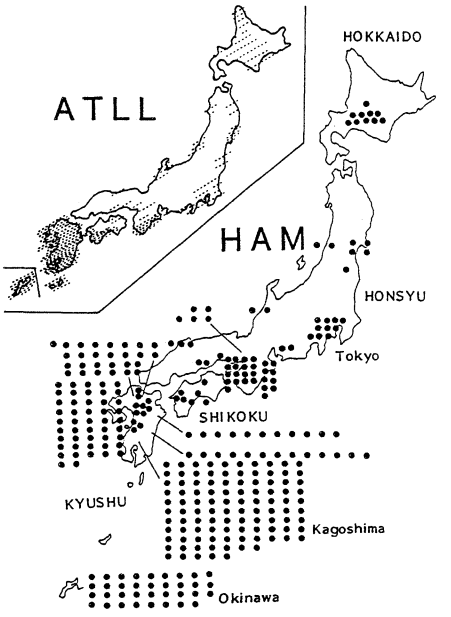
in Japan. This survey was started on October, 1986. A total of 605 institutions received the mailcards which contained the diagnostic criteria for HAM, as well as questions pertaining to previous experiences with HAM. The diagnostic criteria for HAM as specified are: (1) slowly progressive spastic paraparesis with or without other neurological manifestations; (2) positive antibody to HTLV-I in both serum and CSF; and (3) exclusion of other similar neurological entities. As of January 10, 1987, there was a total of 320 cases with HAM including 48 probable cases. As shown in the figure, the geographical distribution of the cases resembled adult T-cell leukemia/lymphoma (ATLL) (7).

DISEASE DISTRIBUTION IN JAPAN



REFERENCES

1) Osame M, Arima H, Norimatsu K, et al: Epidemiostatistical studies of muscular atrophy in Southern Kyushu (Kagoshima and Okinawa prefectures). Jap J Med **14:** 230, 1975.
2) Gessain A, Barim F, Vernant JC, et al: Antibodies to human T-lymphotropic virus type-I in patients with tropical spastic paraparesis. Lancet **ii:** 407, 1985.
3) Osame M, Usuku K, Izumo S, et al: HTLV-I associated myelopathy, A new clinical entity. Lancet **i:** 1031, 1986.
4) Osame M, Matsumoto M, Usuku K, et al: Chronic progressive myelopathy associated with elevated antibodies to HTLV-I and Adult T-cell Leukemia like cells. Ann Neurol **21:** 117, 1987.
5) Osame M, Izumo S, Igata A, et al: Blood transfusion and HTLV-I associated myelopathy. Lancet **ii:** 104, 1986.
6) Osame M, Igata A, Usuku K, et al: Mother-to-child transmission in HTLV-I associated myelopathy. Lancet **i:** 106, 1986.
7) The T- and B-cell malignancy study group: Statistical analyses of epidemiological data on lymphoid malignancies with special reference to adult T-cell leukemia lymphoma: a report of second nationwide study of Japan. Jpn. J Oncol **15:** 517, 1985.

3. Characterizations of Human Immunodeficiency Virus (HIV) and its Implications for Acquired Immunodeficiency Syndrome

Toshio HATTORI

The Second Department of Internal Medicine, Kumamoto University Medical School, Kumamoto, Japan 860.

Since 1986, four patients who were infected with human immunodeficiency virus (HIV) were admitted to the our department. One is asymptomatic carrier with herpes zoster, one is acquired immunodeficiency syndrome (AIDS)-related syndrome (ARC) and the other two were patients with AIDS. Two of them were infected with HIV abroad either by blood transfusions or by heterosexual contact and the others were infected by administrations of blood products.

Patients with AC and ARC were discharged by resolutions of the symptoms. Two AIDS patients died at the 10th day and at the third month after admission. Abnormal behaviours preceeded the onset of AIDS in the former case, and paraparesis and severe dementia were observed in the latter case. The former case died due to interstitial pneumonia. The autopsy showed systemic cytomegalovirus infection and pnemocystis carinii pneumonia, and gliosis and calcification of endothelial cells in the brain were also found. The latter case was treated with a high dose of glycyrrhizin (600 mg/day), which is known to inhibit replication of HIV *in vitro*. After administration of this agent, serum HIV antigen could not be detected and a further decrease of CD4-antigen-bearing cells was not observed, but neurological symptoms progressed to the level of complete decerebrate rigidity with severe dementia. In addition, HIV antigen was detected in the cerebrospinal fluids obtained at autopsy and HIV was also isolated from the fluid. Numerous giant cells with features of macrophages were observed at subcortical regions in the latter case. An electron microscopic study revealed a cluster of virus particles in the giant cell.

Studies of above cases suggested the following points: 1. probabilities of HIV infection of peoples, who lived in abroad, might be high. 2. neurological symptoms could appear as an initial symptom of AIDS. 3. HIV infects neurological tissues and replicates in the brain. 4. a high dose administration of glycyrrhizin apparently inhibits replication of HIV *in vivo*, but the drug dose not seem to across through the blood brain barrier.

To detect HIV infected cells in patients, a monoclonal antibody (mAb) against HIV was raised, using disrupted HTLV-IIIB virions as antigens. The mAb (VAK5) specifically reacts with a major core protein (p24) of various strains of HIV and HIV-2, and simian immunodeficiency virus. Thus the mAb is quite useful to detect infected cells of patients. VAK5 mAb was used to detect HIV-antigen-positive cells by immunofluorescence methods. The results showed that only a few percentages of cells (1-3%) were positive even after lymphocytes were cultured with interleukin 2 for 10 days. These findings raised a possibility that depletion of CD4-antigen-bearing cells could be explained not only by simple infection but also by other mechanisms including syncytium formation. To analyse the mechanisms of HIV infection, we raised another mAb (0.5 β), which reacts external glycoprotein of HIV using Con-A sepharose purified antigens of HTLV-IIIB. 0.5β mAb inhibited cell to cell infection as measured by syncytium formation with HTLV-IIIB infected H9 cells and CEM cells. When, cell free virus particles of various strains, such as HTLV-IIIB, RF and MN were infected to H9 cells, 0.5β mAb inhibited the infection of HTLV-IIIB but did not inhibit the infections of RF and MN. These findings confirmed that the mAb is a type specific neutralizing antibody. The epitope mapping study showed that the mAb reacts with synthesized 24 amino acids of gp120.

The study of biological activity of the epitope would be quite useful to determine the mechanisms of HIV infection and also for development of vaccines against HIV in future.