Contribution of Xpert® MTB/RIF to tuberculosis case finding among pregnant women in Botswana

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Setting: Seven health facilities with antenatal care (ANC) clinics in two districts near Gaborone, Botswana.

Objectives: To determine 1) the prevalence of tuberculosis (TB) and HIV-TB co-infection in pregnancy, and 2) the sensitivities of symptomatic TB screening and Xpert testing against gold standard culture.

Design: This was a cross-sectional study. Pregnant women were randomly enrolled and screened using TB symptoms. HIV status was determined from ANC clinics' client records. Two sputum specimens were collected from all clients and each was tested using Xpert® and culture for *Mycobacterium tuberculosis*.

Results: Of 407 cases, eight had one or more TB symptoms, and all tested negative with Xpert® and culture. Another two (0.5%, 95%CI 0.08–1.96) asymptomatic clients tested positive with both tests. The adjusted TB prevalence was higher than that of the general population (0.6% vs. 0.24%; $P < 0.001$). The prevalence of TB among HIV-positive and HIV-negative clients was 1/69 (1.45%, 95%CI 0.29–2.61) and 1/336 (0.3%, 95%CI 0.23–0.83), respectively (Fisher's exact test $P = 0.312$). Xpert® demonstrated a 100% sensitivity and 100% specificity, while symptom screening had 0.0% sensitivity and 98% specificity.

Conclusions: TB prevalence among pregnant women was high and TB symptom screening had limited ability to detect TB. An alternative TB screening algorithm for pregnant women is urgently needed irrespective of TB symptoms.

Symptomatic screening for TB in pregnant women has a very low sensitivity.^{12–15} Furthermore, a number of other studies demonstrated that routine sputum microscopy has low sensitivity (50–58%) compared to Xpert® MTB/RIF assay (Cepheid, Sunnyvale, CA, USA) (86–98%).^{16–20} Botswana has rolled out Xpert® nationally as part of the TB diagnosis protocol and to test rifampicin resistance.^{9,10} Despite low sensitivity of clinical screening, the Botswana TB diagnostic algorithm still uses TB symptoms. Moreover, the electronic TB register does not capture specific pregnancy-related information.⁵

This study aimed to determine the prevalence of TB and HIV-TB co-infection, and assess the sensitivity of Xpert® and that of symptomatic TB screening among pregnant women using culture as gold standard.

METHODS

Study design and setting

We conducted a cross-sectional study in two districts, Greater Gaborone (GG) and Kweneng East (KE), with a total projected population of 567 409 (25%).²¹ These districts had moderate TB notification rates (499–748/100 000).⁵ Table 1 details the seven purposefully selected health facilities based on the type of the health facility (public or private hospital, clinics with or without maternity wings) and proximity to Gaborone, the capital city of Botswana, and the sampling distribution of antenatal care (ANC) clients (expected vs. included in the analysis).

Sample size and sampling methods

The sample size was estimated at 429 (including 10% for non-response) using the Lwanga et al.'s,²² with the assumption of $P = 0.5$, 95% confidence interval (CI) at $\alpha = 5\%$, and a margin of error of 0.05. Stratified random sampling proportional to size using a lottery method was used to select ANC clients for the study. All pregnant women qualifying for inclusion (18–49 years, providing consent and able to produce sputum) were then consecutively enrolled until the required sample size was reached.

Tuberculosis screening and sputum collection

All study participants were screened for TB symptoms ≥ 2 weeks' duration (cough, fever, night sweats and weight loss).^{10,23} HIV status was determined from ANC clinic client records. Two sputum samples (Spot 1 and 2) were collected from all and tested at the National TB Referral Laboratory (NTRL; Gaborone, Botswana); Spot 1 was tested using Xpert® and Spot 2 by culture using

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KEY WORDS

Mycobacterium tuberculosis; HIV-infection; co-infection; pregnancy; sensitivity

Tuberculosis (TB) is a common non-obstetric cause of maternal mortality (MM),^{1–4} and is the leading cause of MM in high HIV prevalent settings.³ A systematic review from 217 countries reported that an estimated 216 500 pregnant women globally had active TB, 41.0% of whom were in the African region.²

In Botswana, TB notification declined from 622 per 100 000 population in 2002 to 280 per 100 000 in 2015.⁵ TB incidence was also higher than global estimates (0.2% vs. 0.1%).^{6,7} TB prevalence among children aged ≤ 15 years increased from 5.5% (2015) to 7.0% (2017).^{5–8} However, little attention has been given to detect TB in pregnancy that could explain this trend. HIV prevalence in the general population was 18.5% in 2013,⁹ and the TB-HIV co-infection rate was 59.2% in 2018.¹⁰ MM remained high at 182.6/100 000 live births (LB) in 2013, decreasing slightly from 189.6/100 000 LB in 2009.¹¹ However, there are no data on TB prevalence and TB-HIV or HIV-TB co-infection rates among pregnant women.

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TABLE 1 Selected areas and sampling distribution of antenatal clinic clients (expected vs included in the analysis) from the seven health facilities, Botswana, 2017–2018

	Number of participants expected	Included in the analysis <i>n</i> (%)
Gaborone: public		
Princess Marina Referral Hospital	130 (200/week)	95 (23.3)
Broahdhurst-2 Clinic*	68 (100/week)	100 (24.6)
Gaborone West Clinic†	82 (125/week)	77 (18.9)
Gaborone: private		
Gaborone Private Hospital	75 (115/week)	69 (17.0)
Kweneneg East: public (60 km from Gaborone)		
Scottish Livingstone Hospital	29 (47/week)	23 (5.7)
Phuthadikobo Clinic*	22 (34/week)	27 (6.6)
Lentsewetau Clinic†	16 (24/week)	16 (3.9)
Total, <i>n</i>	422	407

*Clinic without maternity wing.

†Clinic with maternity wing.

MGIT™960™ (Becton Dickinson, Franklin Lakes, NJ, USA) and drug susceptibility testing (DST). According to the reception criteria of the NTRL, spilled samples, samples with missing forms or samples with mismatched names were rejected. Sputum quality was ensured by a trained laboratory officer before subjecting the samples for analysis.

Data collection and management

Demographic and medical history data were collected by trained registered nurses using a standardised case report form from November 2017 to March 2018. Data were entered into an Excel (Microsoft, Redmond, WA, USA) spreadsheet for handling and processing, and exported to SPSS, v25.0 (IBM Corp, Armonk, NY, USA) for analysis. Inconsistencies were identified through logic checks and missing data were corrected by reviewing client charts.

Statistical analysis

We calculated TB prevalence among the pregnant women, and then compared the age-adjusted TB prevalence with that of the general population (direct standardisation using 2017 population projections).²¹ We estimated sensitivity, specificity, positive and negative predictive values of symptomatic TB screening and Xpert® using culture as the gold standard. We also described the demographic characteristics, and clinical and laboratory outcomes. We used Fisher's exact test to compare TB prevalence in HIV-positive and HIV-negative pregnant women. Confidence intervals (CIs) were set at 95% and $P < 0.05$ was considered statistically significant.

Ethical considerations

All patients were enrolled using written informed consent. The study protocol was approved by the Ministry of Health and Wellness (MoHW)/Botswana Review Board, University of Botswana Office of Research and Development, Gaborone, Botswana, as well the institutional review boards of the hospitals included in the study.

RESULTS

Of the 429 clients enrolled, 22 (5.1%) were excluded as their sputum samples did not fulfil specimen criteria

or due to incomplete information or mismatched names, leaving 407 (94.9%) in the analysis. Table 2 presents the demographic information of the ANC clinic clients. The median age of ANC clients was 29 years (interquartile range [IQR] 24–35), the youngest and eldest were 18 and 44 years old; the median gestational age was 30 weeks (95%CI 23–36); the median number of people in a household was 4 (95%CI 2–5); a total of 106 women (26.0%, 95%CI 21.8–30.4) had one child in their household; 207 (50.9%, 95%CI 46.0–55.8) had secondary education, while 188 (46.2%, 95%CI 41.3–51.1) were tertiary-educated. A total of 150 women (36.9%, 95%CI 32.2–41.6) were unemployed; 108 (26.5%, 95%CI 22.2–30.8) were private employed; 65 (16.0%, 95%CI 12.4–19.6) were employed by the government and 31 (7.6%, 95%CI 5.0–10.2) were self-employed.

Table 3 details the clinical and laboratory outcomes: of the 407 ANC clinic clients: 8 (1.9%, 95%CI 0.6–3.3) had one or more TB symptoms; 4 presented with cough ≥ 2 weeks, but all TB women with symptoms tested negative on Xpert® and culture. Two (0.5%, 95%CI 0.08–1.96) asymptomatic clients tested positive for TB on both Xpert® and culture, one of whom was HIV-positive. The age-adjusted TB prevalence was statistically significantly higher than that of the general population (3982/629 255; 0.6% vs. 0.24%; 5375/2254 021; $P < 0.001$).⁷

Table 4 gives the HIV-TB co-infection and medical history of the clients. All 407 knew their HIV status and 405 (99.5%, 95%CI 13.4–20.7) consented to disclose their HIV status. Of these, 69 (17.0%, 95%CI 13.3–20.6) were HIV-positive, with an age-adjusted prevalence of 18.6%; and 1.45% (1/69, 95%CI 0.3–2.6) had TB among HIV-positives (HIV-TB co-infection) compared to 0.3% (1/336, 95%CI 0.2–0.8) among HIV-negatives (Fisher's exact test, $P = 0.312$). One of the two *Mycobacterium tuberculosis* cases was HIV-positive, and the prevalence of TB-HIV co-infection was 50% (95%CI 1.3–98.7).

Only eight clients (1.96%, 95%CI 0.6–3.3) had a previous history of TB, and three (37.5%, 95%CI 8.5–75.5) were HIV-positive. A history of contact with an

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TABLE 2 Demographic characteristics of antenatal clinic clients in seven health facilities, Botswana, 2017–2018 ($n = 407$)

Variable	n (%)	(95%CI)	Min (n)	Max (n)
Age, years, median [IQR] ($n = 406$)	29 [24–35]		18	44
Gestational age, weeks, median [IQR] ($n = 404$) [†]	30 [23–36]		4	45
Persons/HH, median [IQR] ($n = 406$) [†]	4 [2–5]		1	16
Children aged <5 year/HH, median [IQR] ($n = 406$)	0 [0–1]		0	4
0	269 (66.1)	(61.50 to 70.70)		
1	106 (26.0)	(21.83 to 30.37)		
2	19 (4.7)	(2.64 to 6.76)		
3	10 (2.5)	(0.98 to 4.02)		
≥4	2 (0.5)	(–0.19 to 1.19)		
Education ($n = 405$) [†]				
Illiterate	1 (0.20)	(–0.24 to 0.64)		
Primary	9 (2.20)	(0.77 to 3.63)		
Secondary	207 (50.9)	(46.03 to 55.77)		
Tertiary	188 (46.2)	(41.34 to 51.06)		
Employment ($n = 407$) [†]				
Unemployed	150 (36.9)	(32.21 to 41.59)		
Private-sector employed	108 (26.5)	(22.21 to 30.79)		
Government-employed	65 (16.0)	(12.43 to 19.57)		
Self-employed	31 (7.6)	(5.02 to 10.18)		
Housewife	19 (4.7)	(2.64 to 6.76)		
Health care workers	11 (2.7)	(1.12 to 4.28)		
Other	23 (5.4)	(3.2 to 7.6)		

[†]Missing values.

CI = confidence interval; IQR = interquartile range; HH = household.

active TB case in the last 2 years was noted by 33 clients (8.1%, 95%CI 5.6–11.2), six of whom (18.2%, 95%CI 7.3–35.5) were HIV-positive. Sixty-four (15.8%, 95%CI 12.4–19.7) had a family history of TB, and 14 (21.9%, 95%CI 12.5–34.0) were HIV-positive.

A total of 63 (15.8%, 95%CI 12.4–19.7) had a history of alcohol intake; 5 (1.2%, 95%CI 0.4–2.9) had a history of cigarette smoking; 7 (1.7%, 95%CI 0.7–3.5) had a history of asthma; 3 (0.7%, 95%CI 0.2–2.1) had a history of diabetes and 21 (5.2%, 95%CI 3.2–7.8) had a history of hypertension.

The Figure shows the TB diagnostic results: both of the two sputum samples that tested positive on Xpert® and culture were susceptible to isoniazid, rifampicin, streptomycin and ethambutol. Neither of the patients with *M. tuberculosis* had close contact with active TB patients or a family history of TB. One of the TB patients was HIV-positive, had been prescribed antiretroviral treatment (ART) and in her second trimester of pregnancy. The

second TB patient was HIV-negative and in her third trimester. There were four asymptomatic clients with culture-positive non-tuberculous mycobacteria (NTM), two of whom were HIV-positive and on ART.

Table 5 details the comparison between Xpert® and TB symptom screening. Xpert® demonstrated a 100% (95%CI 19–100) sensitivity and 100% (95%CI 19–100) positive predictive value (PPV); while the sensitivity and PPV of TB symptoms screened for both were 0%. Xpert® had 100% (95%CI 99–100) specificity and 100% (95%CI 99–100) negative predictive value (NPV), while the specificity and NPV of TB symptoms screened was respectively 98% (95%CI 96–99) and 99% (95%CI 98–99).

DISCUSSION

The crude TB prevalence among pregnant women in our study was 0.5% and the age-adjusted TB prevalence (0.6%) was signifi-

TABLE 3 Clinical and laboratory outcomes of antenatal clinic clients in seven health facilities, Botswana, 2017–2018 ($n = 407$)

Clinical outcomes: TB symptoms (≥2 weeks)	Xpert® results		Culture results		HIV-positive
	Positive n (%)	Negative n (%)	Positive n (%)	Total n (%)	
Cough only	0 (0.0)	2 (0.49)	0 (0.0)	2 (0.49)	1 (50.0)
Fever only	0 (0.0)	1 (0.25)	0 (0.0)	1 (0.25)	1 (100.0)
Night sweats only	0 (0.0)	2 (0.49)	0 (0.0)	2 (0.49)	1 (50.0)
Weight loss only	0 (0.0)	1 (0.25)	0 (0.0)	1 (0.25)	0 (0.0)
Cough, fever and night sweat	0 (0.0)	2 (0.49)	0 (0.0)	2 (0.49)	0 (0.0)
Any TB symptom	0 (0.0)	8 (1.96)	0 (0.0)	8 (1.96)	3 (37.5)
Without TB symptom	2 (0.49)	397 (99.5)	6 (1.5)*	399 (98.0)	66 (16.54)

*Includes clients who tested positive for *M. tuberculosis* and non-tuberculous mycobacteria.
TB = tuberculosis; HIV = human immunodeficiency virus.

TABLE 4 HIV-TB co-infection and medical history of antenatal clinic clients in seven health facilities, Botswana, 2017–2018 ($n = 407$)

Medical history	n (%) (95%CI)	HIV-positive	HIV-negative	P value
Already diagnosed with TB	0 (0.0)	0.0	0.0	
Knew HIV status	407 (100.0)	69 (17.0)	336 (83.0)	
Disclosed HIV status*	405 (99) (98.2–99.9)	69 (17.0)	336 (83.0)	
TB cases	2 (0.5) (0.08–1.96)	1 (1.45) [†]	1 (0.3)	
TB-HIV co-infection	1 (0.5) (1.3–98.7)	1 (50.0) [‡]	1 (50.0)	0.312
Previous history of TB	8 (2.0) (0.62–3.32)	3 (37.5)	5 (62.5)	0.14
Contact with active TB case (last 2 years)	33 (8.1) (5.6–11.2)	6 (18.2)	27 (81.8)	0.85
Family history of TB	64 (15.8) (12.4–19.7)	14 (21.9)	50 (78.1)	<0.01
Asthma [§]	7 (1.7) (0.7–3.5)	1 (16.7)	5 (83.3)	
Cigarette smoking [§]	5 (1.2) (0.4–2.9)	3 (60.0)	2 (40.0)	
Alcohol intake [§]	63 (15.8) (12.4–19.7)	19 (30.2)	44 (69.8)	
Diabetes [§]	3 (0.7) (0.2–2.1)	2 (66.7)	1 (33.3)	
Hypertension [§]	21 (5.2) (3.2–7.8)	5 (23.8)	16 (76.2)	

*407 knew HIV status, but 2 were unwilling to disclose it ($n = 405$).

[†]HIV-TB coinfection = 1/69.

[‡]TB-HIV coinfection = 1/2.

[§]Missing values ($n = 405$).

HIV = human immunodeficiency virus; TB = tuberculosis; CI = confidence interval.

cantly higher than that of the general population. The proportion of HIV among TB patients was 50%. The prevalence of TB among HIV-positive and HIV-negative pregnant women was not significantly different. TB patients in this study did not have a history of smoking, alcohol intake or diabetes, and none of them had a history of contact with active TB case or a family history of TB. Xpert® demonstrated a 100% sensitivity and 100.0% specificity, while symptom screening had 0.0% sensitivity and 98% specificity.

The proportion of TB patients who were co-infected with HIV in our study is similar to that of the general population (50.0% vs. 59%).¹⁰ Likewise, the TB prevalence among HIV-positive pregnant women in our study (1.45%) was within a range (0.7–11.0%) of a systematic review among ANC and postpartum women.¹ Our result is lower than the finding from a study among symptomatic HIV-positive pregnant women in Soweto, South Africa (2.16%),²⁴ a cross-sectional survey among HIV-positive pregnant women receiving prenatal care at community clinics in South Africa (3.3%)¹⁴ and a prospective cohort study among people living with HIV, including pregnant women, in Western Kenya (5.9%).¹⁵ The observed difference in prevalence in the current study could be attributed to differences in study design, HIV prevalence, access to ART, or behavioural and sociodemographic factors. Of note, the observed differences could be explained by the higher HIV prevalence in South Africa and the lower number of pregnant women accessing ART in Kenya (<80%),^{6,25} and the fact that eligibility was based on a lower CD4 cell count, where access to ART was limited to those with advanced HIV disease, while the universal access to ART was high in Botswana (>90.0% among women aged >15 years), especially after Botswana endorsed the 'Test and Treat' policy in 2016.²⁶

None of our TB cases had a history of contact with active TB case or a family history of TB. We hypothesise that their TB might be a result of reactivation, rather than a new infection, and this warrants further research. Pregnancy-associated changes in cell-mediated immune response is known to increase susceptibility to disease.²⁷ This fact is also supported by a primary care-based cohort and self-controlled case series study in the United Kingdom that reported that the risk of TB in pregnancy was higher than those outside pregnancy.²⁸ Furthermore, other stud-

ies have validated this by expounding further on how pregnancy suppresses T-helper 1 (Th-1) pro-inflammatory response, masking symptoms while increasing susceptibility to infection and reactivation,¹ and the non-specific nature of early symptoms of TB, such as malaise and fatigue, which may also be attributed to pregnancy.⁴

It has been previously reported that health-seeking behaviour, client's age, educational status and alcohol and/or cigarette smoking could be risk factors for TB infection.^{4,12,28,29} Our data did not show any association between TB and smoking, alcohol intake or diabetes, as none of our patients with TB had a history of these conditions. In our study, approximately 26% of pregnant women had at least one child in a household with crowded living conditions, and previous evidence has shown that most paediatric TB cases (children aged <15 years) in Botswana are acquired from household contacts, which could explain this increasing trend in paediatric HIV infection.³⁰ This is supported by a study that showed that children living in a crowded household were five times more likely to have TB infection.³¹

Although this study reported four culture-positive NTM cases, a single culture result should be interpreted cautiously, as Bo-

FIGURE Tuberculosis diagnosis among antenatal clinic clients in seven health facilities, Botswana, 2017–2018. NTM = non-tuberculous mycobacteria.

TABLE 5 Comparison of sensitivity, specificity, PPV and NPV of Xpert testing and TB symptom screening against culture as reference among antenatal clinic clients in seven health facilities, Botswana, 2017–2018 ($n = 407$)

Screening method	Sensitivity n (%) (95%CI)	Specificity n (%) (95%CI)	PPV n (%) (95%CI)	NPV n (%) (95%CI)
Xpert testing	2/2 (100) (19–100)	405/405 (100) (99–100)	2/2 (100) (19–100)	405/405 (100) (99–100)
TB symptoms*	0/2 (0)	397/405 (98) (96–99)	0/8 (0)	397/399 (99) (98–99)

*One or more TB symptoms ≥ 2 weeks (cough, fever, night sweat and/or weight loss).

PPV = positive predictive value; NPV = negative predictive value; TB = tuberculosis; CI = confidence interval.

swana treatment guidelines require at least two positive cultures.¹⁰ However, the areas of NTM evaluation, diagnosis and appropriate treatment in the national TB programme need to be improved.

Our finding of high sensitivity of Xpert® is well substantiated by a number of other studies carried out in the general population (68–98%).^{16,17,19,20} The sensitivity and specificity of Xpert® in the present study was almost similar to that reported by a systematic review of 27 studies involving 9557 adults, most from low- and middle-income countries, that showed a pooled sensitivity and specificity of Xpert® of respectively 89.0% and 99.0%.¹⁹ The number of studies using Xpert® to diagnose TB in pregnancy are limited: a cross-sectional study among 306 HIV-positive Kenyan pregnant women seeking ANC in Western Kenya reported a lower sensitivity of 43%,³² while a study among obstetric and gynaecologic inpatients had a sensitivity of 80.8%¹⁷ and a case report, which recommended Xpert® as point-of-care screening tool, described two HIV- and acid-fast bacilli-negative pregnant women diagnosed with TB using Xpert®.³³

Botswana's TB diagnostic algorithm currently includes Xpert® as the initial TB diagnostic test for all presumed TB cases, including pregnant women.¹⁰ However, this does not address the TB screening and early diagnostic challenge among pregnant women having low sensitivity (<28%) for symptomatic TB screening.^{14,15} The 2013 WHO TB guidelines recommends systematic screening for active TB in settings where TB prevalence in the general population is greater than 100/100 000 population using a more sensitive diagnostic test than smear microscopy, and Botswana meets this requirement.¹⁸

Our study had some limitations. The exclusion of 22 (5.1%) study subjects may have caused some loss of TB cases. However, this did not affect our conclusion as the size of the sample was well calculated as $P = 0.5$, 95%CI at $\alpha = 5\%$, and a margin of error of 0.05. Therefore, we believe that the two cases we found in this sample is a true representation for the population. We did not recruit participants beyond the calculated size to find more cases, as that would have made trivial effects appear significant and thus lead to spurious conclusions.

In conclusion, this study demonstrated a significantly higher prevalence of TB among pregnant women in Botswana, but found no significant difference in TB prevalence between HIV-positive and -negative pregnant women. We also demonstrated that symptom screening has limited ability to detect TB among pregnant women. Botswana's current TB diagnostic algorithm includes Xpert® as the initial TB diagnostic test, but focuses only on presumed (suspected) TB cases. There is a high probability of missing subclinical TB cases among pregnant women that could lead to poor foetal and maternal health outcomes. Given the high HIV prevalence of 18.5% in Botswana and the very low sensitivity of symptomatic TB screening among pregnant women, there is a high probability that pregnant women may go undiagnosed and untreated for TB. This clearly

signifies an urgent need for setting up a system for early detection and management of TB among pregnant women. An alternative TB screening algorithm is therefore highly recommended, cognizant of the peculiar features of pregnant women, such as screening all pregnant women at higher risk, irrespective of TB symptoms.

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Objectifs : Déterminer 1) la prévalence de la tuberculose (TB) et de la co-infection VIH-TB pendant la grossesse, et 2) la sensibilité du dépistage de la TB basé sur les symptômes et de l'Xpert® MTB/RIF par rapport à l'étalon or de la culture.

Schéma : Ceci est une étude transversale. Des femmes enceintes venant de sept centres de santé ont été enrôlées de façon aléatoire et dépistées en fonction des symptômes de TB. Deux échantillons de crachats ont été recueillis chez toutes les femmes et chacune a eu un test Xpert® et une culture. Le statut VIH a été déterminé grâce aux dossiers de consultation prénatale.

Résultats : Sur 407 femmes enrôlées et analysées, huit (2,0% IC95% 0,62–3,32) avaient un ou plusieurs symptômes de TB et toutes ont été négatives pour l'Xpert® et la culture. Deux autres femmes (0,5% ; IC95% 0,08–1,96) asymptomatiques ont été positives pour les deux

tests. La prévalence ajustée de TB est plus élevée que dans la population générale (0,6% contre 0,24% ; $P < 0,001$). La prévalence de TB parmi les femmes positives au VIH et non infectées a été respectivement de 1/69 (1,45% ; IC95% 0,29–2,61) et 1/336 (0,3% ; IC95% 0,23–0,83) (test exact de Fisher, $P = 0,312$). L'Xpert® a démontré une sensibilité de 100% et une spécificité de 100,0% alors que le dépistage sur les symptômes a eu une sensibilité de 0,0% mais une spécificité de 98%.

Conclusion : La prévalence de la TB chez les femmes enceintes est élevée et le dépistage sur les symptômes a une capacité limitée de détection de la TB. Il y a un besoin urgent d'un algorithme alternatif de dépistage de la TB pour les femmes enceintes quels que soient leurs symptômes de TB.

Objetivos: Determinar 1) la prevalencia de tuberculosis (TB) y de coinfección por el virus de la inmunodeficiencia humana (VIH) durante el embarazo, y 2) la sensibilidad de la detección mediante los síntomas y la prueba Xpert® MTB/RIF comparadas con el cultivo como método de referencia.

Método: Fue este un estudio transversal. Se incorporaron al estudio de manera aleatoria las embarazadas de siete establecimientos de salud, en quienes se practicó la detección sintomática de la TB. Se recogieron dos muestras de esputo de todas las usuarias y se estudiaron mediante la prueba Xpert® y el cultivo. Se determinó la situación frente al VIH a partir del expediente clínico de la atención prenatal.

Resultados: Ocho de las 407 mujeres inscritas y analizadas (2,0%; IC95% 0,62–3,32) presentaban uno o varios síntomas indicativos de

TB y la prueba Xpert® y el cultivo fueron negativos en todas. Otras dos mujeres asintomáticas (0,5%; IC95% 0,08–1,96) tuvieron resultados positivos en ambas pruebas. La prevalencia ajustada de TB fue más alta que en la población general (0,6% contra 0,24%; $P < 0,001$). La prevalencia de TB en las mujeres infectadas por el VIH fue 1 en 69 (1,45%; IC95% 0,29–2,61) y en las mujeres sin esta infección fue 1 en 336 (0,3%; IC95% 0,23–0,83; prueba exacta de Fisher, $P = 0,312$). La prueba Xpert® demostró una sensibilidad de 100% y una especificidad de 100% y la detección a partir de los síntomas tuvo una sensibilidad de 0,0% pero una especificidad de 98%.

Conclusión: La prevalencia de TB en las embarazadas es alta y la capacidad de la detección sintomática para diagnosticarla es limitada. Se precisa con urgencia otro algoritmo diagnóstico en las embarazadas, independiente de la presencia de síntomas indicativos de TB.