STUDY ON THE ANALYSIS OF CHROMOSOMES IN CANINE TRANSMISSIBLE SARCOMA CELLS

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In the present study, the chromosomal banding patterns of canine transmissible sarcoma (CTS) cells were analyzed on the basic of those of canine normal lymphocytes by the G-, Q-, C- and N-banding techniques. In addinion, N-myc and N-ras oncogenes on the chromosomes of CTS cells were investigated by the *in situ* hybridization method.

The results were summarized as follows:
(1) Chromosomes of normal cells consisted of 38 acrocentric autosome pairs and X, Y-metacentric sex chromosomes. Their G- and Q-banding patterns corresponded to the figures which were shown by Manolache et al. in 1976. (2) The chromosomal number of CTS cells obtained from the 90th to 98th passages was constantly 58 as a modal number and they consisted of 17 metacentrics and 41 acrocentrics. (3) Most chromosomes of CTS cells were demonstrated in normal cells except for the 2 largest metacentric chromosomes. It was considered that metacentric chromosomes, except for the 2 largest ones, of CTS cells resulted from Robertsonian translocation of acrocentric chromosomes of normal cells. The 2nd largest metacentric element of the CTS cell was characterized clearly by negative heteropyknosis on its long arm. (4) C-bands of chromosomes of normal cells were found on the centromeric regions of the 7th, 26th, 34th, 35th, 37th and 38th chromosomes. However, only the C-band appeared on the long arm of the 2nd largest metacentric chromosome in the CTS cell. (5) N-bands of normal cells were recognized on the telomitic regions of the 7th, 9th and 22nd chromosomes. N-bands of CTS cells were stained as 6 spots of 3 pairs of N-bands on the same region of the C-band, and it was recognized that nucleolus-organizing regions were amplified in this region. (6) The grains of N-myc and N-ras on human chromosomes used as controls were detected on the short arm of the 2nd chromosome and the 1st chromosome, respectively, which indicated the known existence of both oncogenes. No grains which showed the existence of N-myc and N-ras were detected on CTS chromosomes.

The above results suggested that chromosomes of CTS cells originated from those of normal cells and that the 2nd largest metacentrics changed in banding structure. In particular, nucleolus-organizing regions were amplified on the long arm of the 2nd largest chromosome. It was suggested that this amplification enhanced tumorigenic properties in CTS.