CLINICAL CHARACTERISTICS AND MATERNAL AND INFANT MORBIMORTALITY AMONG PREGNANT WOMEN INFECTED BY THE HUMAN IMMUNODEFICIENCY VIRUS ATTENDED IN THE PROVINCIAL HOSPITAL OF TETE, MOZAMBIQUE

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Introduction

Calculated figures state that 36.9 [34.3-41.4] million people were infected by the **human immunodeficiency virus (HIV)** in 2014 all over the world, and that 34 million people had died because of **acquired immunodeficiency syndrome (AIDS)** up to that moment, what makes this one of the major **public health** concerns in our days[1].

Most of the people infected by HIV live in low and medium income countries[1]. **Mozambique**, with a population of 27,978,000 inhabitants (data for 2015)[2], is one the most affected countries, with a prevalence of 11.5 % in adults of between 15 and 49 years, according to the most recent figures published by the World Health Organization (WHO). This situates the country in the 8th place of the world ranking[3], only surpassed by other countries of the some region. Moreover, the national survey "INSIDA 2009" of the Ministry of Health of the Republic of Mozambique detected that heterosexual contact accounts for around nine out of ten infections[4] and described a **feminisation of the epidemic**, with an overall prevalence of 13.1 % among women compared to 9.2 % among men, what means they are in higher risk.

Besides, women of reproductive age in sub-Saharan Africa are in higher threat of dying from the **direct complications of pregnancy**[5]. Clinicians practicing in such settings have reported a high incidence of direct obstetric complications among HIV-infected women, but the evidence supporting this is unclear[6]. Calvert *et al* found in their recent meta-analysis a statistically significant association between **puerperal sepsis** and HIV infection, but no significance was found for **obstetric haemorrhage**, **hypertensive disorders of pregnancy** or **dystocia**[6], which were some of the main causes of maternal deaths in Africa between 1997 and 2002, as Khan *et al* published in The Lancet[7]. The relation between the HIV infection under treatment and the development of **preeclampsia** is particularly controversial[8, 9, 10]. Preeclampsia is an hypertensive disorder of pregnancy defined as the finding of arterial hypertension and proteinuria after the 20th week of gestation.

Methods

Data about **socio-demographic**, **clinical** and **laboratory variables** will be gathered in a **questionnaire** during the first 24 hours of postpartum in order to develop a **cross-sectional study** among **women giving labour** at the **Provincial Hospital of Tete** (target population) between **August** and **October 2016** (sample), after being informed about the aims of the study and excluding those who do not want to participate.

Tete is an interior province of the north of Mozambique with a surface of 98.417 m^2 and population of about 1,783,767 inhabitants, according to data of 2007[11]. Its capital, the homonymous city of Tete has, however, a census of 155,909 inhabitants[11], so most of the people of the province live in rural areas. The **Provincial Hospital of Tete** is the main reference sanitary institution for all these people, supported by three rural hospitals and 115 health care centres[12].

Moving to field will be possible thanks to a **grant aid for International Volunteering** given by the **University Centre for International Cooperation and Development (CUCID)** of the **University of Las Palmas de Gran Canaria (ULPGC)** in the context of the academic collaboration convention existing between the ULPGC and the **University of Zambeze (UNIZAMBEZE)**, a public Mozambican institution whose School of Medicine is located in the city of Tete.

Abstract

Introduction. With a prevalence of 13.1 % among women and of 9.2 % among men, HIV/AIDS is a major public health concern in Mozambique. Besides, women of reproductive age in sub-Saharan Africa are faced the threat of dying from the direct complications of pregnancy. Clinicians practicing in such settings have reported a high incidence of direct obstetric complications among HIV-infected women, but the evidence supporting this is unclear.

Aims. 1) Description of clinical characteristics and medical, obstetric and neonatal complications among the pregnant women whose labour is attended at the Provincial Hospital of Tete. 2) Analysis of the relations between HIV and those characteristics and complications. 3) Description of the prevalence of malaria and analysis of its association with HIV.

Methods. Data about socio-demographic, clinical and laboratory variables will be acquired in a cross-sectional study among women giving labour at the Provincial Hospital of Tete between August and October 2016.

Results. The study included 470 women. 12.6 % of them presented the HIV infection, 17.8 % of whom were diagnosed before their pregnancy. 98.3 % of the infected women were asymptomatic, and 64.4 % took antiretrovirals during their gestation. 84.3 % of all the women came from urban districts, and 42 % had an inadequate antenatal care coverage. 31.5 % of pregnancies took place in adolescents, and the risk of HIV increased with age (p = 0.001, nonlinear function), the number of gestations (p > 0.001, nonlinear function) and the history of miscarriages (p = 0.010, OR 2.2 (1.2 ; 4.2)). There was no relation between HIV and malaria. 13.1 % of births were preterm, and the most frequent obstetric complication was preeclampsia (11.9 %), with a 96.4 % of severe cases. Several obstetric complications were more frequent in HIV positive women, but there no significance was found. 29.4 % of births were by elective caesarean section, which were only performed in 17.9 % of the HIV positive women. Neonatal weight was higher among the children of HIV positive women (p = 0.009) and no differences for the rest of neonatal characteristics and complications depending on HIV infection were observed. 9.6 % of newborns died.

Conclusions. The prevalence of HIV was higher than the published data for Mozambique. HIV screening and the adherence to a correct treatment were unsatisfactory. The particular situation of rural women remains unknown. The risk of HIV increased with age up to 35 years, as with the number of gestations and the history of miscarriages. Family planning and antenatal care coverage are still a challenge in Tete. High proportions of prematurity, elective caesarean section and neonatal death were found, not significantly related to HIV.

Results

The study included **470 pregnant women**. 59 of them (**12.6 %**) presented the **HIV infection**. 468 women (99.6 %) had a screening test, though less than one fifth of the diagnosis took place before pregnancy (**Figure 1**). 58 out 59 infected gestants (98.3 %) were asymptomatic when the diagnosis was given, so they were classified into the *stage I of the infection* (the other case was catalogued into the stage II, as she referred a loss of weight of more than a 10 %). 58.1 % of those who were diagnosed before gestation took antiretroviral drugs before being pregnant (73.3 % of whom took tenofovir, lamivudine and efavirenz), and 64.4 % of all the HIV positives referred be under treatment during their pregnancies (64.3 % of whom took the named drugs).

Figure 1. Distribution in % of the diagnostic moments of the HIV infection.

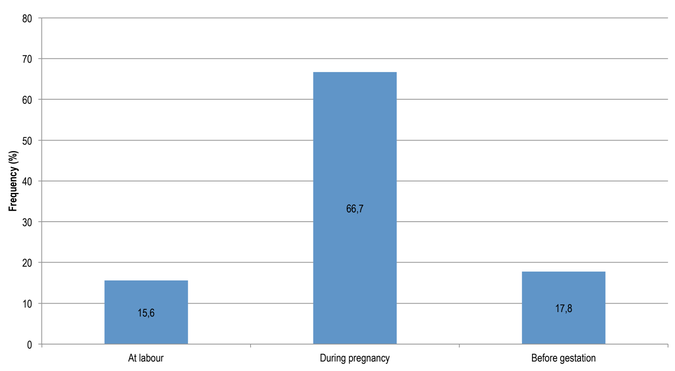

Figure 2. Probability of HIV infection according to the mother's age (p = 0.01).

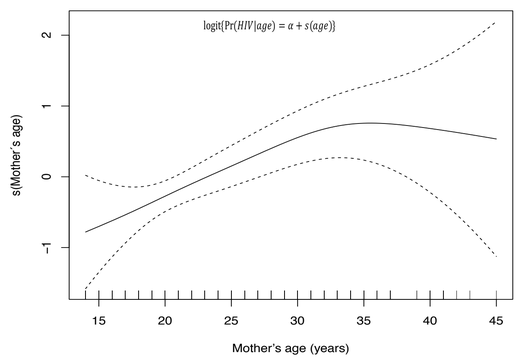

Figure 3. Effect of the number of gestations in the probability of HIV infection (p < 0.001).

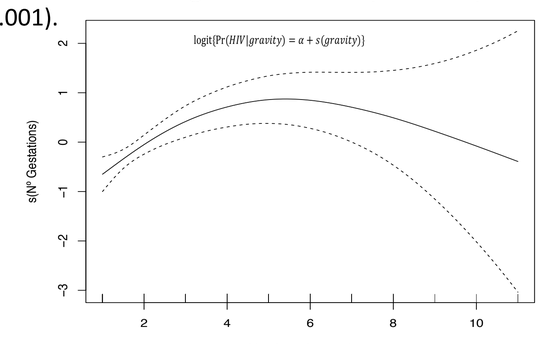

Table 1. Socio-demographic and clinical variables in the sample.

	Total	HIV infection: Negative	HIV infection: Positive	P	OR
	N = 470	N = 411	N = 59		(IC 95 %)
Habitat				0.34	
Urban	396 (84.3)	343 (83.5)	53 (89.8)		
Peripheral	27 (5.7)	23 (5.6)	4 (6.8)		
Rural	45 (9.6)	43 (10.5)	2 (3.4)		
Age, years	23.8 ± 6.4	23.4 ± 6.4	26.3 ± 6.5	0.001	
≤ 16	57 (12.1)	52 (12.7)	5 (8.5)		
16 – 19	91 (19.4)	87 (21.2)	4 (6.8)		
20 – 25	160 (34.0)	140 (34.1)	20 (33.9)		
Antenatal notebook	460 (97.7)	391 (95.1)	55 (93.2)	1	
≥ 4 control visits	255 (58.0)	218 (56.6)	37 (67.3)	0.134	
Reason for consulting					
Onset of labour	389 (83.1)	337 (82.4)	52 (88.1)	0.271	
Hypertensive episode	29 (6.2)	26 (6.4)	3 (5.1)	1	
Haemorrhage	26 (5.6)	24 (5.9)	2 (3.4)	0.759	
Medical precedents					
Arterial hypertension	21 (4.5)	19 (4.6)	2 (3.5)	1	
Bronchopathies	12 (2.6)	10 (2.4)	2 (3.9)	0.651	
Obstetric history					
Gravity				< 0.001	
1	162 (34.5)	154 (37.6)	8 (13.6)		
2	126 (26.9)	111 (27.1)	15 (25.4)		
3	60 (12.8)	48 (11.7)	12 (20.3)		
4 or more	121 (25.8)	97 (23.7)	24 (40.7)		
Parity				0.002	
1	191 (42.4)	178 (45.5)	13 (22.0)		
2	107 (23.8)	93 (23.8)	14 (23.7)		
3	57 (12.7)	45 (11.5)	12 (20.3)		
4 or more	95 (21.1)	75 (19.2)	20 (33.9)		
Previous miscarriages	80 (17.1)	63 (15.4)	17 (28.8)	0.010	2.2 (1.2 ; 4.2)
Malaria					
In pregnancy	42 (9.0)	34 (8.3)	8 (13.8)	0.168	
At labour	3 (0.6)	3 (0.7)	0 (0.0)	1	
Severe	2 (6.9)	2 (7.7)	0 (0.0)	1	
Complicated pregnancy					
Preterm (< 37 SG)	61 (13.1)	55 (13.5)	6 (10.2)	0.715	
Preeclampsia	56 (11.9)	49 (11.9)	7 (11.9)	0.99	
Proteinuria	21 (34.4)	21 (36.2)	0 (0.0)	0.545	
Severe	54 (80.6)	47 (81.0)	7 (77.8)	1	
Abruptio placentae	18 (3.9)	17 (4.2)	1 (1.7)	0.715	
TPD	13 (2.8)	10 (2.4)	3 (5.3)	0.204	
IUGR	5 (1.1)	5 (1.2)	0 (0.0)	1	
Complications at labour					
Caesarea	137 (29.4)	127 (31.0)	10 (17.9)		
For preeclampsia	23 (20.2)	22 (20.9)	1 (11.1)	0.684	
Hypertension at labour	74 (15.8)	67 (16.3)	7 (12.1)	0.404	
Haemorrhage at labour	57 (13.5)	51 (13.6)	6 (12.8)	0.869	
Urinary infection	21 (4.5)	17 (4.2)	4 (6.9)	0.317	
> 18 h of BM	15 (5.3)	15 (6.1)	0 (0.0)	0.112	
Maternal death	0	0	0	-	
Chorioamnionitis	4 (0.9)	4 (1.0)	0 (0.0)	1	
Newborns					
Weight, kg	3 (2.6 ; 3.3)	3 (2.6 ; 3.3)	3.1 (3.0 ; 3.4)	0.009	
Reanimation	48 (10.5)	46 (11.5)	2 (3.5)	0.065	
Death	45 (9.6)	40 (9.7)	5 (8.5)	0.759	
Respiratory distress	41 (9.6)	39 (10.5)	2 (3.7)	0.115	
Fever	11 (2.6)	11 (3.0)	0 (0.0)	0.373	

Data are frequencies (%), means ± SD and medians (IQR).

SG: weeks of gestation. **TPD**: threatened premature delivery. **IUGR**: intrauterine growth restriction. **BM**: broken membranes. **Kg**: kilograms. **SD**: standard deviation. **IQR**: interquartile range.

Conclusions

- The prevalence of the **HIV infection** on the women attended during labour at the Maternity Ward of the Provincial Hospital of Tete (12.6 %) was higher than the referred by the WHO's official data for Mozambique (11.5 %). 66.7 % of these **diagnosis** were done during the current pregnancy, and up to a 15.6 % at labour, and were given when the infection was still asymptomatic (98.3 %). 35.6 % of women gave birth without **antiretrovirals**.
- Gestants attended at labour in the Provincial Hospital of Tete mainly came from **urban districts** of the province (84.3 %).
- The HIV infection showed a directly proportional relation with the mothers' **age** (p = 0.001) up to the age of 35, when this relation became inverse.
- 31.5 % of the women who gave birth were **adolescents**, and 42 % of the sample did not follow an adequate **gestational control**.
- Significant associations were observed between **HIV** and **gravity** (p < 0.001, nonlineal) and the **history of previous miscarriages** (p = 0.010, OR 2.2 (1.2 ; 4.2)).
- The cases of **severe malaria** were not related significantly to HIV.
- 13.1 % of births were **preterm**, which was not significantly associated to HIV. A high but underestimated frequency of **preeclampsia** was observed (11.9 %), though it was probably underestimated. A high proportion of birth took place by **caesarean section** (29.4 %), but this intervention was performed just in 17.9 % of the HIV positives (even though their viral loads were unknown).
- The HIV infection was not significantly associated with **obstetric complications** with which a relation has been already described, such as TPD or IUGR, or where the relation remains controversial, such as obstetric haemorrhage or preeclampsia.
- 9.6 % of the **newborns died** during labour. No significant differences were detected among newborns according to their mothers' HIV status, except for **neonatal weight** (p = 0.009).

References

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