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SURVIVAL ON VERTICALLY INFECTED CHILDREN AND ADOLESCENTS BY HIV AND FACTORS ASSOCIATED WITH DEATH

SOBREVIDA EM CRIANÇAS E ADOLESCENTES INFECTADOS VIA VERTICAL PELO HIV E FATORES ASSOCIADOS AO ÓBITO

SOBREVIVENCIA EN NIÑOS Y ADOLESCENTES INFECTADOS VIA VERTICAL POR EL VIH Y FACTORES ASOCIADOS AL ÓBITO

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ABSTRACT

Objective: to analyze survival time and factors associated with death in HIV-infected children and adolescents. ***Method***: this is a quantitative, observational, longitudinal study using records from the STD/HIV/AIDS Reference Center. Sixty-three clinical records of individuals between 0 and 24 years old were reviewed and a survival analysis with a log-rank test and Cox proportional risk regression were used to estimate the risk factors for death. ***Results***: multivariate analyses showed significance for chronological age, as protection factor (RR: 0.88; 95% CI: 0.78-0.98); non-oral opportunistic infection as a risk factor (RR: 4.3; 95% CI: 1.51-12.1). The mean survival time was 8.8 years; being 10.6 years, after antiretroviral use and 6 years, without using it. ***Conclusion***: there was an increase in survival, with the use of ART by the majority, clinical-laboratory control, and opportunistic infections, possibly influencing this result and the predominance of AIDS-related deaths. ***Descriptors***: HIV; Survival; Associated factors; Vertical Transmission.

RESUMO

Objetivo: analisar o tempo de sobrevida e fatores associados ao óbito em crianças e jovens infectados via vertical pelo HIV. ***Método***: estudo quantitativo, observacional, longitudinal, utilizando registros do Centro de Referência DST/HIV/SIDA. Foram revisados 63 prontuários clínicos de indivíduos entre 0 e 24 anos e utilizada análise de sobrevivência com teste log-rank e regressão de riscos proporcionais de Cox para estimativa ajustada dos fatores de risco para óbito. ***Resultados***: análises multivariadas mostraram significância para idade cronológica como fator de proteção (HR: 0,88; IC 95%: 0,78-0,98) e infecção oportunista não oral como fator de risco (HR:4,3; IC 95%: 1,51-12,1). O tempo médio da sobrevida foi 8,8 anos, sendo 10,6 anos, após uso de antirretroviral, e 6 anos, sem uso. ***Conclusão***: houve aumento da sobrevida, com uso de TARV pela maioria, controle clínico-laboratorial e infecções oportunistas, possivelmente influenciando este resultado e predomínio de óbitos relacionados à AIDS. ***Descritores***: HIV; Sobrevida; Fatores Associados; Transmissão Vertical.

RESUMEN

Objetivo: analizar tiempo de sobrevivencia y factores asociados al óbito en niños y jovenes infectados via vertical por el VIH. ***Método***: estudio cuantitativo, observacional, longitudinal, utilizando registros del Centro de Referencia DST/HIV/SIDA. Fueron revisados 63 prontuarios clínicos de individuos entre 0 a 24 años y fue utilizado el análisis de sobrevivencia con teste log-rank y regresión de riesgos proporcionales de Cox, para estimativa ajustada de los factores de riesgo para óbito. ***Resultados***: análisis multivariados mostraron significancia para edad cronológica, como factor de protección (HR: 0,88; IC 95%: 0,78-0,98); infección oportunista no oral, como factor de riesgo (HR:4,3; IC 95%: 1,51-12,1). El tiempo medio de sobrevivência fue 8,8 años; siendo 10,6 años, después con uso de antirretroviral y 6 años sin uso. ***Conclusión***: hubo aumento de la sobrevivencia, con uso de TARV por la mayoría, control clínico-laboratorial e infecciones oportunistas, posiblemente influyendo este resultado y predominio de óbitos relacionados al Sida. ***Descriptores***: VIH; Supervivencia; Factores Asociados; Transmisión Vertical.

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INTRODUCTION

The HIV infection spread had its epidemiological pattern modified, with a predominance of heterosexual transmission and, consequently, an increase in cases in women. This reality has interfered in the prevalence of vertical transmission and, consequently, in the increase of vertical HIV infection rates.[1] National data indicate that about 92.8% of cases of pediatric AIDS is due to vertical transmission[2], with 65% occurring during labor and the remaining 35% occurring during pregnancy, especially in recent weeks.[1]

According to official data from the Ministry of Health in the period between 1980 and 2014 in Brazil, children under 13 who were predominantly infected via vertical transmission were 13,881 cases (92.8%), while, sexually or blood infections were 1085 cases (7.4%). Among those over 13 years old, vertical infection totaled 655 cases, in the male (0.2%) and 547 cases (0.3%) in the female.[2] Of a total of 1.49 million children born of seropositive mothers, 42% (38-48%) received antiretroviral therapy to prevent vertical transmission. The overall goal is to reduce the number of infected children by 90% and vertical transmission to less than 5 %.[3]

Regarding the prevention of vertical transmission, the study "Protocol 076" AIDS Clinical Trial Group (ACTG-076) conducted in the USA and France in 1994 with HIV positive pregnant women, confirmed that, without any intervention, the rate of vertical transmission is around 20%. However, this rate may be reduced by 67.5% when the pregnant woman uses zidovudine (AZT) from the 14th week of gestation, at the time of delivery, just as the child also receives antiretroviral therapy by the 6th week of life.[4] Brazil stands out for its sustained policy of combating the epidemic, especially in children, including universal access to ART and infant formula. Regardless of the level of development, as well as other countries, Brazil has demonstrated general improvements in the lives of HIV-positive people, even in the face of chronic diseases associated with HIV.[5]

According to studies, since the introduction of combined antiretroviral therapy regimens (ART), there has been an increase in the life expectancy of HIV-infected children.[6] Besides to using antiretroviral therapy, other factors are responsible for the continued increase in survival, such as access extended to the early diagnosis and control of opportunistic infections. At the national level, despite the increase in the number of HIV-infected women in the last 10 years and the presence of pregnancy in this people, a reduction in infected children was observed.[7]

Regarding the influence of ART, in the evaluation of the epidemic among children, studies indicate that the defining conditions of AIDS are strongly associated with the death of children infected by perinatal transmission, before the advent of antiretroviral therapy.[8] After the introduction of the protease inhibitor (PI), the incidence of opportunistic infections has decreased significantly in HIV-infected and ART-infected children, and also reducing AIDS-related deaths in several countries, including Brazil.[9]

Although research show that seropositive children have higher mortality rates, possibly because of the increased prevalence of severe comorbidities, such as pulmonary tuberculosis, bacteremia and diarrheal diseases, advances in care for these children, such as early identification of HIV, together with introduction of antiretroviral therapy, at the opportune moment, has caused the reduction of morbidity and mortality in this group.[10,11]

Despite the importance of the theme for the actual confrontation of the epidemic, studies focused on the analysis of vertical transmission and causes of mortality and survival in HIV-infected individuals remain scarce in our country. These surveys are strategic for health policy planning and the organization of specialized services to care for infected people, improving the effectiveness of the national program.

This study aimed to analyze survival time and factors associated with death in HIV-infected children and adolescents.

METHOD

This is a quantitative, observational, longitudinal study with children, adolescents and young adults of both genders, in the age groups between 0 and 24 years old, seropositive for HIV, infected by vertical transmission. Those who evolved to death and in follow-up in the Specialized Attention Service (SAE) of the Municipal Reference Center (CRM) STD/HIV/AIDS of Feira de Santana-BA in the period of January 10, 2003, to December 31, 2014, were included. To date, including cases that evolved to death, 118 subjects were in regular follow-up at the SAE (consultations every three months), from 0 to 24 years old, 38 children (<13 years), 32 adolescents (13-19 years) and 48 young adults (20-24 years old); 63 of them were infected by vertical transmission, accounting for 37 children, 21 adolescents, and five young

adults. The evolution to death occurred in 18 cases, with ten children, four adolescents, and four young adults.

The municipality of Feira de Santana is the second most populous city in the state of Bahia and it houses the headquarters of the 2nd Regional Health Directorate and the health micro-region pole. In this region, it stands out the CRM DST/HIV/AIDS, which attends the general population of the municipality, by demand referenced of the Units, Centers, and Hospitals of the SUS Network or by spontaneous demand. In SAE, HIV seropositive individuals of all age groups are enrolled regardless of disease progression time and/or previous treatment in other services and municipalities in the semi-arid region of the State.

The data were collected in a specific form according to the study objectives: SAE records, admission records, and clinical records were used, whose study variables were: age group, gender; naive opportunistic infection, oral candidiasis, first count of CD4 cells in the service (0-350 cells/mm^3,> 350 cells/mm^3), first viral load in the service (below 100,000 copies/ml, above 100,000 copies/ml) and the situation of the case (in follow-up, death due to AIDS, death due to other causes).

Statistical analysis was performed in stages: a) Calculation of the simple and absolute frequencies; b) Pearson's χ^2 test, with a descriptive level of p-value, to verify the association between death and variables (sociodemographic, characteristics of the illness, clinical-laboratory data and causes of death). When indicated, Fisher's exact test was performed; c) Survival analysis, for the study period. This analysis was performed for the purpose of evaluating factors associated with death, whether due to AIDS or other diseases. Because it was a vertical transmission study, the date of HIV infection was used as the date of birth of the individual. For the calculation of survival time, considering the variables “CD4 cell count” and “viral load”, the date of the tests until the date of death was used. The date of death was defined through the review of the medical records and death notification forms. For the individuals in follow-up, the censorship date was December 31, 2014. To analyze the statistical significance, the log-rank test was used, comparing curves of the survival function by the Kaplan-Meier estimator, according to variables of the study. Finally, to investigate the role of covariates in death risk, a Cox proportional risk model was used, as well as the Schoenfeld residuals to verify the proportionality of the risks in each variable of the final model. Statistical analysis of the data was analyzed using software SPSS 20.0 and Stata 11.

This research was approved by the Research Ethics Committee of the State University of Feira de Santana under the protocol number 495.456/2013 and CAAE 23524213.7.0000.0053.

RESULTS

In the period between 2003 and 2014, there were 63 records of children, adolescents and young adults, from 0 to 24 years old, HIV positive, infected by vertical transmission reviewed. Of this population, there were 37 children, 54.1% female and 45.9% male; 21 cases of adolescent, 61.9% female and 38.1% male, and five cases of young adults, 100% male (data not shown in the Table).

In the study period, according to the clinical records of the service (Table 1), the prevalence of 0-12 years old (58.7%) and 13 to 19 years old (33.3%), 52.4% female, 71.8% brown/black was verified. Regarding the origin, 90.5% of the individuals were transferred from other services and 3.2% enrolled directly in the SAE.

The proportion of ART use in individuals ≤ 24-year-old, vertically infected, enrolled in the SAE was 71.4%. Concerning comorbidities, 82.5% of the subjects were not affected, and three (3) cases of congenital syphilis (4.6%), five (5) cases of diarrhea (7.5%) and three (3) cases of tuberculosis (4.6%).

Regarding opportunistic non-oral infections, it was verified that 65.1% were not affected. However, 85.7% had at least one episode of oral candidiasis among those who suffered some opportunistic infection.

Of the total of the study subjects, 45 (71.4%) were being followed up in the SAE, until the end of the follow-up period; 15 (23.8%) died from AIDS and three (3) (4.8%) died from other causes, one (1) (1.5%) died from pneumonia; one (1) (1.5%) from refractory hypercomplex heart disease and one (1) (1.5%) from unspecified heart disease (data not shown in the Table). Regarding the characteristics of laboratory follow-up to admission to the service, 67.2% were admitted with a CD4 count below 350 cells/mm^3 and 68.1% with a viral load below 100,000 copies/ml.

Table 1. Characterization of individuals infected by HIV/AIDS, by vertical transmission, attended at the Municipal Reference Center STD/HIV/AIDS, Feira de Santana, Bahia, 2003-2014.

Characteristics	N=63	%
Age group		
0-12 years old	37	58.7
13-19 years old	21	33.3
20-24 years old	5	7.9
Gender		
Female	33	52.4
Male	30	47.6
Origin[1]		
SAE	2	3.2
Other health services	57	90.5
Skin color[2]		
White	11	28.2
Black/brown	28	71.8
Use of ART		
Yes	45	71.4
No	18	28.6
Comorbidities		
Yes	11	17.5
No	52	82.5
Non-oral opportunistic infection		
Yes	22	34.9
No	41	65.1
Oral candidiasis		
Yes	54	85.7
No	9	14.3
Situation of the case		
Alive	45	71.4
Dead by Aids	15	23.8
Dead due to other causes	3	4.8
First CD4 on service[3]		
0-350 cells/mm^3	41	67.2
>350 cells/mm^3	20	32.8
First viral load on service[4]		
< 100.000 copies/ml	42	68.9
≥ 100.000 copies/ml	19	31.1

Note: unknown data: (1) 4; (2) 24; (3) 2; (4) 2

Table 2 shows a bivariate analysis of risk factors for death, whose data are related to the characteristics of illness and clinical-laboratory data, among those who died. The variables that showed statistical significance were “age group” (p=0.02), with 55.6% of deaths concentrated between 0-12 years old, “non-oral opportunistic infection” (p=0.00), where 61.1% had at least one episode; “Oral candidiasis” (p=0.00), with 50.0% presenting at least one episode; “CD4 cell count” (p=0.00), 66.7% showed CD4 lower than 350 cells/mm^3. The differences found for the other variables were not statistically significant.

Table 2. Death distribution according to characteristics of illness, antiretroviral prophylaxis, clinical-laboratory data of HIV/AIDS infected individuals by vertical transmission, attended at the STD/HIV/AIDS Municipal Reference Center, Feira de Santana-BA, 2003-2014.

Characteristics	Death				
	Yes	%	No	%	p-value*
Age group					
0-12 years old	10	55.6	27	60,0	0.02*
13-19 years old	4	22.2	17	37,8	
20-24 years old	4	22.2	1	2,2	
Gender					
Female	7	38.9	26	57,8	0.17
Male	11	61.1	19	42,2	
Origin					
SAE	2	12.5	0	0,0	0.07
Other services	14	87.5	43	100,0	
Skin color					
White	1	16.7	10	30,3	0.49
Black/brown	5	83.3	23	69,7	
Use of ART					
Yes	13	72.2	32	71,1	0.93
No	5	27.8	13	28,9	
Comorbidities					
Yes	3	16.7	8	17,8	0.92
No	15	83.3	37	82,2	
Non-oral opportunistic infection					
Yes	11	61.1	11	24,4	0.00*
No	7	38.9	34	75,6	
Oral candidiasis					
Yes	9	50.0	45	100,0	0.00**
No	9	50.0	0	0,0	
First CD4					
0-350 cells/mm^3	6	66.7	3	33,3	0.00*
≥ 350 cells/mm^3	6	13.3	39	86,7	
First viral load					
<100000 copies/ml	4	14.3	24	85,7	0.35
≥100000 copies/ml	5	25.0	15	75,0	

(*)p-value <0.05 was considered statistically significant: X^2 Pearson test
(**)p-value <0.05 was considered statistically significant: Fisher´s exact test

In the multivariate analysis (Table 3), the statistically significant variables were: “age” (>13 years old), which presented as a protection factor (RR: 0.58; 95% CI: 0.49-0.68); “non-oral opportunistic infection”, which was shown to be a risk factor for death (RR: 1.82, 95% CI 1.03-3.20).

Table 3. Risk Ratio (RR) and the respective 95% confidence intervals (CI) for predictors of progression to death (N= 63).

Variables	RR	IC (95%)	Valor p
Gender	1,19	0,68 – 2,04	0,53
Age	0,58	0,49 – 0,68	0,00
Use of ART	0,82	0,45 – 1,51	0,53
Non-oral opportunistic infection	1,82	1,03 – 3,20	0,03

Survival analysis demonstrated a probability for a reduction in survival time only in subjects who were enrolled in the service with a CD4 cell count below 350 cells/mm^3 (p=0.00) (Figure 1).

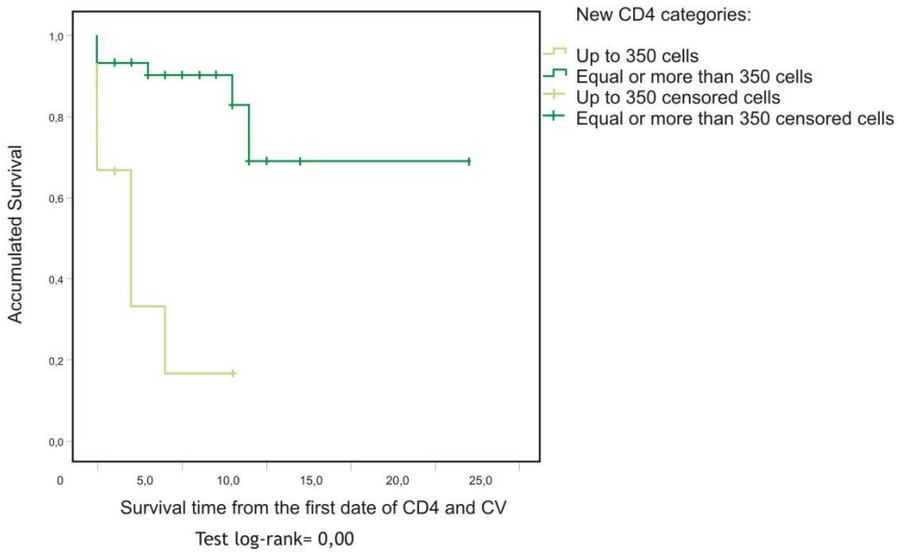

Figure 1. Survival curve, in years, according to the first CD4 examination.

The median overall survival time was 8.8 years, and patients on ART had a longer survival (10.6 years) than those who did not use antiretrovirals (6.0 years) (data not shown in Table).

The proportion of deaths was 28.5%. However, the mortality rate among those who used ART was 3.2/100 person-years, and 3.4/100 person-years, for those who did not use this therapy (data not shown in the Table).

DISCUSSION

The continental dimension of Brazil and the heterosexualization of HIV/AIDS infection are important determinants of vertical transmission of the virus. This way of transmission deserves particular attention, both due to its epidemiological relevance and its impact on the lives of children, who survive adolescence and sometimes adulthood. Vertical transmission involving children, adolescents, and young people requires an expanded view of the problem, considering that the forms of virus contamination interfere with the pathogenesis and evolution of the disease.

The age group determined for this study evidences an increase of the survival time that, according to studies, it has been especially attributed to the improvement of the diagnostic and therapeutic means. It is worth noting that HIV-infected individuals who survive vertically until adolescence and youth require special care from the Health System, with psychosocial attention directed to the reality of coexistence with a chronic disease. Among the mechanisms for the spread of AIDS, the individual's behavior plays a determining role, demanding responsibility for interpersonal exchanges, an important social challenge, especially the group of adolescents and young people whose level of social and emotional maturity are developing, experiencing multiple loving and friendly experiences, among other peculiarities of this stage of development.

In this study, 41.3% (26 cases) of adolescents and young adults were infected with HIV, vertically, 33.3% of whom were adolescents. This finding corroborates with other research that point to the increase in the rates of seropositive children that survive until the stages of adolescence and youth. A study conducted in the United States with HIV-infected patients, aged 12 to 24 years old, verified a 44.8% vertical contamination.[12] A Brazilian study of the Center for Training and Reference in Infectious Diseases (CTR-DIP) in Belo Horizonte/MG), found that, among positive cases in the 0-24 age group, 89.1% was due to vertical transmission.[6]

According to research, the epidemic's inclination toward heterosexualization and feminization has contributed to increased cases of HIV infection among women and pregnant women and vertical transmission. Studies have shown that, since 1992, this tendency has been increasing, reflecting female vulnerability, in relation to the prevention of STIs/AIDS.[5] On the other hand, concomitant with this reality, the group of infected people vertically enters adolescence with the vulnerabilities inherent to this stage of development that, together with psychosocial needs, constituting a special

group for professional, family, therapeutic and psychological support. This face of the epidemic constitutes a paradigm for public health, considering the epidemic potential of HIV infection, requiring investments in the strategies of approaches to young people, regarding habits, behaviors and safe sexual practices.[13,14]

In this study, in the childhood and adolescence, a higher proportion of seropositivity was found in the female. Studies conducted in other Brazilian contexts have found similar proportions of contamination for both genders.[5,9]

Regarding the skin color, in Feira de Santana, most of those infected vertically, in the range up to 24 years old was black (71.8%), although in Rio de Janeiro 22.2% of brown and 13.3% of blacks among adolescents infected with HIV.[15] It should be noted that, in the state of Bahia, most of the population is brown and black, with a large African racial miscegenation and descendants.[16] It is noteworthy that scholars point to a trend of displacement of the AIDS epidemic towards the excluded population (social/cultural), with racial inequality being a point of vulnerability for Afro-descendants, with a greater participation of the black population in HIV contamination rates .[17]

Adopting regular monitoring in the service as a criterion for inclusion of research analysis is a fundamental strategy to guarantee the quality of the data generated, which was guaranteed in the present study, analyzing clinical-laboratory conditions and the use of antiretroviral therapy. This criterion did not imply a sample loss, since all the individuals in the age group were interviewed and examined on a quarterly basis, supposedly because they were accompanied by the parents or guardians. It should be pointed out that the individual in this age group who was missing the consultation/examination has his/her phone contact contacted by the SAE team, seeking to control the efficiency of the service in the cost-benefit items.

The results of the present study verified that the majority (71.4%) of the seropositive individuals used antiretroviral therapy (ART), on average for five (5) years, ranging from 0 to 19 years, which corroborates with research carried out in other countries and regions of Brazil. A study carried out in Cambodia found that 51.5% of the infected children used this drug technology for at least 36 months18; in Brazil, research in Santa Maria (RS) showed that 97.9% of the children infected by vertical transmission were infected with ART[21], as well as among 84.4% of the infected adolescents. Most (66.7%) were by transmission vertical.[15]

The importance of assessing the survival time of the HIV/AIDS infected population in all age groups is the production of information aimed at diagnosis, prognosis, and prevention, which supports the collection of essential indicators for the assistance and implementation of policies and programs to prevent and control infection.

With regard to overall survival, in this study, it was observed an increase in the average time of this indicator among those who used ART. This result corroborates with Brazilian studies and in other countries. In Belo Horizonte, a study showed that the mean survival time of the ART and non-HAART groups was 55.9 and 31.5 months, respectively (p <0.0001) .6 At the national level, a study showed that the probability of survival up to 60 months increased over the years: 60.5% for cases diagnosed between 1997 and 1998 and 86.3% for cases diagnosed between 1999 and 2002[5]. Concurring with findings from Brazilian studies, studies performed in underdeveloped countries of regions of sub-Saharan Africa show similar results, which point to increased survival among HIV/AIDS-infected individuals.[20]

In this study, the significant association between death and age and increased risk for this outcome among children younger than 13 years old, agrees with multicenter American research - PACTS / USA, where 81% of deaths from HIV infection occurred in children under three years, showing a concentration of cases of fatal evolution in the smallest age groups, despite the evident improvement in survival with antiretroviral therapy. The high mortality among younger people may be due to the lack of control and treatment in gestation and perinatal stage, as well as the possibility of late insertion in STD/HIV/AIDS reference services, with delay in the introduction of prophylaxis and antiretroviral treatment, increasing thus the possibility of clinical complications, low immunity and, consequently, less chance of survival. Feira de Santana findings did not show any difference in survival between studied age groups at the beginning of ART therapy.[21]

Considering the significant association between opportunistic infections and evolution to death, verified in the present research, it is worth mentioning that, according to the consensus of scholars, these infections are usually recurrent among HIV infected[19] and are potential risk factors, compromising the survival time. Feira de Santana findings agree with a survey carried

out in Minas Gerais, which showed a risk of death 5.4 times higher among HIV positive individuals, where among those who died (12.1%), 94.1% of the cases were attributed to these infections.[9]

Feira de Santana findings corroborate a survey carried out in São Paulo with children and adolescents aged 0 to 12 years who were vertically infected with HIV, where the survival time was observed to be longer, in the absence of a specific opportunistic infection (candidiasis), especially in those using ART.[22] Researchers point to this infection as an important risk factor for death, even before the fall in CD422 levels, and may manifest itself with functional alterations of the skin and mucosa[23].

In the context of HIV infection, in this study, CD4 cell counts lower than 350 cells/mm3 presented a significant risk factor for death and reduced survival time. The importance of this indicator as an important clinical parameter for monitoring the risk of opportunistic infections is consensual.[24]

The data from Feira de Santana confirm raids conducted in other regions of the country regarding the interference of CD4 counts and viral load, to increase the survival time. A study carried out in Belo Horizonte with children and adolescents infected by vertical transmission found that a high viral load (above 5 log10) and a reduced CD4 cell count (below 15%) presented a risk for a fatal outcome.[8] However, these surveys in Brazilian territory differ from research conducted with children infected vertically in European countries between 1996 and 2004, whose results did not observe a significant association between CD4 + T lymphocyte count and evolution at death.[25]

The overall mortality rate (29.7%) was high, among the individuals who were infected vertically, who were part of this study, in the SAE of Feira de Santana, corroborating data from research conducted with HIV-infected children in mainland countries African countries, whose rates varied between 12 and 39%. According to research, the high rates of vertical HIV infection are influenced by the socioeconomic level, the mother's infection status, and the child's clinical and laboratory situation.[26]

In this study, there was no significant difference in the overall mortality rate among those who used and did not use ART. However, the survival time of those who used this therapeutic resource was higher (10.6 years), compared to those who did not use it (6 years). A study conducted at the Center for Training and Reference in Infectious Diseases (CTR-DIP) in Belo Horizonte, MG, Brazil, which presented a global mortality rate of 9.7%, followed up for 18 years, showed that antiretroviral therapy influences mortality rates, where the non-ART group presented a mortality rate of 5.1/100 person-years and the HAART group of 0.8 / 100 person-years.[6]

Regarding the cause of death, the Feira de Santana study presented results similar to other studies conducted in Brazil, with a predominance of deaths caused by AIDS and related diseases. In Minas Gerais, a study with children and adolescents infected by vertical transmission revealed that among the causes of death (77.4%), all of them were related to AIDS.[6] Other research in the same region pointed to opportunistic disease as an important cause of death, 94.1% responsible for deaths of known causes.[9]

In spite of the fact that some researchers point out that opportunistic infections present a tendency to relapse, due to the compromised immune system[19], in the present study, 65.1% of the individuals were not affected by opportunistic infection at that time, although 90% at least one episode of candidiasis. These results confirm a study carried out at the University Hospital of Santa Maria (RS) with children infected with HIV 19 that indicated 56.5% of the individuals not affected by opportunistic infections during the period of the research. A study carried out at a Pediatric Hospital in Mozambique identified 13.3% of oral lesions, and the most frequent angular cheilitis type of candidiasis[27]; similarly, a survey conducted in the state of Chihuahua, Mexico, showed that 51.7% of HIV-infected children had a positive culture for Candida sp[28]. The findings of this study disagree with a study carried out in the Southern Brazil Service of Reference, which observed an episode of non-oral opportunistic infection, such as pneumonia and cytomegalovirus infection, among 60% of adolescents infected with HIV.[15]

Regarding the limitations of this research, those inherent to the studies using the retrospective method stand out. The absence of some records, or the partial lack of data, compromised the acquisition of some information, limiting the analysis of these items. To minimize these possibilities, the data collection was done in a specific form, standardized, according to research objectives, with a review of the data collected, using as an additional resource the active search of these items in the registration books of the users enrolled in the service. The external validity cannot be considered, since the sample was selected in

health service that, even being Reference Center does not represent the general population, Therefore, the results refer to the study population. The present findings, based on the survey of indicators of the studied population, can be used to verify the effectiveness of measures adopted, and serve as subsidies to improve the dynamics of the Services.

CONCLUSION

The results of this investigation reinforce the enrollment of HIV-infected children in adolescence, pointing to an improvement in the survival of this people, as a reality and challenge to be faced and monitored by the Health System, with its Policies and Programs.

The risk factors for evolution at death analyzed in this study are in agreement with the literature. The finding of the majority of individuals using antiretroviral therapy suggests that this input has been made available locally and regionally, causing a positive impact on the clinical and laboratory profiles of HIV-infected children and adolescents and, consequently, on survival time and evolution of these cases. However, it is recognized the importance of studies that evaluate adherence to treatment, as well as possible side effects, arising from the use of these drugs by adolescents and young people, in the medium and long-term.

The study presented the profile of the causes of death similar to the findings of other studies conducted in different regions of the country. Most deaths, resulting in AIDS deaths, reveal that the benefits of antiretroviral therapy have not yet been sufficient for more expressive changes in this pattern. On the other hand, the evaluation of the mortality pattern requires considering multiple factors, such as access to health service, time elapsed for diagnosis, time of ART, presence of other concomitant pathologies, adherence to treatment, socioeconomic condition, besides social and psychological support offered to patients and their families through the services - Reference Center, Basic Health Units and Hospitals.

The results of this research were sent to the STD/HIV/AIDS Municipal Referral Service, aiming to contribute to subsidize strategies in the care, flow and service organization, as well as in the policies for implementing health surveillance actions and HIV vertical transmission control increases the early intake of pregnant women and the use of antiretroviral therapy for mother and child.

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