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HIV sero-prevalence and high number of deliveries. Women diagnosed or treated for RP formed the population of this study. Eligible participants were obtained from labor or maternity wards in hospitals. The patient was approached by a recruiter to determine her eligibility and recruited by registering her name and giving study identity number. All interested patients were directed to interviewers for the consent process. Informed consent was administered in local language and these consented were asked to undergo rapid clinical and laboratory assessment and interviews. Every patient diagnosed with RP was recruited sequentially to achieve an enrollment of sample size required. This design provided an estimated proportion of women with RP seeking obstetric care that actually have HIV infection, medical conditions related to RP, and description of AIDS- related conditions and opportunistic infection progress and patterns in patient with HIV infection. The HIV progress factors were divided into two categories: 1. HIV early stage symptoms (WHO clinical stages 1&2) and, 2. HIV late (AIDS) stage symptoms (WHO clinical stages 3&4). The study also collected information on general description of medical conditions among women with and without HIV infection.

The consented post- partum women with RP undergone clinical assessment to identify clinical conditions, signs and symptoms of opportunistic or HIV/AIDS related infections and other medical conditions. Rapid HIV test was done using HIV SD Bioline (SD South Korea) to determine sero-status. The HIV sero-status was confirmed by Uni-Gold HIV Rapid Test Kits, Trinity Biotech. The Participants were then clinical assessed and interviewed for self-report of clinical signs to determine HIV/AIDS progressive symptom patterns and severity.

Clients were enrolled for the study only if;

- they were diagnosed with retained placenta by hospital staffs or completed treatment for RP
- they consents to participate
- Potential participants were excluded if they were
- presenting with danger sign or signs of severe illness such as inability to speak, drink, and vomiting
- recent history of convulsions or eclampsia
- lethargic or unconscious
- Experiencing danger signs, or other conditions requiring immediately treatment.

The Medical questionnaire for Medical conditions, signs and symptoms of AIDS related complication was used to collect data. The first part of the questionnaire collected information on the demographic characteristic; age, marital status, education level, and number of births. The second and third part was checklist for sign and symptoms for HIV/AIDS related infections, while the fourth part was medical conditions checklist. Each question of checklist was defined as “Yes” if sign and symptom present or “No” if there was no such symptom. The last section collected information on HIV status and pregnancy outcomes.

Ethical consideration

The Tanzanian Medical Research Coordinating Committee of National Institute for Medical Research (NIMR) approved the study. The informed consent was administered to every postpartum woman with RP interested to participate in the study.

Data analysis

The data entry screen was developed from EpiData software. The data that were entered into the software were transferred to SAS version 9.4 for data analysis. The primary variables of interest were; HIV sero-prevalence among women with retained placenta. HIV/AIDS related symptoms and its progressive factors among women with reined placenta who are HIV positive. Medical conditions among women with RP were also documented to all patients regardless of their HIV status and then compared. Variables were categorized as: age, marital status, education level, and number of birth of women with

retained placenta, HIV status, HIV early stage symptoms (WHO clinical stages 1&2), HIV late (AIDS) stage symptoms (WHO clinical stages 3&4), other medical conditions that may be associated with RP, and pregnancy outcomes. Frequencies tables and cross tabulations were used to determine associations between variables. The chi- squire test was used to analyze categorical data to test statistical significance between these differences or association between variables. The association or the differences were considered significant if P-values <0.05.

The early HIV stage symptoms observed were; fever, chill, night sweats, rashes, productive cough, muscle aches, sore throat, fatigue, swollen lymph nodes and mouth ulcers (WHO, 2015). The late stage symptoms are; rapid weight loss, recurring fever or profuse night sweats, extreme and unexplained tiredness, prolonged swollen lymph glands in the armpits, groin or neck, diarrhea that lasts for more than a week, sores of the mouth, anus, or genitals, pneumonia, red, brown, pink or purple blotches on or under the skin or inside the mouth, nose or eyelids, memory loss and depression and neurological disorders and Kaposi's sarcoma or lymphoma (WHO, 2015).

Results

A total of 251 women with retained placenta were screened for HIV status, HIV/ AIDS related symptoms, other medical conditions and pregnancy outcomes, and the information were included for data analysis. Among women participated, 46 (18%) were aged between 18-25 years, and 196 (78%) aged between 26- 40, while 9 (3.6%) of them were women aged 41-44 (Table 1). The large proportion of them, 185(74%) had 1-3 births; while 62(24%) women had 4-6 births, and 4 of them (1.5%) had delivered 7-9 times. Majority of them, 169(67%) achieved primary level education, while 59(23.5%) completed secondary education, 20 (8%) of these women had not attended any school, and only 3(1.2%) completed college education (Table 1).

The results indicate that among 251 pregnant women with retained placenta 105(41.8%) were sero-positive, while 146 (58.1%) are sero-negative (Table 2). Pregnant women aged 26-40years, that are 79 (31.4%) are more affected with HIV followed by the age of 18-25 years, 22(8.7%), however, there is no significance difference of HIV prevalence among different groups of pregnant women (Table 2). In this regard, among pregnant women, the prevalence of HIV is independent of age, which is different among the women in general public where HIV prevalence is dependent of age groups.

Women with retained placenta that are HIV sero-positive reported significant more episodes of caesarean section operation, 21(61.7%) during delivery compared to women that are sero-negative, 13(38.2%) (P value=0.0113) (Table 3). Women with HIV have significantly more developed PPH 19(67.8%) compared to women without HIV, 9(32.1%) (P value=0.0031). (Table 3). The pregnant women with retained placenta that are sero-positive show significant more preterm deliveries 10 (66.6%) compared to women who are sero-negative, 5(33.3%), P value = 0.0443. Women with HIV had less occasions of still born babies 4(28.5%), than women without HIV, 10(71.4%), however the association was not significant.

There are no significant differences in their baby weights and stillborn births among them probably due to ARV triple therapy current being received by all HIV- positive pregnant women in Tanzania (Table 3). Triple ARV therapy may probably enhanced baby weight during pregnancy. To the surprise, women without HIV show slightly higher number of still born baby deliveries compared to Women with HIV although the difference is not significant. In this situation, ARV triple therapy may have reduced still born babies among HIV sero-positive women. The occurrence of prolonged labor was more significant among HIV infected women 23(79.3%), compared to HIV negative women 6(20.6%), P- value <0.0001(Table 3). The study indicates new findings in pregnancy outcomes opposing other study findings where HIV sero-positive pregnant women were observed to deliver low weight and stillborn babies significantly more often compared to HIV sero-negative (WHO, 2015; Calvert & Ronsmans, 2015). The previous episodes of retained placenta and history of myomectomy had no significant association with retained placenta in women of both group of HIV negative and positive (Table 3).

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The findings show that women with common HIV progressive persistent pneumonia which is among the late HIV/ AIDS stage (WHO clinical stage 3 &4) symptoms had vaginal tears during birth more often (35.2%) than did women who had no pneumonia during delivery (18.9%), P- Value =0.0693 (Table 4). Women with memory loss, depression, and other neurologic disorders had more babies born with body weight below 2500g (underweight baby) (20.8%) compared to women without these symptoms (6.1%), P- Value 0.0316 (Table 4). The symptoms of memory loss, depression, and other neurologic disorders are among the HIV progressive symptoms for individual with HIV in late AIDS stage (WHO clinical stage 3 &4). Other HI/AIDS related progressive symptoms had no significant association with pregnancy outcomes.

Discussion

This study was conducted in public health facilities providing obstetric care in eastern Tanzania where low income women attend. The information was collected in municipalities with higher rate of HIV transmission. In Tanzania, almost 7% of pregnant women are infected with HIV, and all of them are expected to be on Prophylaxis ARV (B+) Triple therapy from antenatal clinics (PMTCT Tanzania, 2016, Ngarina et al., 2014). To understand the prevalence of HIV among women with the retained placenta is important step to inform health care workers to predict the possibility RP for treatment and prevention of PPH to reduce mortality.

Among 251 women with retained placenta, 105 (42%) were HIV sero-positive. This indicates that RP is common among HIV infected pregnant women. The study indicates that prevalence of HIV among pregnant women with retained placenta is independent of age group; this is opposite when HIV prevalence is assessed through age groups in adult women without pregnancy (WHO, 2015; Calvert & Ronsmans, 2015). Women with retained placenta that are HIV sero-positive are more likely to develop PPH as well as to undergo caesarean section operation compared to women that are sero-negative. Following ARV triple therapy, women with HIV had less occasions of still born babies compared to women without HIV although the association was not significant. The pregnant women with retained placenta that are sero-positive under ARV therapy show significant more preterm deliveries compared to women who are sero-negative. This finding corresponds to other similar studies (Calvert & Ronsmans, 2015; Slyker et al., 2014). This finding of increased preterm deliveries were observed in various studies indicating that ARV therapy excessively increased preterm deliveries among HIV infected mothers (Aniji et al., 2013; Watts et al., 2013; Short et al., 2014). Women without HIV show slightly higher percentage of still born baby deliveries compared to Women with HIV although the difference is not significant. We observed no significant differences in their baby weights and stillborn births among women with different HIV status. The ARV triples therapy current being administered to all pregnant women that are sero-positive in antenatal clinics may have influenced some of the observed results**.**

In the medical conditions, we observed phenomenon of prolonged labor (prolonged second or third stage of labor) that was more significant among HIV infected women. Study shows that women with HIV are significantly more likely to experience PPH and to undergo Caesarian section compared to women without HIV.

The pattern of AIDS related opportunistic infections among women with RP that are HIV-sero-positive indicate various pregnancy outcomes. Women with HIV progressive symptom of pneumonia which is among the late HIV/ AIDS stage (WHO clinical stage 3 &4) symptoms are more likely to develop vaginal tears during birth than women without pneumonia. Women with memory loss, depression, and other neurologic disorders are more likely to give birth to underweight babies compared to women without these symptoms. The symptoms of memory loss, depression, and other neurologic disorders develop among HIV infected person during late AIDS stage (WHO clinical stage 3 &4). Other HIV/AIDS related progressive symptoms had no significant association with pregnancy outcomes.

Conclusion

The RP is common among women with HIV. The prolonged labor is the major medical condition currently faced by sero-positive pregnant women during delivery that need attention from health care workers. Women with retained placenta that are HIV sero-positive is more likely to develop PPH as well as to undergo caesarean section operation compared to women that are sero-negative. Majority of HIV Infected women develop prolonged labor when giving birth. The HIV/AIDS progressive symptom of pneumonia put a woman at risk to develop vaginal tear during delivery, while symptoms of memory loss, depression, and other neurologic disorders subject pregnant women at risk of giving birth to underweight baby. The current B+ treatment during antenatal period has changed positively some of the pregnancy outcomes among HIV positive pregnant women.

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Table 1. The demographic characteristics of women with retained placenta (n=251)

Demographic backgrounds			
Variable	Response	Frequency	Percent
Age group in years	18- 25	46	18%
	26- 40	196	78%
	41-44	9	3.6%
Number of births	1-3	185	74%
	4-6	62	24%
	7-9	4	1.5%
Education level	Primary	169	67%
	Secondary	59	23.5%
	College	3	1.2%
	None	20	8%
Total	251	251	

Table 2. The HIV status among women with Retained placenta based on the age group (n=251)

Age Group	HIV status		
	HIV Negative (n=146)	HIV Positive (n=105)	P value
	(n, %)	(n, %)	
18- 25	24(9.56)	22(8.76)	
26-40	117(46.61)	79(31.47)	
41-44	5(1.99)	4(1.59)	
Total	146 (58.1)	105(41.8)	0.6402

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Table 3. The Common medical conditions among women with retained placenta based on HIV status (n= 251)

Medical conditions	HIV status n=251		P value
	HIV Negative	HIV positive	
	n, (%)	n, (%)	
Caesarean section	13(38.2)	21(61.7)	0.0113
Myomectomy	2(40)	3(60)	0.4055
PPH	9(32.1)	19(67.8)	0.0031
Baby weight	11(52.3)	10(47.6)	0.5744
Prematurely delivery	5(33.3)	10(66.6)	0.0443
Prolonged labor	6(20.6)	23(79.3)	< 0.0001
Stillborn baby	10(71.4)	4(28.5)	0.3006
Previous retained placenta	7(43.7)	9(56.2)	0.227

Table 4. The Adverse Pregnancy outcomes among HIV positive women based on HIV/AIDS related progressive symptoms (n=105)

HIV Stage	Common Progressive HIV Symptoms	Symptoms status	Adverse Pregnancy outcomes developed and P- values							
HIV Early stage symptoms (WHO clinical stage 1&2			Stillborn baby (n) %	P-value	Vaginal tear n (%)	P-value	Preterm delivery N (%)	P-value	Baby Weight below 2.5kg N (%)	P-value
	Fatigue	No	(2)3.39	0.7992	(20)33.90	0.4756	6(10.1)	0.7985	(7)11.86	0.3548
		Yes	(2)4.35		(11)23.91		4(8.7)		(3)6.52	
	Muscle ache	No	(2)3.13	0.6471	(23)35.94	0.1821	7(10.9)	0.5375	(8)12.50	0.1943
		Yes	(2)4.88		(8)19.51		3(7.3)		(2)4.88	
	Night sweat	No	(2)3.23	0.1408	(20)32.26	0.7150	6(9.6)	0.9483	(6)9.68	0.9487
		Yes	(2)4.65		(11)25.58		4(9.3)		(4)9.30	
	Fevers	No	(2)3.03	0.5874	(20)30.30	0.9613	5(7.5)	0.3764	(60)9.09	0.8442
		Yes	(2)5.13		(11)28.21		5(12.8)		(4)10.26	
	Chills	No	(2)2.86	0.4709	(22)31.43	0.3494	6(8.5)	0.6382	(6)8.57	0.6382
		Yes	(2)5.71		(9)25.71		4(11.4)		(4)11.43	
	Mouth ulcers	No	(2)2.82	0.4426	(22)30.99	0.3955	6(8.4)	0.5883	(6)8.45	0.5883
		Yes	(2)5.88		(9)26.47		4(11.7)		(4)11.76	
HIV Late stage symptoms (WHO clinical stage 3&4)	Tiredness	No	(2)3.23	0.7075	(22)35.48	0.2478	4(6.4)	0.1978	(6)9.68	0.9487
		Yes	(2)4.65		(9)20.93		6(13.9)		(4)9.30	
	Pneumonia	No	(2)2.94	0.5286	(24)35.29	0.0693	6(8.8)	0.7403	(7)10.29	0.7155
		Yes	(2)5.41		(7)18.92		4(10.8)		(3)8.11	
	Fever or night sweats	No	(4)5.56	0.1674	(23)31.94	0.7242	7(9.7)	0.9185	(6)8.33	0.5393
		Yes	(0)0.00		(8)24.24		3(9.0)		(4)12.12	
	weight loss	No	(2)2.56	0.2572	(23)29.49	0.9530	7(8.9)	0.7444	(7)8.97	0.7444
		Yes	(2)7.41		(8)29.63		3(11.1)		(3)11.11	
	Memory loss, depression	No	(2)2.47	0.1875	(25)30.86	0.5078	6(7.4)	0.1746	(5)6.17	0.0316
		Yes	(2)8.33		(6)25.00		4(16.6)		(5)20.83	

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