

## Serological Evidence of HTLV-1 Infection among Voluntary Blood Donors and Cancer Patients from Kerala State.

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**Abstract :** 279 sera from cancer patients admitted at Regional Cancer Centre (RCC), Trivandrum and 600 sera from voluntary blood donors from Sri Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum, were investigated for the presence of antibody against HTLV-1 virus by "Serodia-HTLV-1" – a Passive Gelatin Particle Agglutination test kits from M/s Fujirebio Inc., Tokyo, Japan. 3.2 % of patients suffering from various types of malignant cancers and 0.7% of voluntary blood donors were found to be positive for HTLV-1 infections. The male cancer patients were more often positive than females - 3.2% and 2.4 %, respectively. Among the age groups, 5.7% positivity was obtained in 41-50 years age, followed by 4.0% among 21-30 years. From healthy blood donors, maximum serological evidence of HTLV-1 infection was detected in Group "A" donors (1.4%) while none of the AB donors was positive for the same infection. The study revealed the rare prevalence of HTLV-1 infection among healthy population; it was four times more prevalence among cancer patients from Kerala state-0.7 % and 3.2%, respectively.

**Key words:** HTLV-1, Cancer patients, Blood donors

### INTRODUCTION

Human T - Cell Leukemia Virus –type-1 (HTLV-1) was first isolated in 1980 from an aggressive lymphoma patient<sup>1</sup>. At present 15-20 millions in the world are infected by this virus, with 2.5 millions in Brazil alone<sup>2</sup>. This virus was found to be the causative agent of Adult T-Cell Lymphoma(ATL) and also associated with some other disease like Myelopathy in Japan<sup>3</sup> and Tropical Spastic para paresis (TSP) in Carribean islands<sup>4</sup>. Besides it was also associated with Uveitis, Arthropathy and infectious dermatitis<sup>5,6</sup>. The HTLV-I infection is more common in Japan, Brazil, Colombia, Carribean islands and in some African countries<sup>2</sup>. In Brazil 79% of ATL patients were positive for HTLV-1, while only <1.0 % of healthy population were infected with the same virus<sup>4</sup>. Salvador reported the highest prevalence of HTLV-1 infections among the healthy population(1.4%). Since the infection is more common in Brazil, from November, 1993 onwards, screening of all bloods for HTLV-1 before transfusion was made mandatory<sup>2,7</sup>. Japan was the first country to introduce mandatory screening all bloods for HTLV-1 before transfusion. The lowest prevalence rate was reported from many other countries including India, Mongolia and Malaysia. The present report is the outcome of the sero-prevalence study of HTLV-1 in cancer patients and in healthy population (Voluntary Blood donors) from Kerala state, South India

### MATERIALS AND METHODS

Blood samples were collected from 600 voluntary blood donors (Gr-A=72, Gr-B=108, Gr-O=360 and Gr-AB=60) from the Sri Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Blood Bank and 279 sera from various types of cancer patients admitted at Regional Cancer Centre (RCC), Trivandrum. The sera separated were preserved at -20° C until tested in batches. No preservatives was added in the sera collected for HTLV antibody testing. The sex and age group of Cancer patients and the Blood Groups of voluntary blood donors are given in Table-1.

The "Serodia-HTLV-1 Kits" – a Passive Gelatin Particle Agglutination test kits obtained from by M/s Fujirebio Inc., Tokyo, Japan were used in the present study for the detection of HTLV-1 specific antibody<sup>8</sup> in sera samples belonging to cancer patients and voluntary

blood donors. All reagents provided in the test kits are kept at room temperature for 15-20 minutes before testing. The sensitized and unsensitized gelatin particles are reconstituted in 3.0 ml and 3.5 ml reconstituent solutions provided by the manufacturer. The 25 ul of sera were diluted from 1:2 to 1:8 in duplicate and tested with both sensitized and unsensitized gelatin particles in the U bottom wells of the micro titre plates. Both positive and negative control sera were added in each batch of testing. 25 ul of sensitized gelatin particle were added in to all wells, and the unsensitized gelatin particles were added into the control wells not having any human sera. The plates are mixed gently well and incubated for two hours at room temperature (22-25 C). The positive results are graded based on the pattern/size of the gelatin particle agglutination as 1+ to 4+. Only the sera showing 2+ and above agglutination pattern were taken as positive for HTLV-1 antibody. Serum samples exhibiting doubtful reactions - between 1+ and 2+ were retested again by the same test kit for confirmation.

### RESULTS

We have found that nine out of 279 cancer patient's sera (3.2%) and 4 out of 600 healthy volunteers blood donors' sera (0.7%) were positive for HTLV-1 antibody. Among the cancer patients maximum positivity was obtained in sera samples belonging to male cancer patients (5/155 = 3.2%) than among the female patients (2.4%) and in the age group of 41 to 50 years (2/35 = 5.7%). Among the voluntary blood donors, maximum positivity was seen with Group A donors (1/72 = 1.4 %) than the Group O donors (2/360 = %). None of the serum belonging to 45 cancer patients below 20 years and 60 blood donors belonging to Group "AB" were found to be positive for HTLV-1 antibody. The details of the results obtained with cancer patients and voluntary blood donors are given in the Table.

**Table:** Sero-prevalence of HTLV-1 infections among voluntary blood donors and cancer patients from Kerala state, India

	Voluntary Blood Donors			Cancer patients			
	No.	%	Age group	No.	%	Age group	
Group - A	72	1	1.4 %	10-20 yrs	25	1	4.0 %
Group - B	108	1	0.9 %	21-40 yrs	75	1	1.3 %
Group - O	360	2	0.6 %	41-50 yrs	35	2	5.7 %
Group-AB	60	0	.....	>50 yrs	144	5	3.5 %
Total	600	4	0.7 %	Total	279	9	3.2 %

## DISCUSSION

Fujiyama et al have reported that the sensitivity and the specificity of both particle agglutination test and ELISA were nearly similar<sup>9</sup>. Our finding of 0.7% positivity for HTLV-1 infections among voluntary blood donors is nearly same as that of a report from Mumbai (0.8%) and nearly four times higher than the report from Pune (0.18%)<sup>10</sup>. But among the donors from Uttar Pradesh and West Bengal a three times higher positivity were reported (2.0%)<sup>10</sup>. In Vellore, Tamil Nadu only 23 out of 1310 sera belonging to STD patients were found to be positive for HTLV-1 antibody (1.8%) including 2.8% prevalence rate among males than the females - 1.1%<sup>11</sup>. The HTLV prevalence varies in different ethnic groups and in different countries. Among French population, none of the two studies involving 510 and 262 sera were found to be positive, while in other races living in France 1.5% positivity was found, including very high prevalence among those above 60 years (14.0%). In Salvador, Brazil, the HTLV-1 is 1.74% and among the HIV infected patients it was 4.7%. In Kerala, India only one out of 25 TSP (4.0%) was found to be positive<sup>12</sup>, which is two times higher than the reports from Iran (2.3%) and far less than the reports from South America (79.0%). Prostitutes have more chances of acquiring HTLV-1 infections compared to other health individuals. Simoes EA et al<sup>13</sup> from Tamil Nadu found HTKLV-III antibodies in 8.2% of positive I Chennai, India, while North America and in Europe 10-40% prostitutes were positive for HTLV-1 antibody<sup>11</sup>. Recently in Kerala state, HTLV-1 antibody have been reported from Dermatitis patients<sup>14</sup>. The findings obtained in our study, along with other reports from Kerala state revealed the moderate prevalence of HTLV-1 infections in this East coastal state of India

## CONCLUSION

The outcome of the present study revealed the less prevalence of HTLV infections among the blood donors (0.7%) in Kerala state, thus confirming the absence and rare prevalence of HTLV infections reported from many

parts of India. This also indicates that the screening of blood donors for HTLV infection is not warranted at present in India as in some endemic countries like Japan and Brazil. The study also indicated four-fold increased prevalence of HTLV infections among the cancer patients (2.8%) than the voluntary blood donors (0.7%) from Kerala state, India. Further studies in other states of India with various group of healthy and diseased persons, will provide additional information regarding the HTLV-1 infections in our country.

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### DAPTOMYCIN

### DRUG PROFILE

**Indications:** Adults. Treatment of complicated skin and skin structure infections and of Staphylococcus aureus bloodstream infections (bacteraemia), including infective endocarditis, caused by susceptible isolates. **Dosages:** Complicated skin and skin structure infections: 4mg/kg administered once every 24hrs for 7-14 days, or until the infection is resolved. Staphylococcus aureus bacteraemia, including right-sided endocarditis: 6 mg/kg administered once every 24hrs for 2-6 weeks depending on the diagnosis. Dose reduction in patients with creatinine clearance <30mL/min, hemodialysis (HD) or CAPD: same dose every 48hrs. Dosing should be given immediately after completion of the HD session. Alternative dosing scheme for HD patients: three times a week is given by intravenous infusion over a 2-minute period or by intravenous infusion over a 30-minute period. **Contraindications:** Known hypersensitivity to daptomycin. **Precautions/Warnings:** Anaphylaxis/hypersensitivity reactions have been reported. Cubicin is not indicated for the treatment of pneumonia. Risk of clostridium difficile-associated diarrhea (CDAD), attention required for patients suffering from diarrhea. If CDAD is suspected/confirmed, consider interruption of Cubicin and institute appropriate treatment. Repeated blood cultures necessary in patients with persisting or relapsing S. aureus bacteraemia/endocarditis or poor clinical response, appropriate surgical investigations or change in antibiotic regimen should be considered, if necessary. The use of antibiotics may promote the overgrowth of non-susceptible organisms, if superinfection occurs while on Cubicin, take appropriate measures. Possible false increase of prothrombin time/international normalized ratio (PT/INR). Risk of muscle disorders (including rhabdomyolysis). Baseline CPK necessary and monitoring of CPK and signs of myopathy during Cubicin therapy, more frequently in patients receiving also HMG-CoA reductase inhibitors or develop unexplained CPK elevation. Treatment discontinuation if CPK elevation greater than 1000U/L with muscle systems or CPK elevation greater than 2000 U/L ( $\geq 10X$  ULN) without muscle systems. Monitoring of sign of neuropathy. Monitoring of renal function and CPK more frequently than once a week in renally impaired patients. Consider treatment interruption of HMG-CoA reductase inhibitors while treating patient with Cubicin. Use in under 18 yrs of age not yet established. **Pregnancy:** Use during pregnancy only if clearly necessary. **Breast-feeding:** Caution while treating breast-feeding women; consider alternative methods of feeding. **Interactions:** Daptomycin undergoes little to no CYP450-metabolism; inhibition or induction of metabolism of drugs metabolized by CYP450 system unlikely. Caution with co-administration of tobramycin. Limited experience with concomitant use of Cubicin with warfarin or with HMG-CoA reductase inhibitors. Monitoring anticoagulant activity in patients receiving Cubicin and warfarin in first several days. Possible interference of daptomycin in assays of PT/INR. **Adverse Reactions:** Common ( $\geq 1$  to <10%): Fungal infections, urinary tract infections, candida infections, anaemia, anxiety, insomnia, dizziness, headache, hypertension, hypotension, gastrointestinal and abdominal pain, constipation, diarrhea, nausea, vomiting, flatulence, bloating and distension, rash, pruritus, limb pain, infusion site reactions, pyrexia, asthenia. Uncommon ( $\geq 0.1$  to <1%): Fungemia, eosinophilia thrombocytosis, decreased appetite, hyperglycaemia, paraesthesia, taste disorder, tremor, vertigo, supraventricular arrhythmia, flushing, dyspepsia, urticaria, arthralgia, muscle pain, muscle pain, muscular weakness, renal insufficiency (including renal impairment and renal failure), vaginitis, fatigue, chills. Rare ( $\geq 0.01$  to <0.1%): Jaundice. **Investigations:** Common ( $\geq 1$  to <10%).

### JIMSA is now IndMED indexed

The present issue marks the 25<sup>th</sup> year of publication of the Journal International Medical Sciences Academy. It is a matter of pride for all fellows/members that Journal Selection Committee (constituted by ICMR), in its meeting held on August 3, 2011, has approved the indexing of JIMSA in IndMED, the best known Indian Medical Database <http://indmed.nic.in>. The Journal will host full text of the articles at MedIND <http://medind.nic.in> and the readers will have access to the full text of articles from January-March 2003 onwards. These articles will be linked for IndMED to JIMSA website.

I wish to express my gratitude for the help and guidance received from the Members of Board of Trustees and the Central Executive Committee members, of International Medical Sciences Academy, World Headquarters, New Delhi. I am also grateful for the valuable cooperation extended by the members of JIMSA Editorial and Advisory Boards; and also the peer reviewers, for their consistent and continuous effort and support to maintain a high standard of quality of the articles published in the journal.

Friends, this is an important milestone in the history of our journal; this will broaden accessibility to all published articles. The journal should now attract original articles of even better quality. We should enforce rigorous peer review of the submitted articles and also on time publication of the issue, every quarter.

Dr. P. D. Gulati, Editor, JIMSA