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CASE REPORT

Human African trypanosomiasis (sleeping sickness): a pediatric case report

Tripanosomiasis africana humana (enfermedad del sueño): a propósito de un caso pediátrico

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ABSTRACT

Human African trypanosomiasis is caused by protozoa of the genus Trypanosoma sp. and is primarily transmitted by the bite of the tsetse fly. This report presents a pediatric case diagnosed with human African trypanosomiasis in low-incidence areas of Central Africa, diagnosed by Cuban collaborators. Case presentation: A 12-year-old patient with a medical history had traveled to an area with active cases of trypanosomiasis within the last 2 years. The patient presented with recurrent fever, general weakness, and drowsiness. Rapid diagnostic tests were positive for salmonellosis and malaria. The patient was treated with antibiotics, with no clinical improvement. The diagnosis was positive for Trypanosoma sp. by thick blood smear and staining. Clinical improvement occurred after nifurtimox-eflornithine combination therapy according to the regional protocol for Trypanosoma brucei gambiense in the second phase of infection. Clinical improvement was seen at 48 hours. Conclusions: Human African trypanosomiasis is a common infection in regions where medical assistance is provided by Cuban medical personnel. The high endemism of other infections with similar symptoms and acquired immunity favors late identification without adequate knowledge and timely clinical-epidemiological analysis. A complementary definition and specific therapeutic measures ensure a good outcome and a better prognosis.

Keywords: Human African Trypanosomiasis; Trypanosoma Brucei Gambiense; Sleeping Sickness.

RESUMEN

La tripanosomiasis africana humana es producida por protozoos del género Trypanosoma sp. y transmitida fundamentalmente por la picadura de la mosca tse-tsé. Este reporte presenta un caso pediátrico con diagnóstico de tripanosomiasis africana humana en zonas de baja incidencia de África central, diagnosticado por colaboradores cubanos. Presentación de caso: Paciente de 12 años de edad, con antecedentes de salud, con viaje reportado a zona de casos activos de tripanosomiasis, en los últimos 2 años. Inicio de fiebre recurrente, debilidad general y somnolencia. Pruebas de diagnóstico rápido positiva a salmonelosis

y paludismo. Tratada con antimicrobianos y sin mejora clínica. Diagnostico positivo a Trypanosoma sp. mediante frotis de gota gruesa y tinción. Mejoría clínica posterior a terapia combinada nifurtimox-eflornitina según protocolo regional, para Trypanosoma brucei gambiense en segunda fase de infección. Mostrando mejoría clínica a las 48 horas. Conclusiones: La tripanosomiasis africana humana, es infección común en regiones donde se brinda colaboración medica por personal médico cubano. El alto endemismo de otras infecciones con síntomas similares e inmunidad adquirida favorece a la identificación tardía, sino se tiene un conocimiento adecuado y un análisis clínico epidemiológico oportuno. La definición complementaria y medidas terapéuticas específicas aseguran la buena evolución y mejor pronóstico.

Palabras clave: Tripanosomiasis Africana Humana; Trypanosoma Brucei Gambiense; Enfermedad del Sueño.

INTRODUCTION

Human African trypanosomiasis (HAT) or sleeping sickness is one of the most important tropical infections and yet one of the least considered in modern medicine. It is caused by protozoa of the genus *Trypanosoma sp*. It is transmitted mainly by the bite of the infected *tsetse* fly. There are two subspecies of the protozoan: Trypanosoma brucei gambiense (THA gambiense), found in West and Central Africa, and *Trypanosoma brucei rhodensiense (*THA rhodensiense), found in East and Southern Africa.[1,2,3] THA is a health problem in rural regions of Africa. It was controlled in the 1960s and almost eradicated. It has increased considerably since the 1970s, emerging as a re-emerging disease.[1,2] Transmission rose sharply in the late 1990s, with more than 35,000 cases reported annually. [3]

After more than a decade of control and steady progress, in 2013, the World Health Organization (WHO) proposed setting the elimination of THA as a public health problem by 2020 as a target.[3] It is considered one of the neglected tropical diseases because it proliferates in impoverished communities, with devastating social, economic, and health consequences.[4]

In Central Africa, Equatorial Guinea is a country with a low incidence of cases (less than 10) according to reports,[3] with control and surveillance of ATF in major cities. The areas of highest epidemiological risk are in the north on the border with Cameroon and in the south with Gabon. Case reports in Equatorial Guinea have remained low, with single-digit figures over the last decade. The country has diagnostic capacity for Gambian THA in its health facilities.[3,5] The need for preparedness in the prevention, diagnosis, and treatment of emerging and reemerging diseases in the region to which it provides collaboration, coupled with knowledge of regional epidemiological risks. And the risk of contracting unknown infections without adaptive or acquired immunity.[6,7,8]

The clinical case aims to present the results of care provided to a pediatric patient with a confirmed diagnosis of human African trypanosomiasis treated in the northern Bioko region of Equatorial Guinea.

CLINICAL CASE

A 12-year-old pediatric patient with no previous health issues was brought to the emergency room with a three-day fever, headache, and extreme weakness. During a comprehensive evaluation, he was diagnosed with malaria and salmonellosis, with positive results from rapid diagnostic tests. Specific treatment with ciprofloxacin, artemeter, and lumefantrine was prescribed according to pediatric doses. Other measures were taken in the emergency department over the next six hours, including antipyretics, parenteral hydration, and continuous observation. Guidance was provided for outpatient treatment, monitoring of signs of clinical deterioration, and return to the emergency department if symptoms persisted or worsened.

Two days later, the patient returns to the emergency department with persistent symptoms and marked drowsiness. A complete blood count is ordered, with results within the acceptable range, and a thick blood smear is performed using Giemsa staining. The results show the presence of *trypomastigotes* in the whole blood. Upon questioning, the family reported that the child had traveled approximately two years earlier to the Río Campo area in the northern continental region of Equatorial Guinea, on the border with Cameroon. The Health Surveillance System was notified of the presence of an active case of THA, requesting consultation with experts in neglected diseases from the Ministry of Health and Social Welfare and specific treatment management according to regional care guidelines, based on evidence from WHO recommendations.[9]

Physical examination. Moist and normally colored mucous membranes. Respiratory system: numerous transmitted noises are heard. Respiratory rate (RR): 20 rpm. Tissue oxygen saturation: 97 %. Cardiovascular system: rhythmic heart sounds. Blood pressure (BP) 120/80 mmHg. Heart rate (HR): 104/bpm. Abdomen: normal. Palpation reveals deep cervical and supraclavicular lymphadenopathy. Central nervous system: Confused, disoriented in time and space, delayed response to commands, bilateral osteotendinous hyporeflexia, limited neck flexion, slight nuchal rigidity.

Laboratory tests. Serological test using Card Agglutination Test for Trypanosomiasis (CATT) for Trypanosoma brucei gambiense (T.b. gambiense) (figure 1).

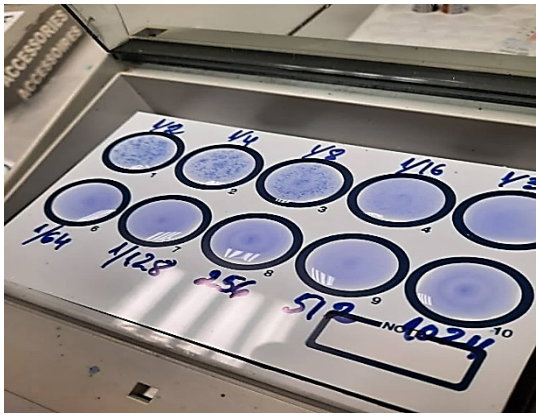

Figure 1. Positive card agglutination test for T.b. gambiense (CATT)

A fluorescence microscopy study of a lymphatic sample was then performed (figure 2).

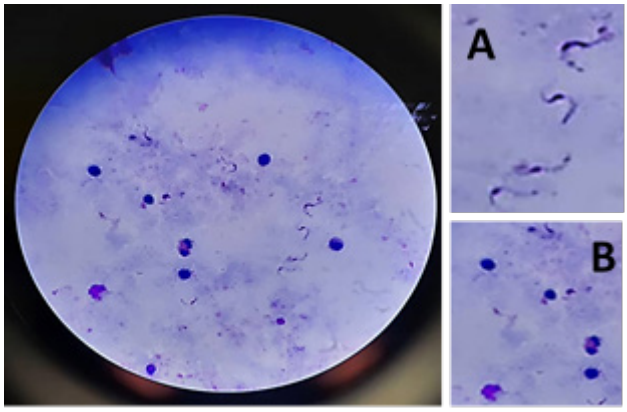

Figure 2. A) Thin forms of trypomastigotes, B) Activated lymphocytes in contact with trypomastigotes

The immunochromatographic test is performed for the rapid and qualitative detection of antibodies of the isotypes (IgG, IgM, IgA) specific for the invariant surface glycoprotein (ISG) or variable surface glycoprotein (VSG) of T.b. gambiense whole blood, BiolineTM HAT 2.0. which has a positive immunochromatographic result for the rapid and qualitative detection of antibodies of the isotypes.

Treatment is initiated with nifurtimox-eflornithine combination therapy (NECT). The following strategy is followed.[9]

Intravenous administration of eflornithine, 400 mg/kg per day in 2-hour infusions every 12 hours for 7 days. Oral administration of nifurtimox, 15 mg/kg per day, divided into three doses (8:00 a.m., 4:00 p.m., midnight) for 10 days. Other general interventions such as daily parenteral hydration and treatment of adverse effects of antimicrobial therapy, as appropriate, such as antiemetics (nausea, vomiting), antipyretics (fever), and analgesics (headache). The patient showed clinical improvement within 48 hours, with resolution of neurological symptoms, and was discharged after 10 days. Follow-up with readmission every 6 months for 2 years is recommended for clinical assessment, hematological studies, and prevention of relapse.

DISCUSSION

The diagnosis of THA caused by T.b. *gambiense* shows a prolonged asymptomatic period during the hematological phase.[10] Symptoms are sometimes very nonspecific and similar to other more prevalent diseases of the circulatory system.[9,10,11] Diagnosis is difficult in areas with high transmission of other diseases that present with general symptoms in regions of central Africa, such as malaria and salmonellosis. The diagnostic definition is even more uncertain when the high level of immunity acquired by these populations could favor false positives in rapid diagnostic tests (RDTs), applied in regional emergency protocols. Even so, coinfection is likely and common. In the case presented, a positive RDT diagnosis for malaria and salmonellosis was observed, without severe symptoms, which led to immediate treatment in the first emergency consultation. Studies suggest that, even in cases of coinfection, priority in treatment should be given to antimalarial drugs, as

a way of minimizing the possibility of neurological complications. Although a recent meta-analysis suggests limitations in the study designs evaluated to make this proposal conclusive.

In the case presented, prior antimalarial treatment did not reduce the possibility of neurological deterioration, showing favorable evolution with the use of specific drugs for the late stage of the disease. This suggests predominant THA infection. The availability of a surveillance system, alert system, and timely specific diagnostics favor a better prognosis in THA. Systematic thick smear examination and staining with dyes such as Giemsa favor the identification of *trypomastigotes* in whole blood, even with low parasite loads. A limitation in our case is the unavailability of cerebrospinal fluid (CSF) testing to confirm the meningoencephalitic phase. Even so, the stage was defined by the initial predominantly neurological symptoms. Clinical manifestations and antibody diagnosis were considered for the early use of *anti-Trypanosoma* drugs for the proposed phase.

However, the 2019 WHO guidelines,[9] include fexinidazole, due to its safety and efficacy profile, since its approval by the European Medicines Agency (EMA).[14,15,16] These were provisional recommendations until new information became available during the publication of ongoing studies on this drug. It proposed NECT therapy before fexinidazole in severe cases.

In our scheme, NECT therapy was used for a pediatric patient with severe symptoms, over 6 years of age, weighing more than 20 kg. The scheme was approved and has a safety and efficacy profile similar to that of fexinidazole, acquired through WHO cooperation mechanisms for countries in the region, with guaranteed availability for the dose and period of use. The satisfactory progress in the first 48 hours, with neurological improvement, indicates timely diagnosis and appropriate treatment[10] for this case.

CONCLUSIONS

Human African trypanosomiasis is a clinical challenge in endemic regions where international medical cooperation is underway. The coexistence of other infectious diseases with similar clinical manifestations, as well as partial immunity acquired by the local population, can contribute to delays in diagnosis if a rigorous and contextualized clinical-epidemiological evaluation is not performed. A thorough understanding of the disease, coupled with timely identification, is crucial for the implementation of specific therapies that improve prognosis and reduce morbidity and mortality associated with *Trypanosoma brucei gambiense*. This highlights the need for ongoing training of medical personnel in tropical diseases and the strengthening of diagnostic capabilities in global health settings.

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CONSENT

The patient's consent was obtained for the performance of this work.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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