

SEROEPIDEMIOLOGICAL STUDY OF ANTI-ADULT T-CELL LEUKEMIA/LYMPHOMA ASSOCIATED ANTIBODIES IN PAPUA NEW GUINEA (1990)

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Introduction

The infection of the Human T-Lymphotropic virus Type-I (HTLV-I) retrovirus is well known as the cause of Adult T-cell Leukemia/Lymphoma (ATLA) which occurs with high incidence among persons born in virus endemic area, such as southwestern Japan, the Caribbean basin and Africa.

Nearly all the patients and many of the carriers of ATLV-I who are in a healthy condition will test positive for ATLA (anti-ATL virus-associated antigen antibodies) in their sera (HINUMA *et al.*, 1981).

Methods and Results

The human sera collected from the Papua New Guinea Red Cross Blood Transfusion Service (PNG Red Cross) in Port Moresby, the Papua New Guinea Medical Pathology Services (PNG Medical Pathology) by Dr. T. TALONU in Port Moresby of the Central Province, and ANGAU Memorial Hospital (Medical Laboratory) in Lea of Morobe Province.

The serum test was done using a Microtiter Technique with a gelatin particle agglutination test (Serodia-ATLA kit, Fujirebio Inc., Tokyo, Japan; IKEDA *et al.* 1984). The ATLA positive range was decided over 16 units of serum materials concentrated by this test.

Table 1. Serological Study of Anti-Adult T-cell Leukemia/Lymphoma Associated Antigen Antibodies in Papua New Guinea (1990)

Sample	Place of Hospital	No. positive cases/total No.	%
Venous Blood of Childbirth Mother * (PNG Red Cross)	Port Moresby (Central Province)	7/101	6.9
Childbirth Mother's Umbilical Cord Sera * (PNG Red Cross)	Port Moresby (Central Province)	2/101	0.02
Sample from Medical Pathology ** (PNG Medical Pathology)	Port Moresby (Central Province)	13/99	13.1
Sera from Medical Laboratory of ANGAU Memorial Hospital	Lae (Morobe Province)	22/175	12.6

* PNG Red Cross: Papua New Guinea Red Cross Blood Transfusion Service

** PNG Medical Pathology: Papua New Guinea Medical Pathology Services

The results of the seroepidemiological study on ATLA is shown in Table 1. Seven cases out of 101 (6.9%) childbirth mothers and 2 cases out of 101 (0.02%) blood from their umbilical cords were positive for ATLA using the materials of the PNG Red Cross. No ATLA positive cases were present in both the childbirth mother sera samples and in their umbilical cord blood at the same time. Thirteen out of 99 (13.1%) samples tested positive for ATLA using the materials from the PNG Medical Pathology and so did 22 cases out of 175 (12.6%) at ANGAU Memorial Hospital.

The samples of the Medical Pathology and ANGAU Memorial Hospital showed a much higher percent of ATLA positive cases than childbirth mothers and their umbilical cord blood.

Discussion

The adult T-cell leukemia/lymphoma (ATL) is caused by an infection of a retrovirus of HTLV-I. Anti-ATL-associated antigen Antibodies (ATLA) in human sera are detected in most ATL patients and in a relatively high percentage of the healthy individuals born in ATLA-endemic areas.

Currently it is supposed that HTLV-I is transmitted by three main routes; 1) from husband to wife, 2) from mother to children, and 3) blood transfusions (TAJIMA *et al.*, 1982; OKOCHI *et al.*, 1982; OKOCHI *et al.*, 1984).

In Japan, ATL-endemic areas are the southwestern regions where healthy carriers were found at a high rate 6-37 % (HINUMA *et al.*, 1987). In Okinawa, the southernmost part of Japan, 51 cases in 170 (30.0%) patients including 20 ATL patients tested positive for ATLA (CLARK *et al.*, 1985).

In neighboring countries, 17 out of 2,545 (0.68%) individuals in Taiwan (PAN *et al.*, 1985), 17 out of 6,255 (0.27%) in Korea (LEE *et al.*, 1986) and 2 out of 6,884 in China (ZENG *et al.*, 1984) were reported as ATLA positive. Each population was composed of healthy persons and patients with various diseases.

The West Indies/Caribbean basin is also known as an HTLV-I invaded area, especially in areas with high concentrations of black people. (CATVOSKY *et al.*, 1982; BLATTNER *et al.*, 1982; O'BRIEN *et al.*, 1983). Africa is also an HTLV-I endemic area (GALLO, 1985).

In reports from the USA about sporadic ATL, most of the patients were black, but their birth places were widespread in the United States and Latin America (JAFFE *et al.*, 1984). However, a few white patients were included in these reports (FOUCAR *et al.*, 1985).

Few seroepidemiological surveys were made in Oceania. No positive cases were found in our survey on the Solomon Islands nor Viti Levu (Fiji) where we collected 72 and 156 sera, respectively (MATSUMOTO *et al.*, 1983; TERASHI *et al.*, 1983).

In the Federated States of Micronesia, no positive cases out of 57 persons in Truk States were found and 3 tested positive out of 154 (1.95 %) individuals in Pohnpei (TERASHI *et al.*, 1986), and 9 positive reactions out of 133 (6.77%) inhabitants of Yap state (TERASHI *et al.*, 1987a) were detected for ATLA in the sera. In the Republic of Palau, nineteen positive cases out of 176 (10.8%) sera were found from inhabitants in our research work (TERASHI *et al.*, 1987b).

Thirty-three positive cases was reported using immunofluorescence test in 1,471 (2.24%) collected sera from 1986 to 1989 in Papua New Guinea (IMAI *et al.*, 1990).

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