CLINICAL RESEARCH

Markers of HTLV-III in patients with end stage renal failure treated by haemodialysis

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Abstract

Patients and members of staff from a haemodialysis unit were tested for markers of infection with human T cell lymphotropic virus type III (HTLV-III), the virus associated with the acquired immune deficiency syndrome (AIDS). An enzyme linked immunosorbent assay showed eight of 100 patients to have antibodies to HTLV-III. In five of these patients past or present infection with HTLV-III was confirmed by Western blot analysis or detection of HTLV-III antigens in lymphocyte cultures, or both. Investigation of other risk factors for AIDS showed that the putative source of HTLV-III was unrelated to dialysis in two patients whereas blood transfusion was the most likely cause of contamination in the others. No member of staff gave a positive result in the enzyme linked immunosorbent assay.

Nosocomial transmission of HTLV-III seems unlikely if precautions similar to those recommended for the control of hepatitis B infection are applied.

Introduction

Epidemiological and virological data indicate that, besides sexual contact, transfusion of contaminated blood products represents an important route of transmission of human T cell lymphotropic virus type III (HTLV-III), or lymphadenopathy associated virus.¹ Patients receiving haemodialysis often require blood transfusion

and are known to be highly susceptible to viral diseases such as hepatitis B and non-A non-B hepatitis that are transmitted in blood. We evaluated the relative risk of these patients becoming infected with HTLV-III.

Subjects

One hundred patients receiving long term haemodialysis and 49 members of staff from our dialysis unit were initially tested for antibodies to HTLV-III with a commercial enzyme linked immunosorbent assay (Organon Teknika, Oss, The Netherlands). Seropositive patients were investigated for risk factors for the acquired immune deficiency syndrome (AIDS) and were selected for further serological and virological studies.

The enzyme linked immunosorbent assay was performed according to the manufacturer's recommendations. Retrospective analysis of stored serum was undertaken to determine the time of seroconversion in seropositive patients. Serum that gave a positive result in the assay was analysed by the Western blot technique on a pellet of concentrated HTLV-III fractionated in a 10% polyacrylamide gel containing sodium dodecyl sulphate and electrophoretically transferred to a nitrocellulose sheet. Particular attention was paid to the reaction of tested serum with p17, p25, and gp100 viral proteins. Detection of viral antigens in lymphocyte cultures was performed as previously described.² Briefly, suspensions of 10⁶ lymphocytes/ml were stimulated for two days with 5 µg phytohaemagglutinin/ml and then incubated with recombinant interleukin-2 for four weeks. Cell extracts were assayed for HTLV-III antigens by solid phase radioimmunoassay with anti-p24 and anti-p15 HTLV-III monoclonal antibodies.

Results

Eight patients were found to be seropositive in the enzyme linked immunosorbent assay. The table shows the additional evidence for infection with HTLV-III found in five of these patients, together with other relevant data. Only one patient (case 3) presented with clinical symptoms (generalised lymphadenopathy) possibly related to HTLV-III infection. All serum from staff members was found to be negative in the assay.

Discussion

Until now patients receiving haemodialysis have not been considered to be susceptible to AIDS, but available data on HTLV-III infection in these patients are scarce.³ In this study past or present

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Markers of HTLV-III and risk factors for AIDS in five patients

Case No	Time of seroconversion as determined by ELISA	Viral proteins shown by Western blot	Viral antigens	Period with functioning kidney transplant	No of transfusions*	Other risk factors for AIDS
1	January 1983		p15, p24	June 1971-September 1980	>50	
2	June 1985		p15, p24	November 1977-July 1983	>50	
3	Not determined	p25	p15, p24		1	From Zaire
4	October 1983	p17, p25			>20	
5	November 1984	p17, p25			8	Heterosexual partner with AIDS

ELISA = Enzyme linked immunosorbent assay.

*During five years before seroconversion as determined by ELISA.

infection with HTLV-III was found in five of 100 patients. In three patients positive on enzyme linked immunosorbent assay the presence of specific antibodies was confirmed by Western blot analysis, and HTLV-III antigens were found in the lymphocyte culture of one of them. Interestingly, lymphocyte cultures were found to be positive for HTLV-III antigens in two other patients in whom corresponding antibodies were detected only by enzyme linked immunosorbent assay. One patient presented with a clinical picture consistent with AIDS related complex, but the four other patients were asymptomatic.

In all five patients with evidence of HTLV-III infection immunity developed after 1982. This finding is consistent with the current knowledge of the epidemiology of AIDS, and similar data have been reported in haemophiliacs.⁴

The putative source of HTLV-III was unrelated to haemodialysis in two patients, whereas blood transfusion was the most likely mode of contamination in the others. The lack of seropositivity among our staff members confirms that the risk of nosocomial infection with

HTLV-III is low when precautions similar to those recommended for the control of hepatitis B infection are applied.⁵

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Cytomegalovirus but not human T lymphotropic virus type III/lymphadenopathy associated virus detected by in situ hybridisation in retinal lesions in patients with the acquired immune deficiency syndrome

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Abstract

Paraffin sections of retinal tissue from five patients who died from the acquired immune deficiency syndrome (AIDS) and retin-

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opathy were examined by in situ hybridisation experiments with deoxyribonucleic acid (DNA) labelled with sulphur-35 of lentivirus, human T lymphotropic virus type III/lymphadenopathy associated virus (HTLV-III/LAV), and cytomegalovirus. HTLV-III/LAV ribonucleic acid (RNA) was not detected in any of the tissue sections. Cytomegalovirus RNA was identified, however, in three of the five patients.

Retinopathy induced by cytomegalovirus may thus be one of the many syndromes potentiated by the immunosuppression caused by HTLV-III/LAV.

Introduction

The acquired immune deficiency syndrome (AIDS) is a disease characterised by the selective loss of helper T lymphocytes, resulting in severe impairment of immune mechanisms^{1,2} and is thought to be caused by infection of the cells with human T lymphotropic virus type III/lymphadenopathy associated virus (HTLV-III/LAV).^{3,4} HTLV-III/LAV is also thought to cross the