A new transplantable strain of leukemic ascites tumor was established in ddOM mice, an inbred strain. The original tumor cells of this ascites leukemia were obtained from a spontaneous leukemia case of ddOM strain. The incidence of leukemia is rather rare in the mice of this strain. The leukemia occurred in a 12-month-old female mouse used for breeding (Photo 1). Autopsy revealed a remarkable enlargement of the lymph nodes throughout the body. The spleen and liver were slightly enlarged. The white and red blood cell counts were 5,900 and $7.13 \times 10^4$ mm$^{-3}$, respectively. Differential white cell counts showed 96% lymphoid cells, 2% monocytes, and 2% myelocytes.

Microscopically, the lymph nodes were overrun with leukemic cells (Photo 2) resulting in obliteration of the normal architectural markings. Invasion of leukemic cells into the capsule or the surrounding tissues was also observed. The leukemic cells were similar to the lymphoblast and they showed a negative oxidase reaction. Many mitoses were seen in the lymph nodes or in the infiltration foci. The spleen tissue was replaced by leukemic cells intermingled with remnant lymphocytes or megakaryocytes (Photo 4). In the liver, a large collection of leukemic cells was noted in the portal area (Photo 3). Infiltration of leukemic cells singly or in small groups into the sinusoids was also observed. Interstitial infiltration of leukemic cells was markedly observed in other organs. The bone marrow showed a uniform infiltration of leukemic cells resulting in practical disappearance of the blood cell formation. Based on these pathological findings this case was diagnosed as lymphatic leukemia, aleukemic type.

Subcutaneous transplantation with small pieces of the tumor tissues of the enlarged submaxillary lymph node was made into 10 mice of the same strain. These transplants grew in all the animals. The subcutaneous tumor tissue of the second passage was minced with scissors and suspended in physiological salt solution. Intraperitoneal inoculation of this tumor cell suspension resulted in enlargement of the abdomen with retention of leukemic ascites in all the mice within two weeks. Thereafter, the leukemic ascites tumor cells were serially transplanted by intraperitoneal injection of the ascites and they have now been maintained for over 60 passages. This strain of the ascites tumor cells was designated as ascites leukemia SR-61. The tumor cells of this strain showed a strict strain specificity and a 100% take in ddOM mice throughout all these passages. However, transplantation of this tumor cell into other dd strain mice always gave a negative result.

As a routine method of transplantation, 0.1 ml of the leukemic ascites containing 10~30 million tumor cells, which were aspirated
by a syringe about 10 days after the inoculation, was injected intraperitoneally. Retention of the ascites was noticed about 7 or 8 days after the inoculation. The swollen abdomen persisted for 10~12 days and thereafter retention of ascites fluid decreased. This decrease was probably caused by the infiltration into various tissues of leukemic cells which proliferate mainly in the ascites during the period of 7~12 days. Some mice died with paralysis of the hindquarter.

Survival time of the mice inoculated with these tumor cells ranged from 2 to 4 weeks, with a mean of 3 weeks at several initial passages. The survival time, however, gradually decreased after serial passages until it reached the shortest time after about 43 passages, when the survival was in a range of 1~2 weeks with a mean of about 10 days. Thereafter, the survival time prolonged slightly and showed a range of 10~20 days with a mean of about 15 days.

Gross examination of the fatal mice inoculated with the tumor cells revealed an extensive infiltration of tumor cells into the regions of the mesenterium and retroperitonium. Degree of enlargement of the lymph nodes, spleen, and liver depended on the duration of the disease. Splenomegaly and hepatomegaly were marked in the mice surviving for a longer period. In these mice, the weight of the spleen and liver was 1.5 and 5.0 g, respectively. Blood examination revealed a typical picture of lymphatic leukemia, with the total white cell counts reaching the level of about 50,000/mm³, 14 days after the transplantation.

Microscopically, the tissues of these mice showed leukemic pictures resembling those of the original mouse. Infiltration and proliferation of leukemic cells were more pronounced in the mice surviving for a longer period (Photos 5 and 6). The smear preparation of the white and milky ascites showed many tumor cells of lymphoblast type, either scattered or gathered together. Many mitoses were seen (Photo 7).

Subcutaneous tumors were formed when the ascites tumor cells were subcutaneously injected. The subcutaneous tumor took a chestnut size within 2 weeks, weighing about 4 g. In these mice an enlargement of the lymph nodes and the spleen also occurred. Microscopical changes in these mice were similar to those of mice inoculated intraperitoneally.

Several attempts failed to transmit the disease through cell-free preparations.

Preliminary chemotherapeutic tests using SR-61 ascites tumor cells showed a rather higher susceptibility to anticancer chemicals. Therefore, ascites leukemia SR-61 may be a useful tool in experimental cancer chemotherapy.

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**EXPLANATIONS OF PLATES LXXV~LXXVI**

Photo 1. Original lymphatic leukemia case. Note enlargement of lymph nodes throughout the body.

Photos 2~4. Histological pictures of the original case.

Photos 5 and 6. Histological picture of the mouse transplanted with ascites leukemia cells; 14 days after transplantation.


H-E: Hematoxylin–Eosin