Cytomorphological Study of Canine Transmissible Venereal Tumor

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Introduction
Canine transmissible venereal tumor (CTVT) is classified as a round cell tumor. It always revealed in round to ovoid shaped cell, moderate amount of vacuolated cytoplasm with a large round to ovoid nucleus and prominent nucleoli (2). However, Amaral et al. (2007) reported that CTVT cytomorphology was classified into three types according to the majority of cell type population: plasmacytic, lymphocytic and mixed type (1). Moreover, plasmacytoid cell type was found to be related to malignant property and increased resistance to chemotherapeutic treatment (5). Our objective was to study the CTVT cell type in Thai dogs and the relation between cytomorphological characteristics and clinical treatment information.

Materials and Methods
Fifteen tumor bearing dogs regardless of sex, breeds and age were diagnosed as CTVT by cytology, histology and polymerase chain reaction (PCR) (3). All dogs initially presented with CTVT and never received chemotherapy prior sample collection. After diagnosed, they were treated with vincristine sulfate 0.025 mg/kg intravenously every week. The history of treatment was recorded for further analysis (time of chemotherapy) and resistance case was noted when the times of chemotherapy were more than 8 times. Each case was classified by its tumor mass anatomical site of tumor mass as genital (GTVT) or extragenital (ETVT) groups. Cytology preparation was performed using impression smear from each tumor mass into two glass slides. The slides were fixed in absolute methanol and stained by the Giemsa or Diff quick staining assay. Cytology samples were examined under light microscope and characterized its characteristics, at least 300 cells, according to the previous study (1). Criteria for CTVT cytomorphological classification

1. Plasmacytic: at least 60% of TVT cells with ovoid cells, large amount of cytoplasm and eccentric nucleus.
2. Lymphocytic: at least 60% of TVT cells with round cells, round nuclei, 1-2 nucleoli, scarce cytoplasm and high N:C ratio.
3. Mixed: mixed cellularity between plasmacytic and lymphocytic cell types, in which none surpassed 59% of the total.

The times of treatment between two anatomical groups, and among three cytomorphological types were comparative analyzed using test and ANOVA respectively. When $p < 0.05$, it was considered statistically significant.

Results and Discussion
Fifteen cases were classified into 4 ETVT (26.7%) and 11 GTVT (73.3%) cases, 5 male (33.33%) and 10 female (66.67%) according to the anatomical lesion and sex respectively. An average age was range 1 to 7 years old. Most of cases were mongrel dog. The predominant cell type of ETVT and GTVT dogs were mixed (75%) and lymphocytic type (66.67%) respectively. Neither ETVT nor GTVT dog presented plasmacytic type in this study.

Figure 1 Cytomorphology of canine transmissible venereal tumor (CTVT) showed both lymphocytoid cells (white arrow) and plasmacytoid cells (black arrow). Giemsa, bar=20 µm.

An average time of chemotherapy was 4 times in GTVT and 6 times in ETVT cases. In this study, an average treatment time between GTVT and ETVT groups showed statistically significant difference ($p<0.05$) while the cytomorphological types between mixed type and lymphocytic type did not. The majority of cytomorphological type from this study was not similar to previous studies describing the plasmacytoid type was the majority finding in CTVT dogs (1,5,4).
Moreover, no evidence of cytomorphology was related with vincristine resistance as previous report (5). This result may suggest that there is no relationship between cytomorphological type and vincristine resistance. However, the average time of chemotherapy may increase in ETVT case. This controversial finding might be resulted from the difference of studied continents and clonal expansion of CTVT itself.

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**References**