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The epidemiology of HIV-associated tuberculosis in rural Cambodia

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SUMMARY

SETTING: Banteay Meanchey Province, Cambodia.

OBJECTIVE: The World Health Organization recommends human immunodeficiency virus (HIV) testing for all tuberculosis (TB) patients and TB screening for all HIV-infected persons in countries with a TB-HIV syndemic. We sought to determine whether evidence supports implementing these recommendations in South-East Asia.

DESIGN: We conducted a cross-sectional survey and retrospective cohort study of patients newly diagnosed with HIV or TB from October 2003 to February 2005 to identify risk factors for HIV infection and TB, and for death during TB treatment.

RESULTS: HIV infection was diagnosed in 216/574 (38%) TB patients. TB disease was found in 124/450 (24%) HIV-infected persons. No sub-groups of patients had a low risk of HIV infection or TB. Of 180 TB patients with HIV infection and a recorded treatment outcome, 49 (27%) died compared to 17/357 (5%) without HIV infection (relative risk [RR] 5.2, 95% confidence interval [CI] 3.1–8.7). HIV-infected TB patients with smear-negative pulmonary disease died less frequently than those with smear-positive pulmonary disease (RR 0.39, 95%CI 0.16–0.93).

CONCLUSIONS: No sub-groups of patients had low risk for HIV infection or TB, and mortality among HIV-infected TB patients was high. These data justify using the WHO global TB-HIV recommendations in South-East Asia. Urgent interventions are needed to reduce the high mortality rate in HIV-infected TB patients.

KEY WORDS: tuberculosis; HIV; epidemiology; mortality; Cambodia

TUBERCULOSIS (TB) is the most common cause of death worldwide among human immunodeficiency virus (HIV) infected persons.[1] The World Health Organization (WHO) recommends that in countries where the prevalence of HIV infection is at least 1% among adults or 5% among TB patients, all TB patients should be offered HIV testing and all HIV-infected persons should be screened for TB disease.[1] Evidence to support this recommendation comes largely from sub-Saharan Africa, where HIV infection is common in TB patients, TB is common in HIV-infected persons, and the mortality rate of HIV-infected TB patients is high, ranging from 6% to 39%, with most African countries reporting a mortality rate under 20%.[2,3]

In contrast, there is limited published evidence on the relationship between TB and HIV in South-East Asia, despite the enormous morbidity associated with the TB-HIV syndemic[4–6] in this region.[2,7–10] Data on treatment outcomes in HIV-infected TB patients from South-East Asia are limited; one small study from Ho Chi Minh City reported that 30% of HIV-infected TB patients died during TB treatment,[11] while another from an infectious disease referral hospital in Thailand reported that 56% died within 1 year of TB diagnosis.[9] However, as there is currently no evidence from the region to demonstrate that universal HIV testing of all TB patients and TB screening of all HIV-infected patients is a more appropriate strategy than HIV testing and TB screening only in high-risk groups, some programs in the region have opted for HIV testing and TB screening only of groups they perceive to be at high risk.

Cambodia has the highest HIV prevalence (1.9% in pregnant women) and the highest rate of TB in South-East Asia (estimated 508 cases per 100 000 population).[2,12] An estimated 13% of all TB patients in Cambodia are HIV-infected.[2,12] In October 2003, the United States Agency for International Development and the US Centers for Disease Control and Prevention (CDC) collaborated with the Cambodia Ministry

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of Health to launch a TB-HIV pilot project in Banteay Meanchey, a rural province in northwest Cambodia that has an HIV prevalence of 1.9%.[12] The purpose of the pilot project was to offer HIV testing to TB patients and TB screening to HIV-infected persons in accordance with current Cambodia Ministry of Health guidelines.[8]

We sought to determine whether all patients or only selected groups should be tested for HIV infection and screened for TB disease to assess the impact of HIV infection on mortality during TB treatment, and to identify factors associated with death among HIV-infected TB patients.

METHODS

We conducted a cross-sectional survey to find risk factors for HIV infection among TB patients and TB among HIV-infected persons and a retrospective cohort study to identify risk factors for death among TB patients and HIV-infected TB patients.

Data collection

In February and March 2005, we collected epidemiologic data from public health registers and standardized logbooks on all persons diagnosed with TB disease or HIV infection at the three voluntary counseling and confidential HIV testing (VCCT) sites and 11 TB clinics participating in the Banteay Meanchey TB-HIV pilot project from October 2003 to February 2005. Data on antiretroviral therapy were not collected because public access to antiretroviral therapy during the 17-month study period was extremely limited.

Definitions used for data analysis

We used standard WHO definitions for TB registration and treatment outcome categories.[13]

VCCT sites collected occupation data as an open text variable. Based on discussions with staff, we classified occupations as 'unskilled', 'semi-skilled', 'skilled', 'children', or 'others' prior to data analysis.

VCCT logbooks included data about why the patient attended the VCCT clinic, including: self-presentation without symptoms, with symptoms, or due to perceived risk, premarital status, pregnancy, parent or partner with HIV, and other. For analysis, we categorized self-presentation with symptoms as 'ill at the time of VCCT visit' and all other responses as 'not ill at the time of VCCT visit'.

Rapid HIV testing was done at VCCT sites. A confirmatory rapid test was done for all positive results. Any person with positive results for both tests was defined as HIV-infected. All patients registered for TB treatment were diagnosed according to a standard national protocol, which included clinical evaluation, examination of three sputum specimens by smear microscopy, chest radiography and an antibiotic trial for patients with suspected smear-negative disease. Patients were defined as having TB if they were registered for TB treatment.

Data analysis

To determine risk factors for HIV infection, we compared TB patients known to be HIV-infected with those known to be non-HIV-infected. We analyzed risk factors for HIV infection according to age, sex and TB diagnosis (smear-positive pulmonary, smear-negative pulmonary or extra-pulmonary). These are the only factors routinely available to TB staff when they refer their patients for HIV testing. To determine risk factors for TB disease, we compared HIV-infected persons diagnosed with TB with HIV-infected persons not diagnosed with TB among all HIV-infected persons who completed TB screening. We analyzed the relationships between TB disease and age, sex, marital status, occupation and illness at the time of VCCT visit. These are the only factors routinely available to VCCT staff when they refer their clients for TB screening.

To determine the impact of HIV infection on TB treatment outcomes, we compared treatment outcomes of patients known be HIV-infected with those not known to be HIV-infected (e.g., non-HIV-infected plus those with unknown HIV status) and repeated this analysis using only those known to be non-HIV-infected as the comparison group. All patients had at least 8 months of follow-up. We excluded patients whose treatment outcome was missing, 'transferred out' or 'default'. We studied the impact of five factors on the risk of death in HIV-infected TB patients, including age, sex, treatment at a TB clinic with a chest radiography machine on site, type of TB disease (smear-positive pulmonary, smear-negative pulmonary or extra-pulmonary), and use of cotrimoxazole preventive therapy (CPT).

For univariate analysis of categorical variables, we compared proportions using χ^2 and, when appropriate, Fisher's exact test. For multivariate analyses, we performed both a log-binomial regression analysis and classification and regression tree analysis (CART). In log-binomial regression, we included the variables described above in the initial model and developed our final models using manual backward, step-wise variable selection, keeping in the model variables with a $P < 0.05$. In CART analysis, we partitioned the data based on large values of the likelihood-ratio (G^2) statistic to develop a decision tree that predicted low risk or high risk of TB or HIV.[14]

Ethical review

The CDC determined that this study was part of a public health program evaluation and did not constitute human subjects research. Throughout the process of reviewing and recording patient data, we safeguarded the privacy of patients by storing all records containing personally identifying information

in secure locations and by excluding names from the electronic database.

RESULTS

Risk factors for HIV infection in TB patients

Of the 957 TB patients, 574 (60%) were tested for HIV infection; of these, 216 (38%) had a positive HIV test result. Compared to TB patients without HIV infection, TB patients with HIV infection were more likely to be aged <35 years and diagnosed with smear-negative pulmonary or extra-pulmonary TB (Table 1).

Using CART analysis, we found that the group of TB patients with the lowest risk for HIV infection were female, aged ⩾35 years and diagnosed with pulmonary TB; 13% of patients meeting all of these criteria were HIV-infected.

Table 1 Risk factors for HIV infection among TB patients who underwent HIV testing ($N = 574$)

Characteristic	HIV-infected/ no. tested *n/N* (%)	RR (95%CI)	aRR (95%CI)
Age, years			
<35	94/194 (48)	1.5 (1.2–1.9)*	1.4 (1.2–1.7)*
⩾35	122/380 (32)	Referent	Referent
Sex			
Male	125/335 (37)	1.0 (0.8–1.2)	NS
Female	91/239 (38)	Referent	NS
TB diagnosis			
Smear-positive pulmonary	91/331 (27)	Referent	Referent
Smear-negative pulmonary	64/144 (44)	1.6 (1.2–3.1)	1.7 (1.3–2.1)*
Extra-pulmonary	61/99 (62)	2.2 (1.8–2.8)*	2.1 (1.6–2.6)*

* $P < 0.05$.
HIV = human immunodeficiency virus; TB = tuberculosis; RR = relative risk; CI = confidence interval; aRR = adjusted relative risk; NS = not included in final multivariate model.

Risk factors for TB in HIV patients

Of 1207 persons diagnosed with HIV infection during the study period, 455 (38%) completed TB screening; of these, 108 (24%) were diagnosed with TB disease. The only independent risk factor for TB disease was being a semi-skilled or skilled worker. TB was diagnosed in 11/21 (52%) semi-skilled or skilled workers (including 8 police/military, 1 teacher, 1 dressmaker and 1 company worker), compared to 89/362 (25%) unskilled workers (adjusted relative risk [aRR] 2.1; 95% confidence interval [CI], 1.4–3.3) (Table 2). We were not able to identify a group of HIV-infected persons at low risk for TB disease using CART.

Of the 1207 persons with HIV infection, 816 did not report feeling ill at the time of VCCT visit and 252 (31%) of these were screened for TB; 54 (21%) of these persons were diagnosed with TB disease.

Treatment outcomes in HIV-infected TB patients

Of the cohort of 854 TB patients with a treatment outcome other than 'transfer out' or 'default', 180 (21%)

Table 2 Risk factors for TB disease among HIV-infected persons who completed TB screening ($N = 455$)

Characteristic	HIV-infected/no. screened *n/N* (%)	RR (95%CI)	aRR (95%CI)
Age, years*			
<18	2/15 (13)	0.63 (0.17–2.3)	NS
<35	45/211 (21)	Referent	NS
⩾35	61/229 (27)	1.2 (0.89–1.7)	NS
Sex			
Male	55/205 (27)	1.3 (0.91–1.8)	NS
Female	53/250 (21)	Referent	NS
Marital status			
Single	22/94 (23)	Referent	NS
Married	55/226 (24)	1.0 (0.68–1.6)	NS
Widow	31/135 (23)	0.98 (0.61–1.6)	NS
Occupation†			
Unskilled	89/362 (25)	Referent	Referent
Semi-skilled or skilled	11/21 (52)	2.1 (1.4–3.3)‡	2.1 (1.4–3.3)‡
Other	8/64 (12)	0.51 (0.26–1.0)	0.50 (0.23–1.1)
Reason for presentation			
Patient feels ill	54/203 (27)	1.2 (0.89–1.7)	NS
Patient does not feel ill	54/252 (21)	Referent	NS

* Because children were not eligible to be employed or married, we excluded persons aged <18 years from multivariate analyses in which job and marital status were included as model terms. To calculate the adjusted risk ratio for persons aged <18 years, we developed separate models that did not include marital status and job.
† Occupations classified as 'unskilled' included: sex worker, karaoke and beer promotion, fisherman, housewife, farmer, factory worker, mechanic, construction worker, driver, motorcycle taxi driver, laborer, seller, or de-miner. Occupations classified as 'semi-skilled' included: police, military, soldier, dressmaker, tailor, craftsman trade, artisan, artist, or monk. Occupations classified as 'skilled' included: officer, NGO officer, company worker, health care worker, or teacher. We categorized all unclassified occupations as 'other.'
‡ $P < 0.05$.
TB = tuberculosis; HIV = human immunodeficiency virus; RR = relative risk; CI = confidence interval; aRR = adjusted relative risk; NS = not included in final multivariate model; NGO = non-governmental organization.

Table 3 Risk factors for death during TB treatment in HIV-infected TB patients ($N = 180$)*

Characteristic	Died/total patients *n/N* (%)	RR (95%CI)	aRR (95%CI)
Age			
<35 years	20/81 (25)	0.84 (0.52–1.4)	NS
⩾35 years	29/99 (29)	Referent	NS
Sex			
Male	29/103 (28)	1.1 (0.67–1.8)	NS
Female	20/77 (26)	Referent	NS
Chest radiography not on site			
Yes	31/116 (27)	0.96 (0.58–1.6)	NS
No	18/64 (28)	Referent	NS
Type of TB			
Smear-positive	25/73 (34)	Referent	Referent
Smear-negative	9/54 (17)	0.49 (0.25–0.96)†	0.46 (0.23–0.89)†
Extra-pulmonary	15/52 (29)	0.84 (0.49–1.4)	0.80 (0.47–1.4)
Cotrimoxazole preventive therapy			
Documented to be receiving	16/58 (28)	1.0 (0.61–1.7)	NS
Not documented to be receiving	33/122 (27)	Referent	NS

* Patients with treatment outcome missing, who defaulted or who were transferred out were excluded.
† $P < 0.05$.
TB = tuberculosis; HIV = human immunodeficiency virus; RR = relative risk; CI = confidence interval; aRR = adjusted relative risk; NS = not included in final multivariate model.

were HIV-infected, 323 (38%) were non-HIV-infected and 351 (41%) were HIV unknown. Of the 180 HIV-infected TB patients, 49 (27%) died, compared with 36 (5%) of 669 patients who were either non-HIV-infected or HIV unknown (RR 5.1, 95%CI 3.4–7.6). The results were similar when we restricted the analysis to only those patients known to be HIV-infected compared with those known to be non-HIV-infected (RR 5.2, 95%CI 3.1–8.7). The median number of days from TB diagnosis to death was 65 days (range 4–206) for HIV-infected TB patients; 49% of deaths occurred during the first 2 months of TB treatment.

In multivariate analysis, we found that patients with smear-negative pulmonary TB were less than half as likely to die (aRR 0.46, 95%CI 0.23–0.89) as those with smear-positive pulmonary TB. We found no other factors, including use of CPT, that were statistically associated with risk of death (Table 3).

DISCUSSION

In this rural Cambodia province, we found that the prevalence of HIV infection in TB patients (38%) and of TB in HIV-infected persons (24%) was high. In addition, over one-fourth of HIV-infected TB patients died during TB treatment and almost half of these deaths occurred in the first 2 months of treatment.

We found that HIV infection was common in all subgroups of TB patients tested. Even in the group with the lowest risk of infection based on a decision tree, we found that over 13% of those tested were HIV-infected. This strongly suggests that the WHO recommendation that all TB patients be tested for HIV infection is superior to testing only TB patients with certain risk factors.

Similarly, we found that TB disease was common in all subgroups of HIV-infected persons screened. It is not clear why semi-skilled and skilled workers were more commonly diagnosed with TB than unskilled workers. While this group does include health care workers, none of those persons diagnosed with TB were health care workers. This finding may be related to selection bias. As semi-skilled and skilled workers were less commonly screened for TB (unpublished data), it is possible that TB was more common among those who actually attended for screening. Regardless, TB was commonly diagnosed among all subgroups of HIV-infected persons screened, which strongly suggests that the WHO recommendation that all HIV-infected persons in Cambodia be screened for TB is superior to screening only those HIV-infected persons with certain risk factors.

Of note, TB was even common among persons who reported not being ill at the time of VCCT presentation, with 21% of those screened being diagnosed with TB disease. Although a detailed history of TB symptoms was not available, these data raise the question as to whether a simple symptom-based screen, as is commonly used in many programs around the world, is sufficient to exclude TB in HIV-infected persons.

The mortality rate in HIV-infected TB patients was over five times higher than in TB patients without HIV infection. Particularly notable is that the death rate in this population, and that reported from another study in Ho Chi Minh City, is higher than that routinely reported from most countries in Africa.[3,11] It is not clear why the death rate is so much higher in these two populations from South-East Asia compared with sub-Saharan Africa. As almost half of those deaths among HIV-infected TB patients occurred within the first 2 months of TB treatment, any interventions designed to improve treatment outcomes for such patients must focus on early diagnosis and treatment of both HIV infection and TB.

Patients with smear-negative pulmonary TB were less likely to die than those with smear-positive pulmonary TB. This also contrasts with data from African countries, which report higher mortality rates for patients with smear-negative pulmonary TB than those with smear-positive pulmonary TB.[3,15–17] Because no patients were culture-confirmed, it is possible that patients diagnosed with smear-negative, pulmonary TB had better treatment outcomes simply because of misclassification (i.e., some did not actually have TB). Others have postulated the converse, that the higher mortality from smear-negative TB observed in sub-Saharan Africa is precisely because such patients do not have TB and they die from a disease which has been misdiagnosed as TB.[18] An alternative explanation is that smear-negative TB in our population is a consequence of earlier diagnosis and that earlier TB diagnosis improved treatment outcomes. This explanation is consistent with that posed in a recent analysis of HIV-infected TB patients in the United States, which also demonstrated a lower mortality rate among patients with smear-negative as compared to those with smear-positive pulmonary disease.[19]

Delayed diagnosis of TB may contribute to the high early mortality rate in resource-limited settings. Although we did not collect data about the exact methods used in individual patients, we know that physicians rely primarily on smear microscopy to diagnose TB, which is relatively insensitive for TB diagnosis in HIV-infected persons.[18,20] Chest radiography was performed infrequently, sputum culture was not available, and other techniques to evaluate for extra-pulmonary TB, such as lymph node aspiration, are almost never used. Additional research is urgently needed to identify evidence-based methods for TB screening and diagnosis for HIV patients, to define how best to implement proven technologies, such as sputum culture, in Cambodia and other resource-limited settings, and to evaluate whether early TB diagnosis reduces mortality in HIV-associated TB.[21]

Our study has two major limitations. First, in the programmatic data, there were no data on potential risk factors for exposure to HIV, including alcohol use and risk behaviors. Second, the population that we analyzed for risk factors is potentially biased, because not all patients were screened for TB or tested for HIV infection. Analysis of those screened/tested revealed that HIV-infected persons who had no symptoms were less commonly screened for TB, and TB patients who were tested for HIV infection were more likely to have smear-positive pulmonary disease and to be aged 18–34 years than those not tested for HIV infection (unpublished data). We do not know whether HIV infection was more or less common among those not tested, nor do we know whether TB was more or less common among those not screened for TB disease. Given the retrospective nature of this study, such selection bias was not avoidable.

CONCLUSIONS

This study provides important baseline epidemiologic evidence that supports the use of current WHO recommendations about TB screening of HIV-infected persons and HIV testing of TB patients in South-East Asia. These data may also be useful for other settings in South-East Asia with similar epidemics of TB and HIV. Most important, the study documents the enormous public health burden of TB and HIV in South-East Asia, and the excess early mortality in patients with both diseases.

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References

1 World Health Organization. Interim policy on collaborative TB-HIV activities. WHO/HTM/TB/2004.330. Geneva, Switzerland: WHO, 2004.
2 World Health Organization. WHO report 2005. Global tuberculosis control: surveillance, planning, financing. WHO/HTM/TB/2005.349. Geneva, Switzerland: WHO, 2005.
3 Mukadi Y D, Maher D, Harries A. Tuberculosis case fatality rates in high HIV prevalence populations in sub-Saharan Africa. AIDS 2001; 15: 143–152.
4 Centers for Disease Control and Prevention. Spotlight on syndemics. Atlanta, GA, USA: CDC, 2007. http://www.cdc.gov/syndemics/overview.htm Accessed June 2007.
5 Freudenberg N, Fahs M, Galea S, Greenberg A. The impact of New York City's 1975 fiscal crisis on the tuberculosis, HIV, and homicide syndemic. Am J Public Health 2006; 96: 424–434.
6 Singer M, Clair S. Syndemics and public health: reconceptualizing disease in bio-social context. Med Anthropol Q 2003; 17: 423–441.
7 Joint United Nations Program on HIV/AIDS. AIDS epidemic update: December 2005. Geneva, Switzerland: UNAIDS, 2005.
8 Centers for Disease Control and Prevention. Screening HIV-infected persons for tuberculosis—Cambodia, January 2004–February 2005. MMWR 2005; 54: 1177–1180.
9 Manosuthi W, Chottanapand S, Thongyen S, Chaovavanich A, Sungkanuparph S. Survival rate and risk factors of mortality among HIV/tuberculosis-coinfected patients with and without antiretroviral therapy. AIDS 2006; 43: 42–46.
10 Quy H, Nhien D, Lan N, Borgdorff M, Broekmans J. Steep increase in HIV prevalence among tuberculosis patients in Ho Chi Minh City. AIDS 2002; 16: 931–932.
11 Quy H, Cobelens F, Lan N, Buu T, Lambregts C, Borgdorff M. Treatment outcomes by drug resistance and HIV status among tuberculosis patients in Ho Chi Minh City, Vietnam. Int J Tuberc Lung Dis 2006; 10: 45–51.
12 Ministry of Health: National Center for HIV/AIDS, Dermatology, and STD. Report on HIV sentinel surveillance in Cambodia 2002. Phnom Penh, Cambodia: MOH, 2002. http://www.nchads.org/Doc/Publication/HSS/Final%20HSS%202002.pdf Accessed 19 February 2006.
13 World Health Organization. Treatment of tuberculosis: guidelines for national programmes. 3rd ed. WHO/CDS/TB/2003.

313. Geneva, Switzerland: WHO, 2003. http://www.who.int/tb/publications/cds_tb_2003_313/en/index.html Accessed June 2007.
14 Breiman L, Freidman J, Olshen R, Stone C. Classification and regression trees. New York, NY, USA: Wadsworth, 1984.
15 Hargreaves N J, Kadzakumanja O, Whitty C J, Salaniponi F M, Harries A D, Squire S B. 'Smear-negative' pulmonary tuberculosis in a DOTS programme: poor outcomes in an area of high HIV seroprevalence. Int J Tuberc Lung Dis 2001; 5: 847–854.
16 Harries A D, Hargreaves N J, Gausi F, Kwanjana J H, Salaniponi F M. High early death rate in tuberculosis patients in Malawi. Int J Tuberc Lung Dis 2001; 5: 1000–1005.
17 Kang'ombe C T, Harries A D, Ito K, et al. Long-term outcome in patients registered with tuberculosis in Zomba, Malawi: mortality at 7 years according to initial HIV status and type of TB. Int J Tuberc Lung Dis 2004; 8: 829–836.
18 Siddiqi K, Lambert M L, Walley J. Clinical diagnosis of smear-negative pulmonary tuberculosis in low-income countries: the current evidence. Lancet Infect Dis 2003; 3: 288–296.
19 Shah N, Schneider E, Nelson L, Laserson K, Wells C. Risk factors for smear-negative pulmonary tuberculosis among HIV-infected patients in the United States, 1993–2003. San Diego, CA, USA: American Thoracic Society International Conference, 2006.
20 Smith R L, Yew K, Berkowitz K A, Aranda C P. Factors affecting the yield of acid-fast sputum smears in patients with HIV and tuberculosis. Chest 1994; 106: 684–686.
21 World Health Organization. TB-HIV research priorities in resource-limited settings: report of an expert consultation. Geneva, Switzerland: WHO, 2005.

RÉSUMÉ

CONTEXTE : Province de Banteay Meanchey, Cambodge.
OBJECTIF : L'Organisation Mondiale de Santé recommande les tests pour le virus de l'immunodéficience humaine (VIH) chez tous les patients tuberculeux et le dépistage de la tuberculose (TB) chez toutes les personnes infectées par le VIH dans les pays où il existe la double endémie TB-VIH. Nous avons cherché à déterminer dans quelle mesure les faits démontrés sont en faveur de la mise en œuvre de ces recommandations en Asie du Sud-est.
SCHÉMA : Entre octobre 2003 et février 2005, nous avons mené une enquête transversale et une étude rétrospective de cohorte chez les patients récemment diagnostiqués comme atteints du VIH ou de TB pour identifier les facteurs de risque pour l'infection VIH, la TB et le décès au cours du traitement de la TB.
RÉSULTATS : On a diagnostiqué une infection VIH chez 216 des 574 patients TB (38%). On a trouvé une maladie TB chez 124 de 450 personnes infectées par le VIH (24%). On n'a trouvé aucun sous-groupe de patients à faible risque d'infection VIH ou de TB. Sur les 180 patients TB infectés par le VIH et où le résultat du traitement a été enregistré, 49 (27%) sont décédés par comparaison avec 17/357 (5%) sans infection VIH (RR 5,2 ; IC95% 3,1–8,7). Les patients TB infectés par le VIH et atteints d'une maladie pulmonaire à bacilloscopie négative sont décédés moins fréquemment que ceux atteints d'une maladie pulmonaire à bacilloscopie positive (RR 0,29 ; IC95% 0,16–0,93).
CONCLUSIONS : On n'a décelé aucun sous-groupe de patients avec un faible risque d'infection VIH ou TB, et la mortalité chez les patients TB infectés par le VIH a été élevée. Ces données justifient l'utilisation des recommandations mondiales de l'OMS TB-VIH en Asie du Sud-est. Des interventions s'imposent en urgence pour réduire le taux élevé de mortalité chez les patients TB co-infectés par le VIH.

RESUMEN

MARCO DE REFERENCIA : Provincia de Banteay Meanchey, Camboya.
OBJETIVO : La Organización Mundial de la Salud recomienda practicar la prueba del virus de la inmunodeficiencia humana (VIH) a todos los pacientes con tuberculosis (TB) y la detección sistemática de la TB en todas las personas infectadas por el VIH, en aquellos países donde existe una sindemia de TB e infección por el VIH. En el presente estudio se buscó determinar si existen datos que respalden la aplicación de estas recomendaciones en el sureste asiático.
MÉTODO : Se llevaron a cabo un estudio transversal y un estudio retrospectivo de cohortes, incluyendo pacientes con diagnóstico reciente de infección por el VIH o de TB entre octubre de 2003 y febrero de 2005, con el objeto de definir los factores de riesgo de infección por el VIH, de TB y de muerte durante el tratamiento antituberculoso.
RESULTADOS : Se diagnosticó infección por el VIH en 216 de 574 (38%) pacientes con TB. Se encontró enfermedad tuberculosa en 124 de 450 (24%) personas infectadas por el VIH. No hubo subgrupos de pacientes con bajo riesgo de infección por el VIH o de TB. De los 180 pacientes tuberculosos co-infectados por el VIH con registro del desenlace terapéutico, 49 (27%) fallecieron, en comparación con 17 de los 357 (5%) pacientes sin coinfección (RR 5,2 ; IC95% 3,1–8,7). La mortalidad en los pacientes con TB pulmonar y baciloscopia negativa y co-infectados por el VIH fue menor que en aquellos con baciloscopia positiva (RR 0,39 ; IC95% 0,16–0,93).
CONCLUSIONES : Ningún subgrupo de pacientes presentó bajo riesgo de infección por el VIH o de TB y la mortalidad de los pacientes tuberculosos co-infectados por el VIH fue alta. Estos resultados respaldan la aplicación de las recomendaciones mundiales sobre TB e infección por el VIH de la OMS, en el sureste asiático. Se precisan intervenciones urgentes con el fin de reducir la alta tasa de mortalidad de los pacientes tuberculosos co-infectados por el VIH.