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RESEARCH LETTER

INFECTIOUS AND PARASITIC DISEASES IN INTERNATIONALLY ADOPTED CHILDREN

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ABSTRACT

Introduction: This study aimed to determine the prevalence of infectious and parasitic diseases in internationally adopted children in Spain and to detect differences based on their geographical area of origin.

Methods: Retrospective cohort study on 516 internationally adopted children (mean age, 3.4 years; female, 57.6%; special needs, 16%). Geographically, 65.9% came from Eastern Europe, 24.8% from Asia, 6.2% from Latin America and 3.1% from Africa. Screening for infectious and parasitic diseases was performed according to the agreed national protocol.

Conclusion: Infectious and parasitic diseases were diagnosed in 14.92% of children and 1.94% of them had two diseases. The most prevalent were intestinal parasitosis (highlighting Giardia lamblia in all geographic areas), skin infections, scabies and Mycobacterium tuberculosis infection (mainly in Eastern Europe and Asia). The findings of this study were consistent with those of neighboring European countries, although the infection rates were lower.

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Infectious disease, Parasitic disease, Child, International adoption.

Introduction

Spain is one of the leading countries in the world for international adoption of children.[1] Children adopted from abroad have a higher risk and susceptibility of developing and carrying infectious and parasitic diseases, acute or chronic, due to poor preventive healthcare, unsanitary conditions and the presence of endemic diseases in their countries of origin.[2,3] This study aimed to determine the prevalence of infectious and parasitic diseases in internationally adopted children in Spain and to detect differences based on the geographical area of origin.

Methodology

A retrospective review was conducted of the records of 516 children adopted internationally in Spain between 2000 and 2022 who were evaluated in a specialized reference center. During the first two weeks after adoption, in the context of a comprehensive clinical examination, screening for infectious and parasitic diseases was carried out according to the protocol agreed upon by a national group of professionals specialized in pediatrics, international adoption and infectious and tropical diseases.[4] All internationally adopted children were tested for stool parasites (3 samples), human immunodeficiency virus serology (anti-HIV 1 and 2), hepatitis B virus serology (HBsAg, anti-HBs, anti-HBc total IgG), hepatitis C virus serology (anti-HCV), syphilis serology (RPR and/or VDRL) and tuberculin test (Mantoux technique with 0.1 ml 2 TU ppd RT-23). Additional tests were performed based on the patient's medical history, country of origin, presence of clinical signs or symptoms and the results of the initial clinical and analytical exam. These tests included bacterial cultures (stool, urine, lesions), investigation of viruses (hepatitis A, cytomegalovirus, rubella, etc.), serology of enteroparasites (strongyloidiasis, etc.) and serology of other parasitic zoonoses (toxoplasmosis, schistosomiasis, toxocariasis, gnasthostomiasis, trypanosomiasis, malaria, etc.). The original document contains explanatory notes and observations about the screening tests.[4] The procedures used in the patients were carried out after obtaining the informed consent of the legal guardian. The data were used under Organic Law 3/2018 on the Protection of Personal Data and Guarantee of Digital Rights in force in Spain.

Results

The mean age at the time of the study for the 516 internationally adopted children was 3.4 years with a standard deviation of 2 years. 57.6% were female and 16% had special needs. Geographically, 65.9% came from Eastern Europe, 24.8% from Asia, 6.2% from Latin America and 3.1% from Africa. Table 1 shows the prevalence of infectious and parasitic diseases in all internationally adopted children and the groups based on the geographic areas of origin. The countries of origin are listed at the bottom of the table. Infectious and parasitic diseases were diagnosed in 77 (14.92%) internationally adopted children and 10 (1.94%) of them were diagnosed with two diseases. The most prevalent disease was intestinal parasitosis, highlighting the protozoan Giardia lamblia in all geographic areas of origin. Bacterial infections (Mycobacterium tuberculosis infection and skin infections caused by Staphylococcus aureus) and ectoparasitosis (scabies) followed in frequency. Mycobacterium tuberculosis infection was more common in those

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Table 1. Prevalence of infectious and parasitic diseases in internationally adopted children in Spain.

	Total n = 516		Eastern Europe [a] n = 340		Asia [b] n = 128		Latin America [c] n = 32		Africa [d] n = 16	
	n	%	n	%	n	%	n	%	n	%
Viral infections										
Human immunodeficiency virus - 1	1	0.19			1	0.78				
Hepatitis B virus	2	0.38			2	1.56				
Varicella-zoster virus	2	0.38	1	0.29	1	0.78				
Molluscum contagiosum virus	4	0.77	2	0.59	2	1.56				
Bacterial infections										
Latent tuberculosis	7	1.36	6	1.76	1	0.78				
Active pulmonary tuberculosis	3	0.58			3	2.34				
Gastroenteritis (*Campylobacter jejuni*)	1	0.19							1	6.25
Urinary tract (*Escherichia coli*)	1	0.19			1	0.78				
Pyodermitis (*Staphylococcus aureus*)	7	1.36	6	1.76	1	0.78				
Fungal infections										
Tinea pedis (*Trichophyton rubrum*)	1	0.19	1	0.29						
Enteroparasitic infections										
Giardia lamblia	30	5.81	18	5.29	7	5.47	3	9.38	2	12.50
Bastocystis hominis	7	1.36	7	2.06						
Ascaris lumbricoides	3	0.58	2	0.59	1	0.78				
Enterobious vermicularis	3	0.58	1	0.29	2	1.56				
Taenia solium	1	0.19	1	0.29						
Ectoparasitic infections										
Scabies	9	1.74	8	2.35	1	0.78				
Pediculosis	3	0.58			3	2.34				
Tissue parasitic infections										
Gnathostomiasis	1	0.19			1	0.78				
Congenital toxoplasmosis	1	0.19					1	3.13		

[a] Russia, 295; Ukraine, 29; Kazakhstan, 11; Romania, 2; Hungary, 2; Bulgaria, 1.
[b] China, 76; India, 24; Vietnam, 13; Nepal, 11; Philippines, 4.
[c] Colombia, 19; Bolivia, 8; Uruguay, 2; Brazil, 2; Ecuador, 1.
[d] Ethiopia, 16.

originating from Asia and Eastern Europe. Skin infections caused by Staphylococcus aureus and scabies were more common in those originating from Eastern Europe. The prevalence of infection by human immunodeficiency virus, hepatitis B virus and other parasitic zoonoses was low, mainly affecting those from Asia.

Discussion

The most prevalent infectious and parasitic diseases found in the cohort of internationally adopted children in Spain were similar to those found in studies conducted in other European countries around us (France[5,6,7,8], Italy[9,10]). However, the infection rates differ. Our study found lower rates of intestinal parasitosis, skin diseases, tuberculosis infections and hepatitis B virus infection among children. Several factors may justify these differences. The main factor is that each receiving country deals with heterogeneous groups of internationally adopted children in terms of country of origin, age and special needs, which can affect the prevalence of certain infectious and parasitic diseases. Furthermore, these characteristics change constantly depending on the new policies adopted in the countries of origin and the incidence of infectious and parasitic diseases in that specific period. For these reasons, the frequency of infectious and parasitic diseases among internationally adopted children is not easy to measure.[3] In our study, the cohort of internationally adopted children was characterized by a mean age of 3.4 years, 16% had special needs (mostly neurological disorders, musculoskeletal deformities, eye disorders and heart diseases) and a low percentage of those originating from Latin America (6.2%) and Africa (3.1%), geographical areas with a high prevalence of endemic diseases. In contrast, studies conducted in Italy[9,10] showed that the

mean age of the adopted children was 2 years older and the percentage of children from Latin America and Africa was 4 times higher. Similarly, studies conducted in France[5,6,7,8] had a similar mean age, but the percentage of children from Latin America and Africa was 8 times higher. In one of the studies[7], the percentage of children with special needs was 3 times higher. Another factor may be the protocol used to screen for infectious and parasitic diseases in internationally adopted children. In a study conducted by Chiappini et al.[11], the screening protocols used in Spain, Italy and France were compared, revealing various approaches and some discrepancies. The researchers also observed that different studies conducted in the same country used different screening protocols, demonstrating that approaches are also heterogeneous at the national level.[9] It is possible that the timing of screening for infectious and parasitic diseases in internationally adopted children could be another factor. Some studies have shown that screening took place months after adoption[5,6], while others do not provide any information. Therefore, it is essential to establish a homogeneous and internationally shared standard of care for studying children adopted from abroad. We want to highlight that in over 50% of our cases, we conducted a telematic assessment of the adoptable child and reviewed their medical reports, providing tailored guidance to families before and throughout the adoption process. This guidance may have played a role in reducing the rate of infections in the adopted child. Regarding the response to the treatment of infectious and parasitic diseases of the cohort of children adopted internationally in Spain, no resistance to the usual drugs used against Giardia lamblia, Staphylococcus aureus, Mycobacterium tuberculosis and human immunodeficiency virus-1 was observed. The estimated transmission rate of infectious and parasitic diseases from internationally adopted children to their adoptive families and close contacts is between 9-12%.[2,5] To minimize the risk of transmission, families should receive specific advice on immunizations, hygiene and safety before, during and after adoption. Additionally, early diagnosis and treatment should be provided to internationally adopted children to prevent the spread of diseases.

Conclusion

The most prevalent infectious and parasitic diseases found in the cohort of internationally adopted children in Spain were similar to those observed in studies conducted in other European countries in our environment. However, the infection rates in Spain were lower, mainly due to the heterogeneity of the children in terms of their country of origin, age and special needs.

Compliance with Ethical Standards
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