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**EARLY PATHOGENESIS OF MAREK'S DISEASE:
CORRELATION BETWEEN INITIAL CYTOLYTIC LESIONS AND
INCIDENCE OF MAREK'S DISEASE LESIONS**

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The early pathogenesis of Marek's disease (MD), especially the correlation between the initial cytolytic lesions in the lymphoid organs and the incidence of MD lesions in chicks lacking maternal antibodies to MD virus (MDV), was studied morphologically. In order to clarify the exact days on which the initial cytolytic lesions occurred and their sequential changes, the thymus of the same individual was examined by biopsy at 1, 3, 5, 9, 11 & 13 days post inoculation (p. i.) and the subsequent MD lesions was investigated by biopsy [at 28 days p. i.]. At the same time, the immunosuppressive effects of neonatal bursectomy by cyclophosphamide (CY) and surgical bursectomy with X irradiation were also examined in the same manner. On the other hand, in order to confirm the lesions in the bursa of Fabricius (BF), the spleen, and the coecal tonsils, investigations of sequentially killed cases (Groups 7, 8, 9 & 10) were carried out.

In the non-MDV inoculated group, the effects of sequential thymic biopsy, neonatal CY, and BX were examined morphologically. The results were as follows: 1) the non-treated thymus (Group 1) showed almost no effect on the lymphoid and other organs in the sequential thymic biopsy performed at 35 days of age; 2) the thymus treated with CY (Group 2) showed severe involution initially; however, after 14 days of age, the involution was recovered gradually; 3) the thymus treated with BX (Group 3) showed very slight involution until 12 days of age.

In the MDV inoculated group (7 days of age), the following results were obtained: 1) in the thymus of all biopsy groups (Groups 4, 5 & 6), the initial cytolytic lesions were found at 5, 7 and 9 days (p. i.). The lesions occurred in the biopsy groups treated with CY and BX (Groups 5 & 6) somewhat earlier than in those of Group 4 (non-treated), and the extent of the lesions was slight; 2) with the exception of the thymus, no observation was made of the initial cytolytic lesions of the BF, the spleen, and the coecal tonsils in the sequentially killed groups treated with CY and BX (Groups 9 & 10); 3) the incidence and extent of the MD tumor lesions were greater in the group treated with CY (Group 5) in comparison with the 2 other groups (the non-treated and treated with BX groups 4 & 6); 4) in the non-treated group, Group 4, the initial cytolytic lesions and the subsequent incidence of MD lesions showed a close correlation. On the other hand, in groups treated with CY and BX (Groups 5 & 6), there was no correlation

observed between the two lesions; however, there did appear to be some relation between their immunosuppressed condition and the incidence of MD lesions.

**A RADIOIMMUNOASSAY SYSTEM USING A SEROVAR-SPECIFIC
LIPOPOLYSACCHARIDE ANTIGEN OF *LEPTOSPIRA*,
AND STUDIES ON THE CHEMICAL NATURE OF
THE ANTIGENIC SITES**

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A highly sensitive and serovar-specific radioimmunoassay (RIA) was established to implement studies on the chemical nature of leptospiral antigenic determinant. The serovar-specific lipopolysaccharide (TM) antigen extracted from *Leptospira interrogans* serovar *kremastos* strain Kyoto was labeled with tritium by a reduction using sodium boro [^3H]-hydride after 1 h oxidation with periodate for the RIA. When 50 ng (625 cpm) of the labeled compound was used in the RIA system, 50% inhibition of the labeled antigen-antibody binding was obtained by the addition of 9 ng of the homologous TM antigen, whereas 5,000 times as much as the TM antigen from *hebdomadis*, which belongs to the same serogroup, was required. The TM antigens from different serogroups, such as *icterohaemorrhagiae*, *copenhageni* and *pomona*, showed no inhibitions in amounts up to 3×10^3 , 2×10^5 , and 2×10^5 , respectively.

The mild acid hydrolysis of *kremastos* Kyoto TM antigen using 0.5 N sulfonic acid or 2 N formic acid produced an antigen-active fraction which was dialysable. The chemical, physicochemical, and immunochemical properties of the fraction obtained by formic acid hydrolysis were then characterized. This fraction was eluted in a gel filtration at a molecular weight which was calculated at approximately 10,000 dalton. As compared with the original TM compound containing 10.5% protein and 1.5% fatty acid, this fraction lacked almost all of these components and was composed mainly of carbohydrates. However, the antigenic potency of this fraction diminished to 1/350 in the RIA. The carbohydrate nature of the antigenic determinant was also discussed.