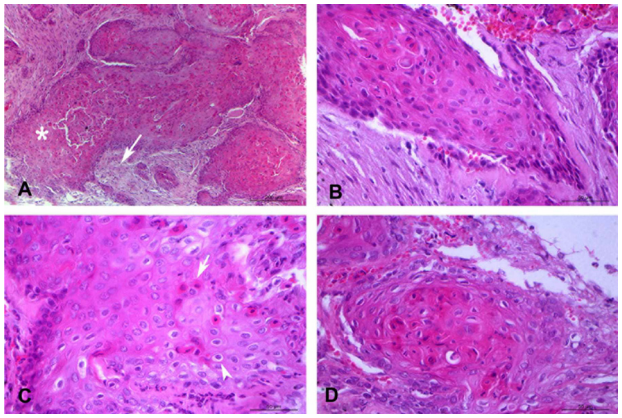

Fig. 2. Thickening of squamous epithelium covering gingiva (asterisk) with fibrosis of submucosa (arrow) H&E stain. Bar 200 µm. Fig. 2B. Cells in stratum basale showing round, swollen nuclei with faint stain. H&E stain. Bar 50 µm. Fig. 2C. Some keratinocytes showing eosinophilic cytoplasm (arrow) and presence of koilocytes (arrow head). H&E. Bar 50 µm. Fig. 2D. Presence of some keratinocytes with crescent shape nuceli. H&E. Bar 50 µm.

Most of veterinarians are not familiar with the wild animal diseases, due to lack of proper training and scarcity of well documented lesions in literature. Nowadays wild animals took an essential part in people life in some communities, as domestication of some kinds of animals is dramatically increased; which shed light on many disorders of wild small mammals, reptiles and wild birds.

Hedgehogs are small insectivorous mammals that can be found throughout the world. They are so small and have a little odor and they do not bite, which makes them a wonderful pet. Hedgehog most common tumors are mammary gland adenocarcinoma, lymphoma, and oral squamous cell carcinoma [3, 7, 10] The third most common site for tumors in hedgehog is the Gastro intestinal tract including oral cavity [7]. Squamous cell carcinoma of the oral cavity is the third most common tumor in Hedgehog [7]. The pathological lesions of Papillomatosis have not described yet in Hedgehog, but the virus itself was isolated from hair follicles of normal skin in European Hedgehog [11].

Here we describe the histological lesion of a solitary wart presented in a maxilla of a hedgehog with clues of viral etiology. Generally, Papillomas of viral origin is characterized by multiple papillary proliferations, thickening of the

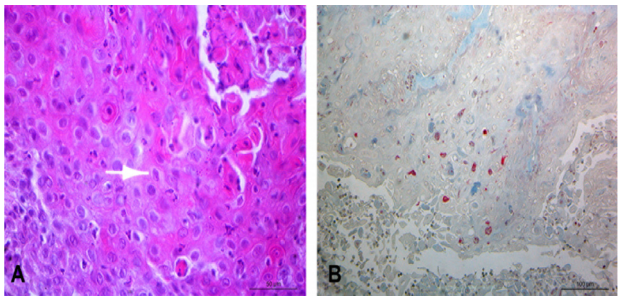

Fig. 3. Intranuclear inclusion bodies inside some keratinocytes (arrow). H&E. Bar 50 µm. Fig. 3B. Demonstration of numerous inclusion bodies in purple color by Macchiavello stain. Bar 100 µm.

squamous epithelium covering skin or mucus membranes with presence of koilocytes in stratum spinosum. Fibrosis of the dermis or submucosa is a manifestation in infections with delta-papillomaviruses [2]. The histological picture in our case is in an agreement with general description of viral papillomas. Moreover, we confirmed the viral etiology of the Hedgehog papilloma by showing viral intra-nuclear inclusion bodies in keratinocytes. Also, one of the characteristic features of viral infections in dermis and mucus membranes is vacuolation of keratinocytes which was shown in our case confirming the viral etiology.

Young animals less than 1 year are most affected by papillomatosis. However, adult animals were also shown to have papillomas as Camels aged 7 and 15 years respectively were reported with warts in cornea and skin of limbs [4, 5]. In our case, the infected hedgehog was aging 5 years old that provide another example of warts in adults. Presence of warts in adults may be due to having an impaired immune system. Further hematological tests could have been valuable in this case.

Papillomatosis characterized by spontaneous regression of warts in young animals. Lymphocytes are seemed to be responsible for the regression of the tumor. However, in our histological section infiltration of lymphocytes was not shown suggesting the poor possibility of spontaneous regression.

We would like to alert clinicians and animals' owners to consider Hedgehog oral viral papillomatosis in their diseases list for better management of oral lesions in Hedgehog. To the best knowledge of the author, this case presents the first report of fibropapillomatosis in Hedgehog.

Acknowledgments

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초록 : 고슴도치 구강유두종

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고슴도치에서 발생한 바이러스성 섬유 유두종의 조직학적 소견과 관련하여 증례보고를 하고자 한다. 상악에서 발생한 단발성의 종대된 종괴는 원형 혹은 타원형의 외양을 보였으며, 표면은 거칠었며, 잇몸과 동일한 색을 나타내었고, 직경은 6×3×2 mm였다. 외과적으로 절제 후, 종괴는 병리조직학적 진단을 위해 경북대학교 수의과대학 병리학교실에 의뢰되었다. 종괴는 처리과정을 거친 후 조직절편 과정 후에 조직병리학적 진단을 위해 염색 과정을 거쳤다. 조직병리학적 진단으로 본 종괴는 Fibro-papilloma로 진단되었다. 조직병리학적으로 종괴는 유두종 바이러스에 의한 사마귀와 비슷한 조직학적 소견을 보였으며, 가시층 및 기저층의 비후, 각질세포에서의 핵내봉입체, 점막하층의 섬유화가 특징적으로 관찰되었다. 또한 Macchiavello염색을 통하여 붉은 색의 핵내봉입체를 동정하였으며, 유두종의 자발적인 퇴축과 관련이 있는 림프구의 침윤은 관찰되지 않아, 본 증례의 종양의 자발적인 퇴축의 가능성이 낮음을 시사하였다. 유두종증은 주로 어린 연령의 동물에서 다발하는 것으로 알려졌으나, 본 증례의 경우 5년령의 고슴도치에서 발생한 경우로, 감소한 면역력과 관련 있는 것으로 사료된다. 본 증례는 고슴도치에서 발생한 유두종 바이러스에 의한 섬유성 유두종 증례로서, 본 저자가 알고 있는 한 최초 보고인 것으로 사료된다.