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A Cross-Sectional View of HTLV-1: From Childhood to Adulthood in an Endemic Region of Colombia

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Abstract: Human T-cell lymphotropic virus type 1 (HTLV-1) affects between 10 and 20 million people worldwide and remains a neglected infection in endemic areas such as southwestern Colombia. This study aimed to describe the clinical and demographic characteristics of forty-four patients with confirmed HTLV-1 infection treated at a referral center between January 2021 and December 2023. A retrospective case series analysis was conducted, including twenty-three pediatric patients, sixteen adults, and five pregnant women, with confirmation by Western Blot. Among the pediatric population, 52.2% presented with anemia, leukocytosis, and pulmonary coinfections, mainly due to Aspergillus spp. and Mycobacterium tuberculosis; 47.8% had infective dermatitis, and 45.5% had malnutrition. In adults, adult T-cell leukemia/lymphoma (ATLL) was the main manifestation (56.3%), followed by neurological involvement (43.7%). The mortality rate among adults was 68.7%, and one death was recorded in the pediatric group. The pregnant women had a mean age of 33 years and an average gestational age of 31.6 weeks at diagnosis; all were asymptomatic carriers. These findings highlight the clinical burden of HTLV-1 across different age groups and reinforce the need to implement public health strategies, including prenatal screening and comprehensive clinical follow-up in endemic areas.

Keywords: HTLV-1; adult T-cell leukemia/lymphoma; infectious dermatitis; coinfections; vertical transmission; pregnancy; clinical cohorts; Colombia

1. Introduction

HTLV-1 was the first retrovirus to be identified, described in the early 1980s. It affects approximately 10 to 20 million people worldwide. It is endemic in southwestern Japan, the Caribbean, South America, Australia, and West Africa. In Colombia, the highest prevalence is found in the Pacific Region (7.52%), followed by the Caribbean (3.53%), Andean (3.08%), Orinoquía (1.27%), and Amazon (0.20%) regions.

Three transmission routes have been described for the virus: vertical transmission, especially through breastfeeding, which is most strongly associated with the development of ATLL; sexual transmission, which is more efficient from men to women; and parenteral transmission, through transfusion of contaminated blood products or shared needle use. Most virus carriers remain asymptomatic. However, some exhibits increased susceptibility to chronic inflammatory and

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autoimmune conditions, opportunistic infections, malnutrition, depression, and interstitial lung disease. Between 2% and 10% develop severe conditions such as adult T-cell leukemia/lymphoma (ATLL), HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP), and HTLV-1-associated uveitis.

Despite the recognition of HTLV-1 as a relevant pathogen, studies remain scarce, and clinical characterization of affected groups still represents a limited area of knowledge. The objective of this study is to describe the clinical and demographic characteristics of patients with HTLV-1 infection treated at a referral center, including pediatric, adult, and pregnant populations.

2. Materials and Methods

A retrospective descriptive case series study was conducted at a referral hospital in southwestern Colombia between January 2021 and December 2023. Patients of all ages with a confirmed diagnosis of HTLV-1 infection by Western Blot, who were treated at the referral hospital during the study period and had a minimum follow-up of one year, were included. Patients with incomplete medical records that prevented the extraction of relevant data were excluded. For analysis, patients were stratified into pediatric, adult, and pregnant groups.

No sample size calculation was performed due to the descriptive nature of the study and the rarity of HTLV-1 infection with clinical manifestations. As this was a consecutive case series of uncommon conditions, all available cases that met the inclusion criteria during the study period were included.

Descriptive statistics were used for data analysis. Categorical variables were expressed as absolute frequencies and percentages. Continuous variables were described using measures of central tendency and dispersion, with mean and standard deviation for normally distributed variables, and median with interquartile range for non-normally distributed variables. Data were analyzed using statistical software. Epi Info™, a database and statistics program for public health professionals, was used for analysis.

3. Results

Data were collected from forty-four patients with confirmed HTLV-1 infection by Western Blot. Proviral load data were unavailable for all evaluated cases. Of the total, twenty-three were pediatric cases (52%), sixteen adults (37%), and five pregnant women (11%).

3.1. Pediatric patients

We analyzed 23 children, including 14 males (63.6%) and 9 females (39.1%). Sixteen had been previously included in a published cohort, while seven were newly incorporated. All were from southwestern Colombia: Valle del Cauca (78.3%), Cauca (8.7%), Nariño (8.7%), and Chocó (4.3%). Age at presentation ranged from 4 months to 17 years (mean: 9.88; SD: 4.71). Ten patients (45.5%) had mild to moderate malnutrition (BMI <−1 SD), and three (13.6%) were below −2 SD.

Seventeen patients (73.9%) showed hematologic abnormalities: anemia (Hb <11 g/dL) in 12 (52.2%), leukocytosis (>15,000 cells/µL; median: 15,410; IQR: 5,370–47,280) in 12, and thrombocytosis (>450,000 platelets/µL) in two. Two had thrombocytopenia (<100,000 platelets/µL) with normal flow cytometry. Two adolescents were diagnosed with adult T-cell leukemia/lymphoma (ATLL), both with leukocytosis, anemia, and thrombocytosis. C-reactive protein was positive in 19 patients (82.6%), and LDH was elevated (>450 U/L) in both ATLL cases.

Twelve patients (52.2%) had pulmonary coinfections: probable aspergillosis (n=5), pulmonary tuberculosis (n=4), HKU1 coronavirus pneumonia (n=1), rhinovirus/enterovirus bronchiolitis (n=1), and bacterial pneumonia without isolation (n=1). Eight (34.8%) developed chronic lung disease with radiological changes, and two had associated pulmonary hypertension. Imaging showed interstitial infiltrates, bronchiectasis, nodular lesions, and ground-glass opacities.

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Systemic coinfections included one case of toxoplasmosis, leptospirosis, and mixed malaria; and one with soft tissue infection by Streptococcus pyogenes with intestinal parasitosis (Ascaris lumbricoides and Trichuris trichiura). Additional infections included pansinusitis, MRSA bacteremia, tracheitis by Pseudomonas aeruginosa, esophageal candidiasis, and in one ATLL case: urinary tract infection by P. aeruginosa, S. epidermidis, and A. lumbricoides. No patient had coinfection with HIV, hepatitis B, C, or syphilis.

Neurological complications were reported in four patients: one with bilateral brainstem infarction, two with HTLV-1-associated myelopathy, and one with Vogt-Koyanagi-Harada syndrome. Two cases showed immune-mediated manifestations: inflammatory bowel disease and immune thrombocytopenic purpura.

Thirteen patients (56.5%) had cutaneous manifestations: infective dermatitis (47.8%), scabies, and tinea corporis. One death was recorded during follow-up due to multiorgan failure from severe bacterial and fungal coinfections. Table 1 summarizes the main clinical characteristics and findings in the pediatric group.

Table 1. Demographic and Clinical Characteristics of Pediatric Patients with HTLV-1 Infection.

Case	Age at Diagnosis	Gender	Residence	Pulmonary Coinfection	Autoimmunity	Dermatologic Findings	Neurologic Findings	Other Findings	Outcome
1	1 year	M	Cali, Valle del Cauca	No	No	No	Tuberculous meningitis	None	Alive
2	11 years	F	Cali, Valle del Cauca	No	No	No	No	Toxoplasmosis, Leptospirosis, and Malaria	Alive
3	1 year	M	Cali, Valle del Cauca	No	No	Tinea corporis	No	Acute diarrheal disease, malnutrition	Alive
4	10 years	M	Buenaventura, Valle del Cauca	No	No	Infective dermatitis	Myelopathy	Pansinusitis, severe malnutrition	Alive
5	9 years	M	Cali, Valle del Cauca	Right upper lobe pneumonia, no etiology	No	Infective dermatitis	No	Pneumopathy, malnutrition	Alive
6	3 years	M	López de Micay, Cauca	No	No	Infective dermatitis	No	Intestinal parasites (*Ascaris, Trichuris*), soft tissue infection	Alive

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								by *S. pyogenes*	
7	1 year	M	Medio San Juan, Chocó	No	Immune thrombocytopenic purpura	Scabies	No	Pneumopathy	Alive
8	15 years	M	Buenaventura, Valle del Cauca	Pulmonary aspergillosis	No	No	No	None	Alive
9	7 years	F	Buenaventura, Valle del Cauca	Pulmonary aspergillosis	No	Infective dermatitis	No	Pneumopathy, *MRSA bacteremia*, tracheitis by *P. aeruginosa*	Deceased
10	6 years	M	Tumaco, Nariño	No	Inflammatory bowel disease	Infective dermatitis	No	None	Alive
11	8 years	F	San Isidro, Valle del Cauca	Pulmonary *aspergillosis, H. influenzae* pneumonia	No	Infective dermatitis	No	Pneumopathy	Alive
12	16 years	M	Timbiquí, Cauca	*Coronavirus HKU1* pneumonia	No	Infective dermatitis	No	Pneumopathy, malnutrition	Alive
13	8 years	M	Puerto Merizalde, Valle del Cauca	Pulmonary tuberculosis	No	No	No	None	Alive
14	10 years	F	Buenaventura, Valle del Cauca	Mixed pneumonia *(H. influenzae, S. aureus, S. pneumoniae, Rhinovirus/Enterovirus, Parainfluenza)*	No	Infective dermatitis	No	Pneumopathy	Alive

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15	8 years	F	Mosquera, Nariño	Pulmonary aspergillosis	No	No	No	None	Alive
16	15 years	M	Buenaventura, Valle del Cauca	Pulmonary aspergillosis	No	No	No	Pneumopathy, severe pulmonary hypertension	Alive
17	4 months	M	Cali, Valle del Cauca	*Rhinovirus/Enterovirus* bronchiolitis	No	No	No	None	Alive
18	7 years	M	Buenaventura, Valle del Cauca	Pulmonary tuberculosis	No	Infective dermatitis	No	Pneumopathy, pulmonary hypertension, malnutrition	Alive
19	9 years	F	Cali, Valle del Cauca	No	No	Infective dermatitis	No	ATLL	Alive
20	16 years	M	Buenaventura, Valle del Cauca	Pulmonary tuberculosis	No	Infective dermatitis	No	ATLL, *Ascaris*, *S.epidermidis bacteremia*, UTI by *P.aeruginosa*, *Rhinovirus/Enterovirus* infection	Alive
21	16 years	M	Puerto Merizalde, Valle del Cauca	No	No	No	No	Esophageal *candidiasis*, *S.stercoralis infection*, malnutrition	Alive
22	17 years	M	Buenaventura, Valle del Cauca	No	No	No	Myelopathy	Neurogenic bladder	Alive

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23	12 years	F	Cali, Valle del Cauca	No	No	No	Vogt-Koyanagi-Harada syndrome panuveitis	None	Alive

3.2. Adults patients

The adult cohort included 16 patients with a mean age of 48.5 ± 14.5 years, with a predominance of females (56.25%). All patients were from southwestern Colombia, with the majority residing in Buenaventura (37.5%) and Cali (31.3%). All individuals had an adequate body mass index (mean BMI: 22.8 ± 4.21). Two cases had a history of sexually transmitted infections: one was a 50-year-old woman with positive HBsAg and detectable viral load for hepatitis B virus (HBV), without liver function abnormalities or imaging findings suggestive of cirrhosis or splenomegaly; the other was a 60-year-old woman diagnosed with latent syphilis, without neurological involvement. Additionally, two cases were diagnosed with strongyloidiasis and one had a history of dengue exposure, although no active infection by toxoplasmosis, malaria, or leptospirosis was detected in this cohort.

Regarding laboratory findings, 31.25% of patients presented with leukocytosis (mean: 92,468 ± 88,031 cells/µL), with an overall average white blood cell count of 33,943 ± 61,091 cells/µL. Mean hemoglobin was 12.35 ± 6.44 g/dL and the average platelet count was 294,200 ± 156,183 platelets/µL. C-reactive protein was positive in 87.5% of patients, with a median value of 59 mg/L (IQR: 10–84). Procalcitonin was requested upon admission in 62.5% of patients and was positive in 30% of them, with an average value of 2.23 ± 0.76 ng/mL. Fungal infection screening was performed in three cases using serum galactomannan, which was positive in one case in the context of pulmonary aspergillosis. Chest CT scans were performed in 81.25% of patients, with the most frequent finding being lymphadenopathy (46.13%), especially in patients diagnosed with adult T-cell leukemia/lymphoma.

During hospitalization, 31.5% of patients developed pneumonia, 40% of which were associated with SARS-CoV-2 infection. Blood cultures were performed in all patients and were positive in 56.25% of cases. The most frequently isolated pathogens were *Staphylococcus aureus* (n=3; two methicillin-resistant strains), *Pseudomonas aeruginosa* (n=2), *Klebsiella pneumo*niae (n=1), and *Acinetobacter baumannii* (n=1). One patient developed a pulmonary thromboembolism.

The most frequent clinical manifestation associated with HTLV-1 was adult T-cell leukemia/lymphoma, observed in 56.25% of cases, including 12.5% with cutaneous T-cell lymphoma. Neurological manifestations were present in 43.7%, with dysphagia being the most common symptom. No cases of uveitis were documented, although one patient had a history of Sjögren's syndrome. Notably, two cases of ATLL with HTLV-1–associated myelopathy occurred in middle-aged Afro-descendant women, both of whom died.

The overall mortality rate in this group was 68.7%, of which 72.3% occurred in patients diagnosed with ATLL. Table 2 summarizes the clinical and demographic characteristics of this adult cohort.

Table 2. Demographic and Clinical Characteristics of Adult Patients Infected with HTLV-1.

Case	Age at Diagnosis	Gender	Residence	Pulmonary Coinfection	Autoimmunity	Dermatologic Findings	Neurologic Findings	Other Findings	Outcome
1	30	M	Cali, Valle del Cauca	No	No	No	Tropical spastic	Depressive syndrom	Deceased

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							paraparesis	e; Bacteremia: *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *P.aeruginosa*	
2	65	M	Danubio, Valle del Cauca	Pneumonia by *SARS-CoV-2*	No	No	Dysphagia	ATLL	Deceased
3	48	M	Punta Bonita, Buenaventura	Aspergillosis; Pneumonia by *SARS-CoV-2*	No	Cutaneous T-cell lymphoma	Dysphagia	*Methicillin-resistant S. aureus* bacteremia	Deceased
4	43	M	Timbiquí, Cauca	No	No	No	Multiple cranial neuropathies: CN III palsy, CN VI palsy, facial paralysis, CN V palsy	None	Alive
5	50	F	Nariño	No	No	No	No	None	Alive
6	52	M	Buenaventura	No	No	No	No	ATLL; *Methicillin-resistant S. aureus* bacteremia	Deceased
7	52	F	Buenaventura	No	No	Mature T-cell cutaneous lymphoma, IIB	No	Skin lesion infected with *MDR P. aeruginosa*	Deceased
8	57	F	Buenaventura	No	Sjögren's syndrome	No	Extensive longitudinal cervical/thoracic	ATLL; Syphilis	Deceased

 doi:10.20944/preprints202506.0135.v1

							myelitis; neurogenic bladder due to CNS infiltration		
9	59	F	Cali, Valle	No	No	No	Axonal and demyelinating neuropathy in lower limbs	None	Alive
10	47	M	Chocó	No	No	No	Dysphagia	ATLL; *C. difficile infection*	Deceased
11	72	F	Cali, Valle	Nosocomial pneumonia	No	No	No	ATLL	Deceased
12	52	M	Buenaventura	Bacterial pneumonia	No	No	No	ATLL; Bacteremia by *P. aeruginosa*	Deceased
13	23	F	Cali, Valle	No	No	No	No	Bacterial keratitis in left eye; pseudopapilledema with optic nerve drusen	Alive
14	60	F	Cali, Valle	Multilobar pneumonia	No	No	No	ATLL; Syphilis	Deceased
15	49	F	Buenaventura	No	No	Generalized xerosis	Myelopathy; overactive bladder	ATLL; *Methicillin-sensitive S. aureus* bacteremia	Deceased
16	18	F	Buenaventura	No	No	Norwegian scabies	No	ATLL; Renal disease	Alive

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3.3. Pregnant Women

Five pregnant women with HTLV-1 infection confirmed by Western Blot were identified in the cities of Cali and Buenaventura. The average age was 33 years, and the mean gestational age at the time of diagnosis was 31.6 weeks. All were asymptomatic carriers and had no active co-infections with hepatitis B or C viruses. Four of them had non-protective levels of anti-HBs antibodies, indicating a lack of effective immunity against hepatitis B.

Among the identified risk factors, one patient reported having received a blood transfusion in 2015, another had tattoos, and one had been a victim of sexual violence. All newborns will undergo postnatal follow-up to assess the possibility of vertical transmission and detect early clinical manifestations.

These findings suggest that, in this group, HTLV-1 infection was not associated with significant immunosuppression or concomitant viral infections at the time of screening. Nevertheless, clinical follow-up during pregnancy is essential due to the potential for vertical transmission and the virus's immunological implications.

4. Discussion

HTLV is a globally distributed infection, although its prevalence varies widely depending on the region or country. In many areas, it is considered a neglected disease, as public health policies focused on its prevention are scarce and generally limited to blood donor screening. As a result, many patients are diagnosed late, often once clinical manifestations have already appeared [4,15,16]. In this context, the present study provides a cross-sectional view of the clinical and epidemiological behavior of HTLV-1 in children, adults, and pregnant women. Notably, this is the first study of its kind conducted in Colombia and reports the largest number of pediatric cases to date [17].

One of the most striking findings was the high frequency of malnutrition in the pediatric population (45.5%), particularly among those with a BMI below two standard deviations. Although establishing a causal relationship with HTLV-1 infection is complex due to limited nutritional data in this population, this finding is clinically relevant and may be influenced by multiple factors [13,15]. In endemic areas such as southwestern Colombia, social and nutritional conditions, along with barriers to healthcare access, may contribute to both transmission and malnutrition. Additionally, parasitic coinfections such as Ascaris lumbricoides and Trichuris trichiura, and chronic respiratory diseases like tuberculosis have been documented to worsen nutritional status [18–23].

In adults, we observed an opposite pattern, with a predominance of overweight (36.6%) and obesity (19.7%) [24,25], like what has been reported in international studies. Anemia was also found in over half of the pediatric patients, consistent with findings from Jamaican children, where a higher incidence of severe anemia has been reported in those infected with HTLV-1 [26]. It has been suggested that low hemoglobin levels and mean corpuscular volume are associated with higher antibody titers or elevated viral load, implying that chronic immune activation may contribute to anemia development in these patients [27].

Another important hematological finding was leukocytosis (52%) in children, contrasting with other studies where leukopenia predominates. Additionally, there was a high frequency of thrombocytosis (47.8%), while thrombocytopenia was less common (8.7%), consistent with other reports [28]. In our pediatric series, platelet counts showed a trend toward thrombocytosis (47.8%), while thrombocytopenia was observed in only 8.7% of cases. This finding aligns with data reported by Ribeiro et al. (2022), who found thrombocytopenia in 6.9% of HTLV-I-infected patients [28]. It is important to consider that in cases of thrombocytopenia in HTLV-I patients, immune thrombocytopenic purpura (ITP) should be evaluated as a potential underlying mechanism. Studies have shown a higher prevalence of ITP in HTLV-I-infected individuals compared to healthy controls, making it a relevant consideration for diagnostic and therapeutic approaches [29].

Regarding pulmonary involvement, HTLV-1 has been associated with chronic inflammation of the interstitium and airways, including interstitial pneumonia, bronchiolitis, and alveolitis [30]. This

 doi:10.20944/preprints202506.0135.v1

pattern has often been underestimated, but recent studies show it may have significant clinical implications [31–34]. The association between HTLV-1 and bronchiectasis has been documented in several regions, with up to a threefold increased risk in infected patients [33,34]. In our study, eight pediatric patients (34.8%) developed chronic pulmonary disease, and two had pulmonary hypertension. A study in Indigenous Australian communities reported chronic pulmonary disease in 6.1% of children and 39.3% of adults infected with HTLV-1 [5]. Tomographic findings in HTLV-1-infected patients typically include centrilobular nodules, bronchovascular wall thickening, ground-glass opacities, and bronchiectasis. In our study, the most frequent pulmonary imaging findings were interstitial infiltrates, followed by bronchiectasis, diffuse nodular lesions, and ground-glass opacities.

In the context of immunosuppression, pulmonary tuberculosis coinfection is a particular concern. Studies in Brazil have shown a higher prevalence of HTLV-1/TB coinfection, associated with worse outcomes [36]. This is partly due to HTLV-1-induced immune dysfunction, which impairs both innate and adaptive responses to Mycobacterium tuberculosis [8,37–39]. The reported TB incidence in people with HTLV-1 infection is 3.3 per 1,000 person-years, compared to 1.1 in the general population [14]. In our study, four pediatric cases of pulmonary tuberculosis were identified via PCR for Mycobacterium tuberculosis. No adult cases were found.

Pulmonary aspergillosis has been described in adults with ATLL and HAM [40,41] and previously in pediatric populations [13]. In the present study, five cases of probable aspergillosis were identified with positive galactomannan in bronchoalveolar lavage (cut-off >1). No adult cases were reported. Both Aspergillus spp. and Mycobacterium tuberculosis may significantly contribute to lung damage, decrease quality of life, and increase mortality. Since both infections are potentially treatable, active investigation is recommended in patients with respiratory involvement.

Patients with ATLL experience severe immunosuppression associated with opportunistic infections and other malignancies [42,43]. However, even in the absence of clinical disease, HTLV-1 can cause immune deterioration [43,44]. Unprotected sex, contact with blood or tissues, and breastfeeding may expose individuals not only to HTLV-1 but also to HIV, Treponema pallidum, hepatitis B and C viruses, HPV, and HSV [45]. In our adult cohort, two patients had concurrent syphilis, with no evidence of CNS involvement.

HTLV-1 distribution, with high prevalence in low- and middle-income countries [46], overlaps with regions where infections such as Strongyloides stercoralis, Mycobacterium tuberculosis, and Mycobacterium leprae are also common. Coinfection with a variety of pathogens is therefore likely [45]. Both adult and pediatric patients in our study presented with S. stercoralis.

Crusted scabies is a rare but severe and highly contagious infection caused by massive infestation with Sarcoptes scabiei and can be considered a marker of HTLV-1 infection [47]. In Bahia, Brazil, severe scabies was strongly associated with HTLV-1 (OR = 3.0; 95% CI: 1.85–4.86, $p < 0.01$) [48], and chronic scabies was linked to HTLV-1 in Peruvian women (OR = 13; 95% CI: 1.6–82, $p < 0.02$) [49]. In a 30-month follow-up of 30 Brazilian children with infective dermatitis associated with HTLV-1, 70% had scabies and one had crusted scabies [50]. In our study, one pediatric patient had scabies, and one adult had crusted scabies.

Infective dermatitis remains an underdiagnosed condition, often confused with common dermatoses like atopic or seborrheic dermatitis [51]. This delay may lead to severe complications. A study of 42 patients with infective dermatitis showed that 42% developed neurological complications [52]. Thus, infective dermatitis is not only a marker of HTLV-1 infection but also a potential predictor of more severe disorders such as ATLL and HAM [53]. In our study, eleven patients (47%) had infective dermatitis, one of whom also developed myelopathy. It was more common in males and began as early as age 3, with school-aged children and adolescents being the most affected.

The association between HTLV-1 and autoimmune diseases remains poorly understood. Molecular mimicry is the most widely accepted mechanism underlying the development of some autoimmune conditions [54]. HTLV-1 has been linked to Sjögren's syndrome, arthropathies, and uveitis [55], as well as to rheumatoid arthritis, systemic lupus erythematosus, autoimmune thyroiditis, and polymyositis [56,57]. One adult patient in our study had Sjögren's syndrome.

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HTLV-1-related chronic inflammation causes diffuse degeneration in the central nervous system, especially in the spinal cord, which is the basis of HAM/TSP pathogenesis [58]. Genetic and epigenetic factors may explain the predominance in middle-aged women (~45–55 years), with a threefold higher incidence than in men, increasing with age into the fifth decade [59–61]. In our study, HAM occurred in 31.3% of adults (n=5), all of them middle-aged women (mean age: 47.6 ± 11.7). Two pediatric cases also had myelopathy. The co-occurrence of ATLL and myelopathy is rare and has been described mostly in adult men in Japan and Iran [62–64]; however, in our study both cases occurred in Afro-Colombian women.

HTLV-1-associated uveitis is a chronic intraocular inflammation causing blurred vision and amaurosis, often bilateral [65]. We report a pediatric case of bilateral amaurosis consistent with previous findings. Kihara et al. described five pediatric uveitis cases due to HTLV-1, all unilateral [66]. A Brazilian study found that HTLV-1-infected patients had a tenfold higher uveitis prevalence than non-infected individuals [67]. Most cases were bilateral and involved the intermediate chamber. In contrast, in Japan the most common findings were iritis (97%), vitreous opacities (92%), retinal vasculitis (61%), and uveoretinal inflammatory lesions (19%) [68].

Adult T-cell leukemia/lymphoma was the most frequent manifestation in adults (56.25%), including 12.5% with cutaneous T-cell lymphoma; all patients died. Two pediatric cases of ATLL were identified. ATLL typically presents between ages 30 and 80, peaking between 50 and 70, and primarily affects men. Median survival varies by subtype: 8.3 months for acute, 10.6 months for lymphomatous, 31.5 months for chronic, and 55 months for smoldering [69,70]. In adults, symptoms include skin lesions, lymphadenopathy, hepatosplenomegaly, and multiorgan involvement. In children, skin and lymph node involvement are most common, followed by hepatosplenomegaly, bone marrow infiltration, and occasionally CNS involvement [71]. Although rare in children, ATLL has high morbidity and mortality and warrants high suspicion in endemic areas to facilitate early detection, treatment, and prognosis [72].

Prenatal HTLV-1 screening is essential to prevent vertical transmission. In Japan, a national screening program significantly reduced prevalence by performing serological testing before 30 weeks of gestation [73–76]. In our cohort, five pregnant women (11%) were diagnosed with HTLV-1. All were asymptomatic, with no active viral coinfections and low protection against hepatitis B. These findings reinforce the need for screening strategies in endemic areas like southwestern Colombia, where the infection remains underdiagnosed.

Limitations of this study include its retrospective nature, lack of proviral load data (which hinders correlating viral activity with clinical severity), and a limited sample size that may reduce generalizability of some findings.

5. Conclusions

This study represents the largest clinical and epidemiological analysis of HTLV-1-infected patients conducted in Colombia to date, including pediatric, adult, and pregnant populations in an endemic region. In the pediatric cohort, high frequencies of hematologic abnormalities, pulmonary coinfections, infective dermatitis, malnutrition, and neurological complications—including HTLV-1-associated myelopathy—were observed. In adults, ATLL predominated, with high mortality, as well as severe neurological and opportunistic coinfections. Among pregnant women, all asymptomatic, gaps in hepatitis B immunity and relevant risk factors were identified, underscoring the need for prenatal surveillance.

These findings highlight the importance of implementing screening programs for high-risk groups, as well as early diagnosis strategies, comprehensive clinical follow-up, and prevention of vertical transmission. In endemic areas such as southwestern Colombia, where HTLV-1 remains a neglected infection, strengthening public health policies could significantly reduce virus-related morbidity, transmission, and mortality.

6. Patents

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