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Histological chorioamnionitis and its predictors among mothers with premature rupture of membranes delivering at tertiary hospitals in Uganda: a multicenter cross-sectional study

Ibrahim Abdi Abdinasir¹, Marie Pascaline Sabine Ishimwe², Maxwell Okello¹, Paul Byaruhanga¹, Ralph Samson Enyamitoit¹ and Theoneste Hakizimana^{1*}

Abstract

Background Histological chorioamnionitis (HCA) is a significant global threat to maternal and fetal health, with an increasing prevalence in resource-limited settings. However, data on its burden and predictors remain scarce in Africa, including Uganda. This study aimed to determine the prevalence and predictors of HCA among mothers with premature rupture of membranes (PROM) at three tertiary hospitals in Uganda.

Methods This multicenter cross-sectional study was conducted over a three-month period, from July to October 2023, at three tertiary hospitals in Uganda. A total of 106 women diagnosed with PROM were consecutively enrolled. Data were collected using a structured questionnaire that captured routine history-taking and physical examinations. Key information gathered included the history of liquor drainage, clinical signs of chorioamnionitis (fever, uterine tenderness, and foul-smelling liquor), labor history, and placental samples obtained after delivery for histopathological analysis. Descriptive statistics and binary logistic regression analyses were performed using STATA version 14.2. Statistical significance was set at $P < 0.05$, with a 95% confidence interval. Results were presented using bar charts, pie charts, and tables.

Results Among the 106 participants with PROM, 44 (41.5%) had histological chorioamnionitis. The most common histological finding was neutrophil infiltration in 22 cases (50.0%), followed by funisitis in 13 cases (29.6%). Referral status (aOR = 4.5, 95% CI: 1.511–13.315, $p = 0.007$) and lack of prenatal care (PNC) attendance (aOR = 9.8, 95% CI: 2.802–14.504, $p = 0.000$) were independently associated with histological chorioamnionitis.

Conclusions and recommendations. The prevalence of HCA in this study was notably higher than previously reported data from Uganda. Neutrophil infiltration was the most frequently observed histological lesion. Patients with PROM who were referred from other health facilities or had not attended PNC were at a higher risk of developing HCA. These findings highlight the critical need for early detection and management of HCA in mothers with PROM, particularly in resource-limited settings. Routine screening for HCA should be implemented for all women presenting

*Correspondence:
Theoneste Hakizimana
theonestehakizimana5@gmail.com
Full list of author information is available at the end of the article



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with PROM, with special attention to referred cases and those without PNC. Early initiation of treatment should be considered until the diagnosis is definitively ruled out. Further research is needed to explore the underlying causes of HCA to inform targeted preventive measures.

Keywords Histological chorioamnionitis, predictors, Premature Rupture of Membranes, Tertiary Hospitals, Uganda

Introduction

Chorioamnionitis (CA) is a significant obstetric complication involving infection of the amniotic fluid and placenta, often due to ascending bacterial organisms from the vaginal canal, and is clinically characterized by maternal fever, uterine tenderness, foul-smelling amniotic fluid, and tachycardia in both the mother and fetus [1, 2]. Histological chorioamnionitis (HCA), a pathological diagnosis, is defined by polymorphonuclear leukocyte infiltration, indicating placental inflammation and necrosis [3, 4]. While Clinical chorioamnionitis (CCA) and HCA are related, HCA can occur without clinical symptoms, making it vital to anticipate adverse effects, particularly in mothers with PROM, as the risks to both mother and fetus/neonate increases with prolonged PROM duration [5–7].

Globally, the prevalence of HCA varies in high-income countries where CA affects 1%–4% of pregnancies, with both CCA and HCA implicated in 40%–70% of preterm deliveries [8]. HCA has been reported in 75% of women with PROM and 30% of those without PROM [9]. Studies in Colombia and India report prevalence rates of 68.75% and 52.9%, respectively [10, 11]. In sub-Saharan Africa, prevalence ranges from 34.1% to 60.8%, with studies in Nigeria and Uganda reporting rates of 60.8% and 34.1%, respectively [12, 13]. These disparities reflect variations in healthcare access and diagnostic practices.

HCA significantly impacts maternal and neonatal outcomes. Maternal complications include postpartum hemorrhage, endometritis, and sepsis, while neonatal consequences include preterm birth, respiratory distress, sepsis, and long-term neurodevelopmental impairments [7, 9, 14, 15]. The prevalence of HCA increases with decreasing gestational age, affecting 47.3% of pregnancies at less than 32 weeks and 83.3% at less than 30 weeks [16]. It complicates nearly half of preterm PROM cases before 34 weeks [15].

Risk factors for HCA include prolonged PROM, nulliparity, labor dystocia, frequent vaginal examinations, and lower socioeconomic status [9, 12, 17, 18]. Prolonged labor (≥ 18 h) and PROM exceeding 12 h are strongly associated with HCA [9, 12]. Additionally, spontaneous labor and race have been identified as significant predictors [19, 20].

Effective management of HCA requires timely diagnosis and intervention. Gross examination of placentas by

trained providers and histopathological evaluation are essential for identifying inflammatory lesions such as neutrophilic infiltration [1, 9, 20]. Prompt administration of antibiotics and delivery are key to mitigating adverse outcomes [18, 19]. However, limited access to routine histological diagnostics in LMICs, including Uganda, hinders effective management [12].

Despite the known burden of HCA, significant gaps exist in understanding its epidemiology and associated factors in resource-constrained settings. In Uganda, there is scarce data on HCA prevalence and predictors, particularly among mothers with PROM. This study aims to determine the prevalence of HCA and identify its predictors among women delivering at tertiary hospitals in Uganda, providing evidence to improve maternal and neonatal outcomes.

Methods

Study design and setting

This descriptive cross-sectional study was conducted in the labor suites of Fort Portal Regional Referral Hospital (FRRH), Kiryandongo General Hospital, and Mubende Regional Referral Hospital in Uganda, from July 2023 to October 2023. FRRH is a public hospital funded by the Uganda Ministry of Health and one of 15 designated internship hospitals in the country. It provides opportunities for medical school graduates to complete a one-year internship under the supervision of qualified specialists and consultants. The hospital is equipped with specialized departments, including an Obstetrics and Gynecology Department, which served as the setting for this study. This department is staffed by specialists, medical officers, interns, and midwives. Study participants were recruited from FRRH's catchment area, which includes the districts of Kabarole, Bundibugyo, Kamwenge, Kasese, Ntoroko, and Kyenjojo.

Kiryandongo General Hospital is a 109-bed government-owned facility located approximately 209 km northwest of Mulago National Referral Hospital, Uganda's largest medical institution. The hospital's catchment area spans Kiryandongo District and parts of Masindi, Nakasongola, Oyam, Apac, Amuru, and Nwoya Districts.

Mubende Hospital, situated in the town of Mubende in Uganda's Central Region, serves as the referral hospital for the districts of Mubende, Mityana, Kiboga, and

Kyankwanzi. The Obstetrics and Gynecology Department, where this study was conducted, has a 102-bed capacity and is staffed by three consultants, four senior house officers, two medical officers, and nine midwives.

These hospitals serve a wide range of socioeconomic groups, making the results relevant to similar populations in Uganda and comparable low-resource settings. All three hospitals are public institutions that serve both urban and rural populations. Each hospital is equipped with a modern, accredited laboratory; however, none currently have an on-site pathologist to perform histopathology examinations.

Study population

This study included all pregnant women at or beyond 26 weeks of gestation who were in the latent phase of labor and diagnosed with premature rupture of membranes at Fort Portal, Kiryandongo, and Mubende Regional Referral Hospitals, provided they consented to participate. Women with retained placentas, uterine rupture, HIV positive serostatus or who were unconscious were excluded from the study.

Sample size determination

For objective one, the sample size was calculated from a simplified formula for proportions, Yamane (1967) [21]

$$n = \frac{N}{1 + N(e^2)}$$

where:

n = required sample size.

N = population size = 145 women with PROM (Maternity registries at three tertiary hospitals in Uganda for 3 months, FRRH = 75, MRRH = 39 and Kiryandongo Hospital = 31).

e = the level of precision = 5% = 0.05

$$n = \frac{145}{1 + 145(0.05^2)}$$

= 106.4

For Objective two sample size was computed from the study done by Nyaga and colleagues where they found that the duration of labor for more than 18 h has been associated with HCA with aOR:4.0, and proportion at 16.9% [12]. Using sample size estimation for factors [22]

$$n = \frac{Z_{\alpha/2}^2 * \frac{1}{OR} * p(1 - p)}{d^2}$$

n = required sample size.

Z = Level of significance at 95% Confidence Interval ($Z = 1.96$) and $\alpha = 0.05$, $Z_{0.05} = 1.96$,

P = proportion = 16.9 = 0.169.

d = Margin of error of accuracy ($\alpha = 5\%$) (Taken as 0.05).

OR – odds ratio = 4

$$n = \frac{1.96^2 / 2 * \frac{1}{4} * 0.169(1 - 0.169)}{0.05^2}$$

$n = 53.915$

Therefore the minimum required sample size for this study was 106 women with PROM who delivered at three tertiary hospitals.

Sampling technique

The study participants were consecutively enrolled from labor suites of 3 teaching hospitals which were purposively selected such as FRRH, MRRH and Kiryandongo General Hospitals until the necessary sample size was reached. Since we utilized a power of 80% while computing, the inclusion criteria were strictly followed, and the sample size was adequate. Priority was not granted on the basis of a person's race, ethnicity, or religion.

Data collection procedure

The mothers in early latent phase of labor in labor suites of FRRH, MRRH and Kiryandongo General Hospital were provided the details of the study followed by written informed consent given that they understood the study details and demonstrated the ability to make an informed and voluntary decision. The mothers were then taken for routine medical history including a history of liquor drainage, clinical features of chorioamnionitis (fever, tender uterus and foul-smelling liquor), labor history and estimation of gestational age. This was followed by physical examination, using aseptic technique under sufficient light, a sterile Cusco's bivalve self-retaining vaginal speculum was placed and visualization of pooling fluid in the posterior fornix was diagnostic of premature rupture of membranes in this study. Investigator-administered questionnaires (Appendix I) were completed in local language or English for women who didn't understand local language. Thereafter, the mothers who met the inclusion criteria were delivered, and placentas were collected and stored immediately in a special placental bucket containing 10% buffered formalin by the principal investigator or trained research assistants. Typically, the placentas of mothers who chose not to participate in the study were subsequently not taken for the study. The results were then individually communicated to the participants and were advised to link up with the obstetrician on duty for appropriate routine care.

Processing the placenta

The collected placentas that were stored in placenta buckets containing 10% buffered formalin were sent to

the histopathology laboratory for processing by laboratory technicians and examination by a pathologist at Mbarara Regional Referral Hospital. The tissues were processed by a laboratory technician by passing them through increasing alcohol grades, such as 70%, 90%, and 100% alcohol (dehydration), before being cleared with xylene. Following cleaning, the tissues were subjected to one to three cycles of paraffin wax. They were then embedded in new wax by pouring molten wax into a mold that was large enough, aligning the sample to be cut in the correct plane, and then cooling the mass to guarantee solidification. Using a microtome, the tissues were sectioned and placed on a slide. Finally, the tissues were stained with hematoxylin and eosin.

After a pathologist and the principal investigator examined the slides, a diagnosis of HCA was established on the basis of microscopic evidence of inflammation of the placenta, umbilical cord, and membrane (infiltration of polymorphonuclear leukocytes, funisitis, and other immunocytes, such as macrophages and T cells).

Study variables

Independent variables included sociodemographic, medical, and obstetric factors associated with histological chorioamnionitis. The dependent variable was the presence or absence of histological chorioamnionitis, diagnosed through examination of placental tissue obtained after delivery. The diagnosis was made based on established histological criteria, including the presence of inflammation in the chorion, amnion, and adjacent tissues.

Quality control

To ensure the credibility and accuracy of the study, strict adherence to the inclusion and exclusion criteria was maintained. English and translated versions of the questionnaire were available for participants who did not know the local language or English, respectively. Questionnaires were rigorously reviewed and pretested at Kampala International Hospital prior to data collection to guarantee the capture of accurate and reliable information. The principal investigator provided comprehensive training to research assistants (4 registered medical doctors) and conducted regular supervision to ensure proper use of data collection tools and adherence to ethical standards. Placentae were collected and transported to the laboratory following established protocols, with each sample labelled using a unique participant code for accurate identification. Daily, data backups were carefully inspected, verified for consistency, and securely stored to uphold data integrity.

Data analysis

The information on a questionnaire was entered into Microsoft Excel version 2019 and then imported into STATA version 14.2 for analysis. For continuous variables, the baseline demographic and clinical characteristics were summed as the means and medians. For categorical variables, proportions, percentages, and frequencies were employed. Descriptive statistics were performed to obtain the prevalence of histological chorioamnionitis and common histological features. The results were expressed as frequencies and percentages and respectively presented via pie and bar charts. The prevalence of histological chorioamnionitis was calculated as the proportion of positive placentas with evidence of HCA to the overall number of placentas studied. Binary logistic regression was used to describe the factors associated with histological chorioamnionitis, whereby factors with *p* values less than 0.2 and those with biological plausibility at bivariable analysis were used for multivariable analysis. Those factors with *p* values less than 0.05 were considered significant in this study. The results were presented in tables and illustrations at 95% confidence interval.

Results

Basic characteristics of the study participants

The study initially enrolled 110 women with PROM. However, one participant opted out, and three were excluded—two due to positive HIV serostatus and one due to incomplete records. The study flow is illustrated in Fig. 1. Among the 106 respondents considered for this study, the majority were aged between 20 and 30 years 57 (53.8%). Most of them had attained a primary level of education 50(47.2%) and were rural residents (72, 67.9%). The majority of our participants were peasant farmers 40 (37.7%) and earned fewer than 250,000 Uganda shillings per month 76 (71.7%). The majority were married 75(70.7%) (Table 1).

Prevalence of HCA among mothers with PROM delivering at three tertiary hospitals in Uganda (N = 106)

Among the 106 patients with PROM who were considered for the study at the three tertiary hospitals, 44 (41.5%) had histological chorioamnionitis. However, 62 (58.5%) patients did not have histological chorioamnionitis (Fig. 2).

Common histological features of histological chorioamnionitis among mothers with PROM delivered at three tertiary hospitals in Uganda

The most common histological finding was neutrophil infiltration 22 (50.0%), followed by funisitis 13 (29.6%) (Fig. 3).

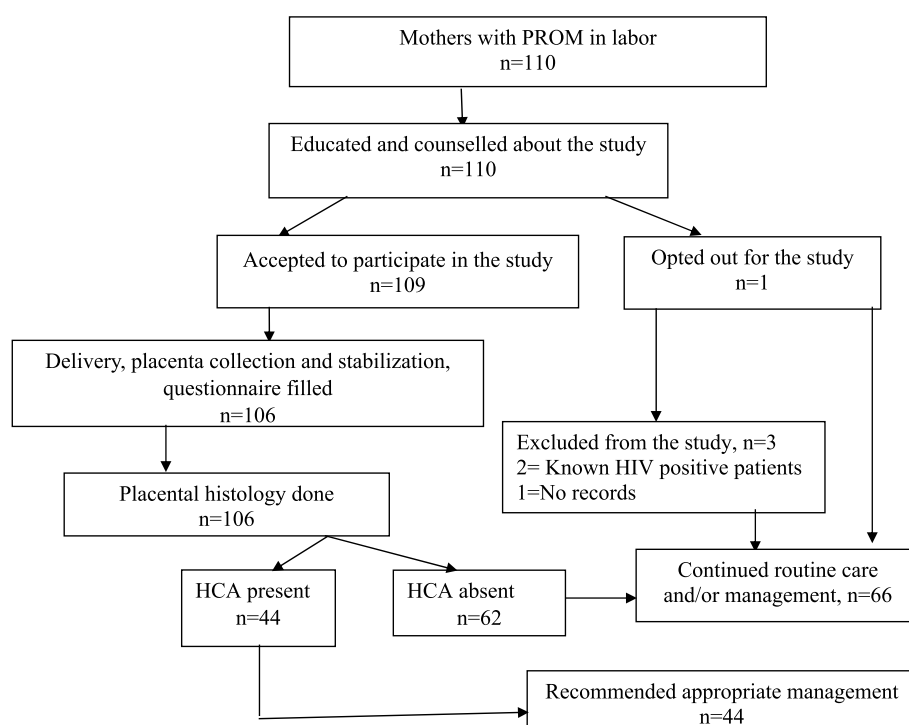


Fig. 1 Study flow chart

Table 1 Sociodemographic characteristics of the study participants (N = 106)

Variable	Category	Frequency (n)	Percentage (%)
Age	< 20 years	26	24.5
	20-30 years	57	53.8
	31-40 years	20	18.9
	≥ 40 years	3	2.8
Education status	None	31	29.2
	Primary	50	47.2
	Secondary and higher	25	23.6
Residence	Rural	72	67.9
	Urban	34	32.1
Occupation	House wife	25	23.6
	Peasant farmer	40	37.7
	Business	34	32.1
	Civil servant	7	6.6
Monthly income (Ugx)	< 250,000	76	71.7
	250,000–450,000	23	21.7
	> 450,000	7	6.6
Marital status	Single	31	29.3
	Married	75	70.7

UGX = Ugandan shillings

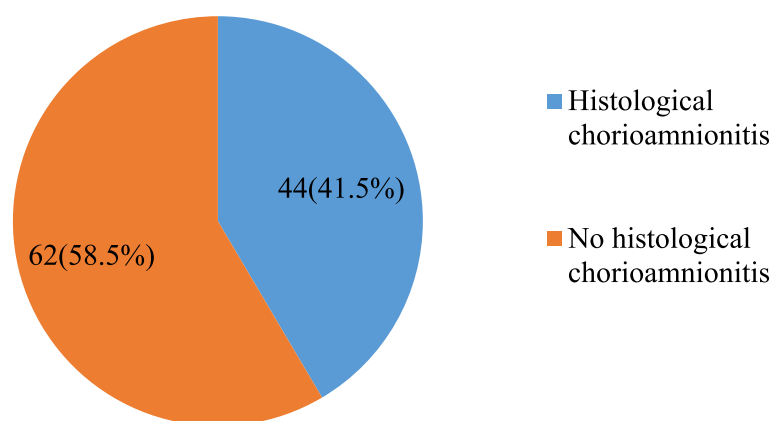


Fig. 2 Pie chart representing the prevalence of HCA among mothers with PROM delivering at 3 tertiary hospitals in Uganda

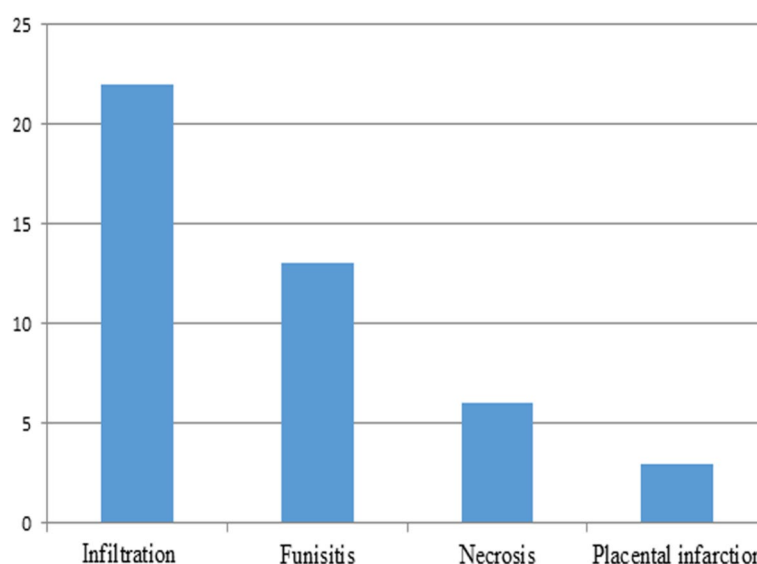


Fig. 3 Common histological features of HCA among mothers with PROM delivered at three tertiary hospitals in Uganda

Factors associated with HCA among mothers with PROM delivering at three tertiary hospitals in Uganda (N=106)

Bivariate analysis (Table 2) revealed that education status, area of residence, monthly income, marital status, mode of delivery, patient referral status and prenatal care attendance were associated with histological chorioamnionitis among mothers with PROM who delivered at the three tertiary hospitals. At the multivariate level of analysis (Table 3), after removing confounders, referred status and lack of prenatal care attendance were found to be independently associated with histological chorioamnionitis at the three tertiary health facilities of Mubende, Fortportal and Kiryandongo. Specifically, women who had been referred were 4.5-fold more likely to have histological chorioamnionitis (aOR=4.5, 95% CI: 1.511–13.315, $p=0.007$). Similarly, women who had not

received prenatal care were 9.8-fold more likely to have histological chorioamnionitis (aOR=9.8, 95% CI: 2.802–14.504, $p=0.000$).

Discussion

Histological chorioamnionitis (HCA) is a significant obstetric challenge, especially in resource-limited settings where its prevalence and predictors remain unclear [23]. Its strong association with adverse maternal and neonatal outcomes underscores the need to understand its burden among women with premature rupture of membranes (PROM) to inform clinical management and improve perinatal outcomes [24]. This study aimed to determine the prevalence of HCA and identify associated factors among mothers with PROM delivering at tertiary hospitals in Uganda.

Table 2 Bivariable analysis of factors associated with HCA among mothers with PROM delivering at three tertiary hospitals in Uganda (N = 106)

Variable	Category	HCA		UOR (95%CI)	p value
		Yes (n = 44)	No (n = 62)		
Sociodemographic factors					
Age	< 20 years	12(46.2)	14(53.8)	1.2(0.464–2.997)	0.730
	20-30 years	24(42.1)	33(57.9)	Ref	
	31-40 years	6 (30.0)	14(70.0)	1.7(0.569–5.054)	
	≥ 40	2 (66.7)	1(33.3)	0.4(0.031–4.245)	
Education status	None	19(61.3)	12(38.7)	4.1(1.311–12.646)	0.015*
	Primary	18(36.0)	32(64.0)	1.4(0.508–4.120)	
	Secondary and higher	7(28.0)	18(72.0)	Ref	
Residence	Village	37(51.4)	35(48.6)	4.1(1.575–10.555)	0.004*
	Town	7(20.6)	27(79.4)	Ref	
Occupation	House wife	12(48.0)	13(52.0)	1.2(0.227–6.671)	0.809
	Peasant farmer	18 (45.0)	22(55.0)	1.1(0.216–5.520)	
	Businesswoman	11(32.4)	23(67.6)	0.6(0.121–3.355)	
	Civil servant	3(42.9)	4(57.1)	Ref	
Monthly income (Ugx)	< 250,000	36(47.4)	40(52.6)	5.4(0.620–47.031)	0.127*
	250,000–450,000	7(30.4)	16(69.6)	2.6(0.264–26.073)	
	> 450,000	1(14.3)	6(85.7)	Ref	
Marital status	Single	16(51.6)	15(48.4)	1.8(0.769–4.171)	0.177*
	Married	28(37.3)	47(62.7)	Ref	
Obstetric factors					
Gravidity	Primigravida	6(37.5)	10(62.5)	0.8(0.275–2.455)	0.724
	Multigravida	38(42.2)	52(57.8)	Ref	
Parity	Primipara	7(38.9)	11(61.1)	0.9(0.311–2.476)	0.804
	Multipara	37(42.1)	51(57.9)	Ref	
Previous h/o chorioamnionitis	Yes	21(44.7)	26(55.3)	1.3(0.581–2.751)	0.555
	No	23(39.0)	36(61.0)	Ref	
Mode of delivery	Vaginal	33(47.1)	37(52.9)	2.0(0.866–4.744)	0.103*
	Caesarean section	11(30.6)	25(69.4)	Ref	
Number of vaginal examinations	< 5	13(38.2)	21(61.8)	Ref	0.638
	≥ 5	31(43.1)	41(56.9)	0.8(0.356–1.886)	
Referral status	Yes	20(33.9)	39(66.1)	0.5(0.224–1.079)	0.075*
	No	24(51.1)	23(48.9)	Ref	
Gestational age	< 37	13(52.0)	12(48.0)	1.7(0.708–4.313)	0.226
	≥ 37	31(38.3)	50(61.7)	Ref	
PNC attendance	Yes	20(26.3)	56(73.7)	Ref	0.000*
	No	24(80.0)	6(20.0)	0.1(0.032–0.250)	
ROM Duration	< 18 h	26(40.0)	39(60.0)	Ref	0.691
	≥ 18 h	18(43.9)	23(56.1)	1.2(0.532–2.591)	

* $p < 0.2$, UOR Unadjusted odds ratio, CI Confidence interval, HCA Histological chorioamnionitis, h/o history of, PNC prenatal care

Our study revealed that the prevalence of histological chorioamnionitis was 41.5%. This prevalence was notably lower than the rates reported in other countries, including 68.75% in Colombia [10], 60.8% in Nigeria [13], 52.9% in India [11], 47% in Canada [15], and 42.3% in the USA [1]. The disparity may be due to difference

in geographical location and relatively small sample size and study duration. Additionally, disparities in healthcare systems and interventions, such as the quality of antenatal care and the availability or use of antibiotics during pregnancy and labor, could impact the prevalence.

Table 3 Multivariable analysis of factors associated with HCA among mothers with PROM delivering at three tertiary hospitals in Uganda (N= 106)

Variable	Category	aOR(95%CI)	p value
Education status	No formal education	0.4(0.0760–2.040)	0.267
	Primary	0.6(0.139–2.360)	0.441
	Secondary and higher	Ref	
Residence	Village	0.5(0.128–2.154)	0.371
	Town	Ref	
Monthly income (Ugx)	< 250,000	0.3(0.013–5.044)	0.369
	250,000–450,000	0.3(0.015–6.411)	0.451
	> 450,000	Ref	
Marital status	Single	0.7(0.261–2.099)	0.572
	Married	Ref	
Mode of delivery	Vaginal	0.9(0.323–2.944)	0.965
	Caesarean section	Ref	
Referred status	Yes	4.5(1.511–13.315)	0.007*
	No	Ref	
PNC attendance	Yes	Ref	
	No	9.8(2.802–14.504)	0.000*

* $p < 0.05$, aOR = adjusted odds ratio, CI = confidence interval, Ugx = Uganda shilling, PNC = prenatal care

Our prevalence was higher than the 22.0% reported in Morocco [9], the 28.7% reported in Italy [20], the 22.6% reported in New South Wales Australia [7], the 23.2% reported in Turkey [16], the 28.0% and 34.1% reported in Uganda [12, 14]. We attribute such discrepancies to the differences in the methods used by different researchers. For example, unlike other studies, our study did not consider gestational age. Those who were at term or pre-term but above fetal viability and those who were post term were included in the study for as long as they experienced premature rupture of membranes. This could have impacted the histological findings and therefore the discrepancies.

In this study the most common histological finding was neutrophil infiltration followed by funisitis. Our findings were consistent with the findings in a study conducted from Uganda [14] and Australia [7, 25]. However, we noted discrepancies with the findings of previous researchers, such as Zaidi et al. in Morocco [9], Goldstein et al. in USA [19], Jang et al. in Korea [26] where Funisitis was the most common histological feature and Kyozyuka et al. in Japan where necrotizing funisitis was the common finding [27]. Variations in histological features have been reported among different researchers across the globe. This is not uncommon and could perhaps justify the need for individual placental histology assessments for all PROM patients

to ascertain the type of lesions involved at that particular time since different placental lesions have been reported to impact maternal and fetal outcomes. The histological findings of neutrophil infiltration and funisitis are critical indicators of intrauterine infection and inflammation in PROM cases. These findings significantly influence clinical management, necessitating early antibiotic therapy, careful monitoring of labor and fetal well-being, and heightened awareness of neonatal risks.

In this study referred status and lack of prenatal care attendance were found to be independently associated with histological chorioamnionitis at the three tertiary health facilities. According to our findings, mothers with premature rupture of membranes delivered at these hospitals following referral from other health facilities were observed to be 4.5-fold more likely to have histological chorioamnionitis than those directly admitted at these hospitals ($p = 0.007$). Similarly, women who had not received prenatal care by the time of delivery were 9.8-fold more likely to have histological chorioamnionitis than were those who had received prenatal care ($p = 0.000$). Previous scholars, such as Torricelli et al. in Italy [20] and Kyozyuka et al. in Japan [27] reported similar observations. It is possible that referred mothers with PROM from peripheral health centers may take longer to reach the referred points. These individuals are also likely to be subjects of unnecessary vaginal examinations, untidy nursing environments and so on. All these factors have been reported to be associated with chorioamnionitis among women with premature rupture of membranes. This, coupled with ignorance of obstetric complications such as PROM and chorioamnionitis due to a lack of education messages among women who do not attend prenatal care, could be responsible for the observations in this study.

Strengths and limitations of the study

This was a multicenter study as opposed to most previous related studies, which were localized in one center. This gave us wide coverage and inclusion in terms of the different respondents recruited. The absence of pathologists in some hospitals impacted the accuracy of histological diagnoses, potentially affecting the study's results however this was minimized by early transportation of placenta in Formalin to Mbarara regional referral Hospital for timely analysis as instructed by the consultant Pathologists. We cannot generalize this study finding given that this was an institution-based study. Future population-based studies are therefore encouraged.

Conclusions

The prevalence of HCA was notably high compared with that previously reported in Uganda. Neutrophil infiltration was the most common histological lesion among women with PROM delivered at Fortportal, Mubende and Kiryandongo regional referral hospitals in Uganda. PROM patients referred from other health facilities and women who have not attended antenatal care were more likely to have histological chorioamnionitis. The findings of this study emphasise the importance of early detection and management of histological chorioamnionitis in mothers with premature rupture of membranes, particularly in resource-limited settings. We recommend routine screening of all women with PROM for histological chorioamnionitis, especially those patients referred from other health facilities and women who have not attended antenatal care and should also be initiated on treatment for chorioamnionitis unless proven otherwise. Further researches are encouraged to explore underlying causes of HCA to inform more specific preventive measures.

Abbreviations

CCA	Clinical chorioamnionitis
DOR	Diagnostic odds ratio
HCA	Histological chorioamnionitis
FRRH	Fort Portal Regional referral hospital
MRRH	Mubende Regional referral hospital
KIU	Kampala International University
PROM	Premature rupture of membranes

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12884-025-07245-4>.

Supplementary Material 1.

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Authors' contributions

IAA, TH, and MPSI designed and developed the proposal. PB and MPSI performed the data collection and entry. TH performed the statistical analysis. MO and RSE drafted the initial manuscript. MO and TH contributed to reviewing and revising the manuscript. The final manuscript was read and approved by all the authors.

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Data availability

The dataset that was utilized in this study is not publicly available due to ethical considerations. Upon reasonable request, the dataset used can be accessed with the permission of the corresponding author Dr. Theoneste Hakizimana (email: Theonestehakizimana5@gmail.com).

Declarations

Ethics approval and consent to participate

This research project was approved by the research ethics committee of Bishop Stuart University and the administration of MRRH, FRRH and Kiryandongo General Hospital under registration number BSU-REC-2023- 144. The

study was registered with the Uganda National Council for Science and Technology (UNCST). All study participants provided written informed consent during the early latent phase of labor, ensuring they understood the study details and demonstrated the ability to make an informed and voluntary decision. All participants were aged 18 years or older and each provided consent personally. The research adhered strictly to ethical standards as outlined in the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹Department of Obstetrics and Gynecology, Kampala International University, Ishaka, Uganda. ²Department of Pediatrics and Child Health, Kampala International University, Ishaka, Uganda.

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