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Gross Findings of Bovine Lymphoma Detected in Holstein -Friesian Dairy Cattle in Korea

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Although there are a lot of previous reports on the bovine leukemia virus (BLV) and enzootic bovine leukosis (EBL), pathologic researches are not much, especially on the tumor distribution in internal organs. Furthermore, there was a little pathologic report of the EBL in Korea. Therefore we were trying to survey lymphoma caused by BLV infection and to examine these cases grossly.

Samples were obtained from cattle necropsied at the Pathology division, National Veterinary Research and Quarantine Service, and from cattle slaughtered at the abattoir in the South Korea. All of the examined 30 cows were over three years old and female Holstein-Friesian cattle. There was no Korean native cattle case. Leukotic tissue was gray to pink, soft to firm, and bulged from the cut surface. In advanced cases, hemorrhage and/or necrosis could cause great variation in the appearance of involved structures. In many cases, there were multifocal to diffuse yellowish necrotic foci like pus in the center of the tumor mass; sometimes scattered

calcified regions. Neoplastic tissues were mostly located in intestine, heart, stomach, and diaphragm. In the abdominal cavities, large tumor masses sometimes reaching the size of over 20cm developed from a conglomeration of several neighboring lymph nodes.

In macroscopic observation on the 30 lymphoma case caused by BLV infection, tumor masses are pink to gray, soft to firm, and they bulges from the cut surface. In advanced case, hemorrhage and/or necrosis could cause great variation in the appearance of involved structures. Most frequently involved organs are lymph node, intestine, heart, and stomachs. This findings would be useful for clinical diagnosis of BLV infection

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Histopathological Characteristics of Bovine Lymphoma in Korea

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Many studies have been performed on the bovine leukemia since bovine leukemia virus (BLV) was detected in 1982 in Korea.

In recent study, the seroprevalence of BLV in dairy cattle was more than 50 percents in Korea. However, only limited results were reported on the pathological findings of lymphoma.

A histopathological study was conducted on the bovine lymphoma caused by BLV infection. Lymphoma samples were obtained from two sources: necropsied cattle submitted for disease diagnosis and from slaughtered cattle. A diagnosis of lymphoma was based on PCR test results and on histopathological evaluation. A total of 30 lymphoma cases were classified according to the National Cancer Institute Working Formulation. All lymphoma cases were in female Holstein-Friesian dairy cattle aged 4 years or older. No affected Korean native cattle (Hanwoo) were found in the study.

Tumors consisted of fairly uniform sheet of closely packed lymphocytes without architectural arrangement. Diffuse large cell type comprised 25 cases. The remainder consisted of 3 diffuse mixed types and 2 immunoblastic types. Follicular-type lymphoma was not detected. The mitotic index of tumor cells was on average 2.5/high power field (400x). Nuclear cleavage was detected in 53% of cases. Multi-nucleated cells were scattered among tumor cells in 30% of cases. However, all of them did not fulfill all requirements of Reed-Sternberg cell which was found in the human Hodgkin's disease. The multi-nucleated cell was considered nothing more than a peculiar deviation of uncontrolled neoplastic proliferation.

We conclude that the most common histological cell type of bovine lymphoma in Korea was a diffuse large type with

multi-nucleated cells and nuclear cleavage.

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Observation of Lymphocyte Nuclear Pocket in Cattle Infected with Bovine Leukemia Virus

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Smith and O'Hara studied LNP in humans. After this report in humans, typical LNP type structures were observed in bovine leukosis cases in 1964 by Knocke. We have attempted to make statistical comparison of LNP incidence in BLV negative cattle with BLV positive cattle. Cows under study were naturally BLV infected or non-infected Holstein-Friesian cattle reared in Chungnam Province, Chugbuk Province, and Gyeonggi Province of Korea. All examined cattle were over three years old. Blood was from the 98 heads in total. Presence of LNPs in the peripheral blood lymphocytes was observed with transmissible electronmicroscope (Hitachi 5700).

Profiles of LNP were predominantly of the ring or loop types that extended from the