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Tuberculosis and human immunodeficiency virus co-infections and their predictors at a hospital-based HIV/AIDS clinic in Uganda

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SUMMARY

SETTING: Mulago Hospital, Uganda.

OBJECTIVE: To evaluate the burden of TB-HIV (tuberculosis-human immunodeficiency virus) co-infections and their predictors in an urban hospital-based HIV programme.

DESIGN: Prospective observational study.

METHODS: Clinicians screened all patients with HIV/AIDS (acquired immune-deficiency syndrome) for previous and current TB treatment at enrolment and throughout follow-up.

RESULTS: Of 10 924 patients enrolled between August 2005 and February 2009, co-prevalent TB was 157/10 924 (1.4%), which included 88/157 (56%) with TB confirmed at enrolment and 65/157 (41%) with TB diagnoses established during follow-up in whom symptoms were present at enrolment. Male sex (adjusted odds ratio [aOR] 2.3, 95%CI 1.6–3.2) and body mass index (BMI) $\leqslant$20 kg/m^2 (aOR 3.8, 95%CI 2.5–5.4) were associated with co-prevalent TB. Overall, 749/10 767 (7%) were diagnosed with incident TB at a higher rate among antiretroviral treatment (ART) patients (8/100 patient years of observation [PYO]) than non-ART patients (5/100 PYO, log rank $P < 0.001$). Female sex (adjusted hazard ratio [aHR] 1.4, 95%CI 1.2–1.7) and baseline BMI $\leqslant$ 20 (aHR 1.9, 95%CI 1.6–2.2) predicted incident TB.

CONCLUSION: Routine TB screening in the HIV/AIDS care programme identified a significant number of TB-HIV co-infections among patients with and without ART, and is therefore a potential strategy to improve HIV treatment outcomes in resource-limited settings.

KEY WORDS: HIV/AIDS; TB-HIV co-infections; tuberculosis; ART; Africa

TB-HIV (tuberculosis-human immunodeficiency virus) co-infection remains the leading cause of mortality among people living with HIV/AIDS (acquired immune-deficiency syndrome) (PLWA) in Africa,[1–3] where patients present with typically advanced HIV disease.[4,5] PLWA are up to 50 times more likely to develop active TB in a given year than HIV-negative individuals,[6] and TB-HIV co-infections have been associated with poor long-term immunological recovery.[7] Furthermore, delays in initiating antiretroviral treatment (ART) result from delays in establishing a diagnosis of TB; a delay of 90 days in ART initiation after HIV diagnosis is associated with a 50% risk of mortality.[8] The dual TB-HIV epidemic thus poses implementation challenges to universal access to HIV treatment for PLWA in Africa.

HIV-induced immune suppression modifies the clinical presentation of TB and makes diagnosis of TB-HIV co-infections difficult.[9,10] In hospital-based series, 40–65% of HIV-infected Africans with respiratory disease had TB;[11] however, autopsy studies show that up to 50% of HIV-related TB deaths go undiagnosed.[10,11] Strategies to reduce TB-related mortality among PLWA depend on the accurate identification of risk factors, availability of diagnostic facilities and a high index of suspicion by clinicians in HIV/AIDS care.

Data available on the burden of TB-HIV co-infections in hospital-based routine HIV care facilities are limited. We evaluated the burden of TB-HIV co-infections and their predictors in an urban hospital-based HIV programme by routine TB screening at enrolment into the programme and through follow-up.

METHODS

Study setting

The Immune Suppression Syndrome (ISS) Clinic was established in 2005 to offer out-patient HIV/AIDS care at Mulago Hospital, Kampala, Uganda. The clinic

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provides HIV/AIDS care at no cost to over 10 000 patients, of whom 68% are female. HIV care includes counselling, clinician evaluation, prophylaxis for opportunistic infections (OIs) and laboratory testing, including CD4+ T-cell measurement (when available). Patients receive daily cotrimoxazole prophylaxis, safe drinking water vessels, insecticide-treated bed nets and counselling and HIV testing for family members. About 50% of patients are eligible for ART at World Health Organization (WHO) Clinical Stages 3 and 4 and/or a CD4 count of ⩽250 cells/μl (where CD4 counts are available), and are initiated on ART within 8 weeks post-enrolment. ART patients are encouraged to have a family member or friend to assist with ART medication adherence and toxicity recognition. First-line ART is provided through the Global Fund to Fight AIDS, Tuberculosis and Malaria using a generic combined formulation of stavudine (d4T), lamivudine (3TC) and nevirapine (NVP), or through the United States President's Emergency Plan for AIDS Relief with a combined formulation of zidovudine (ZDV) and 3TC plus efavirenz (EFZ)/NVP and a combined formulation of tenofovir and emtricitabine (Truvada) plus EFZ/NVP.

Enrolment and follow up

Between August 2005 and February 2009, 10 924 patients were consecutively enrolled at the ISS clinic. Clinic appointments for ART patients are scheduled at 2, 4, 8, 12 and 16 weeks and every 12 weeks after that. Patients have open access to the clinic for any medical problems. Missed appointments, deaths and losses to follow-up among ART patients are ascertained by a home visiting team. Non-ART patients were reviewed 3 monthly for refill of cotrimoxazole prophylaxis, OI treatment and re-evaluation for ART eligibility.

TB screening

Clinicians screen all patients for TB by completing a questionnaire that evaluates previous and current anti-tuberculosis treatment as well as the presence of

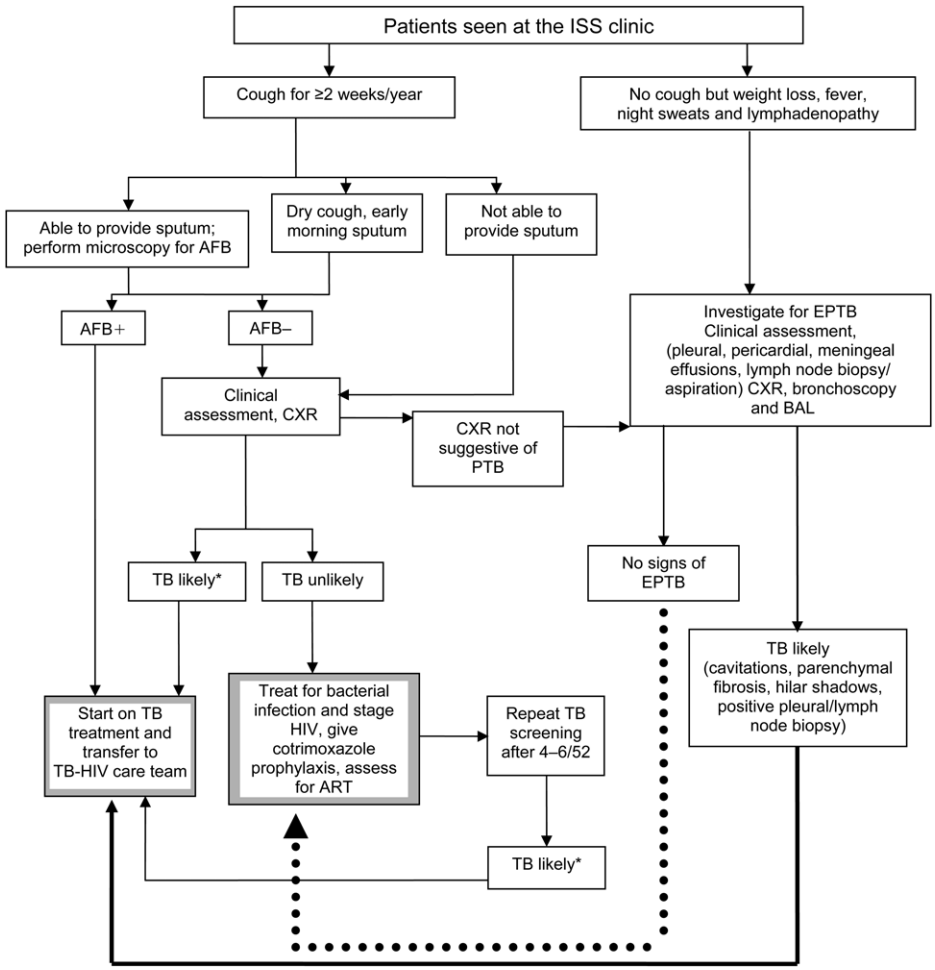

Figure 1 Algorithm for TB screening at the Mulago ISS Clinic in Uganda. *'TB likely' patients were treated as TB cases, as TB cultures were not affordable for the HIV programme in a resource-constrained setting; 679 (75%) of TB likely cases had AFB-positive smears, 106 (19%) were AFB-negative and 57 (6%) had extra-pulmonary TB; only five patients had BAL. ISS = immune suppression syndrome; AFB = acid-fast bacilli; AFB+ = AFB-positive; AFB− = AFB-negative; EPTB = extra-pulmonary TB; CXR = chest X-ray; BAL = bronchoalveolar lavage; CBC = complete blood count; ESR = erythrocyte sedimentation rate; PTB = pulmonary tuberculosis; HIV = human immunodeficiency virus.

symptoms of active TB (cough, fever for ⩾2 weeks, night sweats and loss of weight). Patients with symptoms of active TB underwent further investigations as required (Figure 1) at enrolment and through follow-up, irrespective of ART status. Patients with likely TB are transferred to the TB-HIV team (a subunit of the ISS clinic) to initiate anti-tuberculosis treatment and subsequently ART as soon as they are eligible and ready for treatment (according to WHO and national treatment guidelines). Under the TB-HIV team, patients are managed until they complete TB treatment, after which they are transferred back to the general HIV care team.

Definitions of TB

Co-prevalent TB was defined as patients with likely TB (TB cases) if 1) TB diagnosis was confirmed at enrolment; 2) TB was diagnosed prior to programme entry, for which anti-tuberculosis drugs were still being received at enrolment; 3) TB diagnosis was established during follow-up for which symptoms were present at enrolment; and 4) TB diagnosis was confirmed during the first 3 months of ART for which symptoms were present prior to ART initiation.

Incident TB was defined as likely TB for which date of symptom onset and date of diagnosis were both after enrolment into HIV care and after initiation of ART (for those on ART at the time of TB diagnosis).

TB cases included pulmonary smear-positive TB (defined by two acid-fast bacilli [AFB] positive smears with compatible clinical illness), pulmonary smear-negative TB (defined as at least two AFB-negative smears with clinically and radiologically compatible illness of at least 3 weeks' duration that did not respond to conventional antibiotics), and extra-pulmonary TB, where the diagnosis was based upon a combination of clinical, radiological and histopathological findings of at least one AFB-positive smear from an extra-pulmonary site.[12,13]

Statistical analysis

We analysed data from patients who were enrolled into HIV/AIDS care between August 2005 and February 2009. Participants with and those without co-prevalent TB were compared using multivariate logistic regression analysis to determine independent predictors of co-prevalent TB. The Cox proportional hazards model was used to examine associations between baseline variables and a diagnosis of incident TB. Independent variables were included if they were significantly associated with incident TB at bivariate analysis ($P < 0.05$). The model included sex, age, referral from the routine HIV counselling and testing (RCT) programme and history of TB treatment in the previous 1 year. The Kaplan-Meier technique and the log-rank test were used to compare TB-free survival probability curves for both the ART and non-ART groups.

The present study was approved by the Mulago Hospital Research and Ethics Committee.

RESULTS

Enrolment into HIV care

Overall, 10 924 patients were enrolled at the Mulago Hospital ISS clinic. The median age of the patients was 32 years (interquartile range [IQR] 27–38], and 7372 (67%) were female; 3928 (36%) had WHO Clinical Stage 3 and 4, and the median CD4 count was 154 cells/μl (IQR 55–363). The majority of the patients (7264, 67%) were referrals from the RCT programme in the hospital. The number of patients enrolled increased over time, and the median CD4 count at enrolment increased from 71 cells/μl (IQR 34–154) in 2005 to 319 cells/μl (IQR 106–597) in 2009 (Figure 2). Of the cumulative 906 TB likely cases diagnosed (co-prevalent and incident), 679 (75%) had AFB-positive smears, 106 (19%) were AFB-negative and 57 (6%) had extra-pulmonary TB.

Co-prevalent TB

Only 580/10 908 (5%) had a history of TB treatment in the previous year. Co-prevalent TB was diagnosed in 157/10 924 (1.4%), which included 88/157 (56%) with TB confirmed at enrolment, 4/157 (3%) with a TB diagnosis made prior to programme entry, for which anti-tuberculosis treatment was still being given at enrolment, and 65/157 (41%) TB diagnoses established during follow-up for which symptoms were present at enrolment. However, no TB was

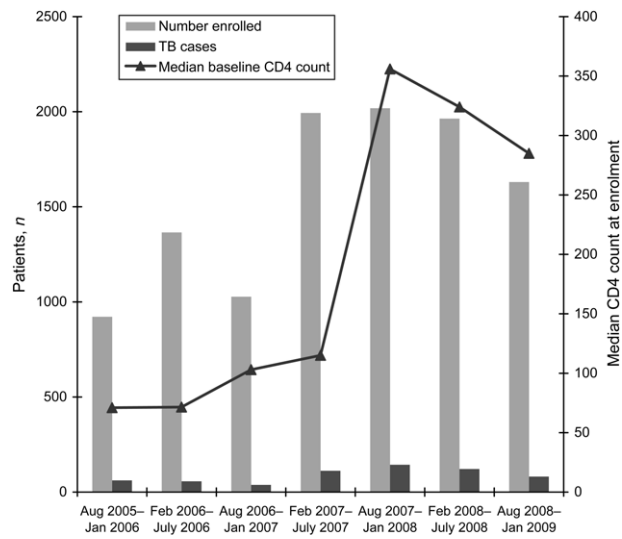

Figure 2 Distribution of patients enrolled and TB cases from August 2005 to February 2009. The increasing coverage of routine HIV testing at the Mulago Hospital during the study period led to an increase in the number of patients who underwent HIV testing at less advanced stages of the disease. Only 11% of patients underwent CD4 count measurement prior to initiation of antiretroviral treatment. TB = tuberculosis; HIV = human immunodeficiency virus.

Table 1 Logistic regression analysis of factors associated with TB among 10 924 patients enrolled into HIV/AIDS care at the Mulago ISS Clinic between August 2005 and February 2009

Variable	Prevalent TB *n* (%)	No prevalent TB *n* (%)	Unadjusted OR (95%CI)	*P* value	Adjusted OR (95%CI)	*P* value
Total	157 (1.4)	10 767 (98.6)				
Sex						
Female	65 (42)	7 307 (68)				
Male	92 (58)	3 460 (32)	3.0 (2.1–4.1)	<0.001	2.3 (1.6–3.2)	<0.001
Age, years						
⩽35	86 (55)	6 478 (60)				
>35	71 (49)	4 289 (40)	1.2 (0.9–1.7)	0.171	1.0 (0.7–1.4)	0.993
Level of education						
Primary and below	86 (56)	6 043 (56)				
Secondary and above	71 (44)	4 724 (44)	1.0 (0.7–1.4)	0.735	1.0 (0.8–1.5)	0.708
BMI*						
⩽20	104 (66)	3 545 (33)				
>20	44 (28)	6 682 (62)	3.3 (3.3–5.0)	<0.001	3.8 (2.5–5.4)	<0.001
Point of referral						
RCT programme	114 (72)	7 150 (66)				
Other testing sites	43 (28)	3 617 (33)	1.3 (0.9–1.8)	0.102	1.3 (0.9–1.9)	0.208
TB treatment in the past year†						
No	139 (89)	9 671 (90)				
Yes	14 (11)	884 (10)	1.3 (0.4–3.6)	0.825	1.4 (0.5–3.9)	0.473

* 549/10 924 (5%) patients had missing baseline BMI.
† 216/10 924 (2%) patients had no data on history of TB treatment.
TB = tuberculosis; ISS = immune suppression syndrome; HIV = human immunodeficiency virus; AIDS = acquired immune-deficiency syndrome; OR = odds ratio; CI = confidence interval; BMI = body mass index; RCT = routine HIV counselling and testing.

diagnosed during the first 3 months of ART for which symptoms were present prior to ART initiation. Male sex (adjusted odds ratio [aOR] 2.3, 95% confidence interval [CI] 1.6–3.2) and body mass index (BMI) ⩽20 kg/m^2 (aOR 3.8, 95%CI 2.5–5.4) were associated with co-prevalent TB (Table 1).

Incident TB

Overall, 749/10 767 (7%) patients were diagnosed with incident TB, at a rate of seven cases per 100 person-years of observation (PYO). Of these, 513/749 (69%) had initiated ART, and the median time between ART initiation and TB diagnosis was 14 months (range 0–41). Incident TB was significantly higher among ART patients (relative to non-ART patients: 8/100 PYO, 95%CI 8–9 vs. 5/100 PYO, 95%CI 5–6, log rank $P < 0.001$; Figure 3). Only 57/749 (8%) incident TB cases were extra-pulmonary TB, the remainder being pulmonary TB.

Male sex (adjusted hazard ratio [aHR] 1.4, 95%CI 1.2–1.7), baseline BMI ⩽ 20 (aHR 1.9, 95%CI 1.6–2.2) and treatment for TB in the past year (aHR 1.2, 95%CI 1.1–1.5) were significant predictors of incident TB (Table 2). Incident TB patients on ART were more likely to have WHO Clinical Stage 3 and 4 disease (OR 2.1, 95%CI 1.8–2.5) compared to their non-ART counterparts (Table 3).

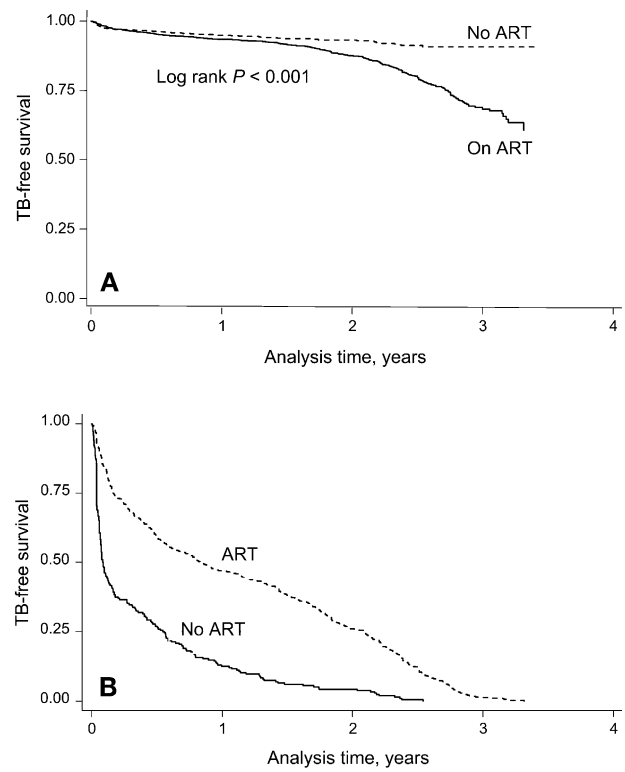

Figure 3 **A.** Kaplan-Meier survival estimates showing TB-free survival among patients with and without ART. **B.** Subgroup analysis of TB-free survival among the 749 patients who developed incident TB. Half of the patients with incident TB were diagnosed in the first 14 months of enrolment into HIV/AIDS care. TB = tuberculosis; ART = antiretroviral treatment; HIV = human immunodeficiency virus; AIDS = acquired immune-deficiency syndrome.

DISCUSSION

We found a co-prevalent TB rate of 1.4%, which is lower than previously reported in a Ugandan home-based HIV care study, where 7.2% of patients had

Table 2 Cox proportional hazards analysis of predictors of incident TB among 10 767 patients at the Mulago ISS Clinic between August 2005 and February 2009

Variable	Incident TB *n* (%)	No incident TB *n* (%)	Unadjusted HR (95%CI)	*P* value	Adjusted HR (95%CI)	*P* value
Total	749 (7)	10 018 (93)				
Sex						
Female	426 (57)	6 881 (69)				
Male	323 (43)	3 137 (31)	1.6 (1.4–1.9)	<0.001	1.4 (1.2–1.7)	<0.001
Age, years						
⩽35	413 (55)	6 065 (61)				
>35	336 (45)	3 953 (39)	1.2 (1.1–1.4)	0.004	1.0 (0.9–1.2)	0.754
Level of education						
Primary and below	404 (53)	5 639 (56)				
Secondary and above	345 (47)	4 379 (44)	1.1 (0.9–1.3)	0.211	1.0 (0.9–1.2)	0.697
BMI*						
⩽20	368 (49)	6 314 (63)				
>20	346 (46)	3 199 (32)	1.9 (1.6–2.2)	<0.001	1.9 (1.6–2.2)	<0.001
Point of referral						
RCT programme	555 (74)	6 595 (66)				
Other testing sites	194 (26)	3 423 (34)	1.5 (1.3–1.8)	<0.001	1.1 (0.9–1.3)	0.218
Treatment for TB in the past year†						
Yes	69 (9)	815 (8)				
No	651 (87)	9 020 (90)	1.2 (0.9–1.5)	0.906	1.2 (1.1–1.5)	0.011

* 540/10 924 (5%) had follow-up data without baseline BMI.
† 212/10 767 (2%) patients had follow-up data without baseline data on history of TB treatment in the past year.
TB = tuberculosis; ISS = immune suppression syndrome; HR = hazard ratio; CI = confidence interval; RCT = routine HIV counselling and testing.

active TB at enrolment,[2] and in South Africa, where 15% were receiving TB treatment at enrolment, with an additional 10% diagnosed during the ART screening process.[8,13] However, we found that 41% of the co-prevalent TB cases had suspected TB at enrolment that was confirmed during follow-up. The delay in making the diagnosis of likely TB is attributable to 1) patient-related socio-economic factors that influence their return for diagnostic work-up,[14] and 2) health system factors that contribute up to 74% of the delays in TB diagnosis, thus reflecting the inadequacy of health systems to diagnose TB among symptomatic individuals.[14]

It is in this context that the current study encouraged TB screening for all patients in HIV/AIDS care. Routine TB screening at entry into HIV/AIDS care

Table 3 Characteristics of 749 patients who developed incident TB at the Mulago ISS Clinic between August 2005 and February 2009.

Variable	ART *n* (%)	Non-ART *n* (%)	OR (95%CI)	*P* value
Total	513 (68)	236 (32)		
Sex				
Female	296 (58)	130 (55)		
Male	217 (42)	106 (45)	1.1 (0.8–1.5)	0.502
Age, years				
⩽35	266 (52)	147 (62)		
>35	147 (28)	89 (38)	1.5 (1.1–2.1)	0.007
Level of education				
Primary and below	255 (50)	149 (63)		
Secondary and above	258 (50)	87 (37)	1.7 (1.3–2.4)	<0.001
WHO clinical stage*				
1 and 2	234 (46)	111 (47)		
3 and 4	279 (54)	125 (53)	2.1 (1.8–2.5)	<0.001
BMI†				
⩽20	220 (43)	126 (53)		
>20	272 (53)	96 (40)	1.1 (0.8–1.4)	0.717
Point of referral				
RCT programme	393 (77)	162 (69)		
Other testing sites	120 (23)	74 (31)	1.5 (1.1–2.1)	0.021

* The majority (90%) of patients initiated ART on WHO clinical criteria with no CD4 counts available.
† 35/714 (5%) incident TB patients had data missing for BMI.
TB = tuberculosis; ISS = immune suppression syndrome; ART = antiretroviral therapy; OR = odds ratio; CI = confidence interval; WHO = World Health Organization; BMI = body mass index; RCT = routine HIV counselling and testing.

identifies a significant number of TB-HIV co-infections that would otherwise remain undiagnosed and contribute to the morbidity and mortality among patients in HIV treatment programmes.[2,3,15] However, the majority (67%) of the patients were referred from the hospital routine HIV testing programme for admitted patients, where patients receive diagnosis and treatment of OIs and other comorbidities. Our results may have therefore underestimated the TB-HIV co-infections among PLWA, as the patients with confirmed active TB during hospitalisation were routinely treated for both HIV and TB medication as per national and WHO guidelines.

This model minimises the possible delays caused by first referring patients for enrolment into an HIV care programme where individuals may have up to four clinic visits before a diagnosis of TB is made.[12] The latter causes delays because patients often report lack of funds for transportation to attend the return visits.[14] Moreover, the delay between diagnosis and treatment is associated with a high pre-ART mortality rate, as patients do not present immediately on referral.[4,16] On the other hand, 5% of the cohort had had previous treatment of TB, which potentially contributes to the low rates of co-prevalent TB rates in this study. Our definition of co-prevalent TB included patients with a diagnosis of TB made prior to entry into the programme who were still receiving antituberculosis treatment at enrolment, to give HIV care programmes in similar settings an indication of the need to plan for immediate availability of antituberculosis drugs for this subpopulation; however, the number was too small (3%) to alter the analysis of co-prevalent TB.

We found that a BMI of $\leqslant$20 was associated with co-prevalent TB, and attribute this to the fact that wasting is part of the clinical symptomatology of both HIV/AIDS and TB. Clinicians should therefore endeavour to exclude TB-HIV co-infection among patients with wasting. Similarly, male sex was associated with co-prevalent TB, which is consistent with other studies from lower-income countries.[17–19] This is possibly due to the reluctance of males to attend HIV testing and treatment services, as has been previously documented.[20] We therefore encourage ongoing campaigns to increase male involvement in HIV testing, prevention and treatment programmes to enable early diagnosis and appropriate interventions before the development of life-threatening OIs, including TB. In addition, we recommend more studies to explore the role of sex in TB-HIV co-infection in Africa.

The TB incident rate was seven cases per 100 PYO, which is comparable to reports from other Ugandan cohorts,[2,21] and incident TB was significantly higher among ART than non-ART patients. Considering loss to follow-up and mortality rates of respectively 15% and 17% in similar cohorts,[4,22] we used the survival analysis technique, and all patients contributed to follow-up time, irrespective of status. However, ART patients had more intense follow-up relative to non-ART patients, thus introducing a bias of more opportunities for TB diagnosis among ART patients. Most cohorts report incident TB among ART patients and do not consider non-ART patients;[7,23] however, our results raise a policy issue of encouraging robust TB screening and follow-up for ART and non-ART patients.

Among the incident TB cases, the ART and non-ART cohorts were similar, except that ART patients had more advanced HIV disease and were more likely to be referrals from the RCT programme where they had been prepared to initiate ART. We appreciate that although TB puts all PLWA in WHO Clinical Stage 3 and 4, making them eligible for ART,[24,25] about 30% of the incident TB cases had not yet initiated ART, reflecting the prevalent challenge of reaching all those in need of HIV treatment in resource-limited settings.[26]

Incident TB in resource-limited settings is secondary to both undiagnosed co-prevalent TB at ART initiation and subclinical TB developing as part of the immune reconstitution inflammatory syndrome.[27] It is noteworthy that likely TB was not diagnosed during the first 3 months of ART, a result that emphasises that rigorous TB screening prior to ART is likely to reduce cases of 'TB unmasking', which is largely due to undiagnosed or active subclinical TB at the time of ART initiation.[28–30] Clinicians therefore require the skills and facilities to diagnose and treat TB to reduce TB-associated mortality in HIV treatment programmes.[31–33] However, there is also a need to evaluate the cost-effectiveness of routine TB screening in the context of the rapidly growing numbers of PLWA and the already constrained resources available for health care in Africa.

Like most programmes in resource-limited settings, we relied on clinical, microbiological sputum examination and radiological findings for the diagnosis and treatment of likely TB cases, as sputum culture was not affordable.[24] In similar settings, sputum microscopy has a sensitivity of 62% and a positive predictive value of 85%,[34] making it acceptable to treat likely TB cases in the absence of culture in view of the high TB-associated mortality among PLWA. HIV care programmes in resource-limited settings face an added challenge in TB diagnosis, hence the urgent need to explore cheaper alternative diagnostic tests.[12,35] We do not report on TB-associated mortality, as this is being handled by the TB follow-up team.

CONCLUSION

Routine TB screening at enrolment in HIV/AIDS care and through follow-up identifies a significant number of TB-HIV co-infections among ART and non-ART patients, and is thus a potential strategy for improving HIV treatment outcomes in resource-limited settings.

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RÉSUMÉ

CONTEXTE : Hôpital Mulago, Ouganda.
OBJECTIF : Evaluer le fardeau des co-infections TB-VIH (tuberculose-virus de l'immunodéficience humaine) et leurs facteurs prédictifs dans un programme VIH basé sur un hôpital urbain.
SCHÉMA : Etude observationnelle prospective.
MÉTHODES : Les cliniciens ont dépisté chez tous les patients VIH/SIDA (syndrome de l'immunodéficience acquise) en ce qui concerne les traitements TB antérieurs ou présents lors du recrutement et au cours de l'ensemble du suivi.
RÉSULTATS : Sur 10 924 patients recrutés entre août 2005 et février 2009, la coprévalence de la TB a existé chez 157/10 924 (1,4%), ce qui comportait 88/157 (56%) de TB confirmée lors du recrutement et 65/157 (41%) de diagnostics de TB établis au cours du suivi chez qui les symptômes étaient présents lors du recrutement. Sont en association avec la coprévalence d'une TB le sexe masculin (OR_{aj} 2,3 ; IC95% 1,6–3,2) ainsi qu'un index de masse corporelle (BMI) $\leqslant$20 (OR_{aj} 3,8 ; IC95% 2,5–5,4). Dans l'ensemble, une TB incidente a été diagnostiquée chez 749 des 10 767 (7%), et à un taux plus élevé chez les patients sous traitement antirétroviral (ART ; 8/100 années-personne) que chez les patients non-ART (5/100 années-personne; log rank $P < 0{,}001$). Une TB incidente est prédite par le sexe féminin (ratio de risque ajusté [HR_{aj}] 1,4 ; IC95% 1,2–1,7) et par un BMI initial $\leqslant$ 20 (HR_{aj} 1,9 ; IC95% 1,6–2,2).
CONCLUSION : Le dépistage de routine de la TB dans un programme de soins du VIH/SIDA a permis d'identifier un nombre significatif de co-infections TB-VIH chez les patients avec ou sans ART ; il représente dès lors une stratégie potentielle pour améliorer les résultats du traitement VIH dans des contextes à ressources limitées.

RESUMEN

MARCO DE REFERENCIA: El hospital de Mulago en Uganda.
OBJETIVO: Evaluar la carga de morbilidad de coinfección por tuberculosis (TB) y el virus de la inmunodeficiencia humana (VIH) y sus factores pronósticos, en un programa de atención de la infección del VIH en un hospital urbano.
DISEÑO: Fue este un estudio prospectivo de observación.
MÉTODOS: Los médicos interrogaron a todos los pacientes con infección por el VIH y síndrome de inmunodeficiencia adquirida (SIDA) sobre el antecedente de tratamiento antituberculoso previo o actual, en el momento de comenzar el estudio y a lo largo del seguimiento.
RESULTADOS: Participaron en el estudio 10 924 pacientes, inscritos entre agosto del 2005 y febrero del 2009. La prevalencia de coinfección tuberculosa fue 157 en 10 924 pacientes (1,4%); de estos casos 88 (56%) se confirmaron en el momento de entrar al estudio y 65 (41%) durante el seguimiento, pero los síntomas estaban presentes al comienzo. Los factores que se asociaron con coinfección tuberculosa fueron el sexo masculino (ORa 2,3; IC95% 1,6–3,2) y el índice de masa corporal (BMI) $\leqslant$20 (ORa 3,8; IC95% 2,5–5,4). En total, se diagnosticaron 749 casos nuevos de TB en los 10 767 pacientes (7%), con una tasa más alta en los pacientes que recibían tratamiento antirretrovírico (ART; 8 por 100 años-persona) que en los pacientes que no lo recibían (5 por 100 años-persona; prueba del orden logarítmico $P < 0{,}001$). Los factores de predicción de TB nueva fueron el sexo femenino (CRIa 1,4; IC95% 1,2–1,7) y un BMI inicial $\leqslant$ 20 (CRIa 1,9; IC95% 1,6–2,2).
CONCLUSIÓN: La detección sistemática de la TB en el programa de atención de la infección por el VIH y el SIDA puso en evidencia una cantidad considerable de casos de coinfección en los pacientes que recibían ART y en quienes no lo recibían; esta estrategia puede mejorar los desenlaces del tratamiento de la infección por el VIH en entornos con recursos limitados.