Tuberculosis in HIV-infected persons in British Columbia during the HAART era

Matthew P. Cheng, MD,¹ Alim Hirji, MD,^{1,2} David Z. Roth, MSc,³ Victoria J. Cook, MD,^{1,3}
Viviane D. Lima, PhD,⁴ Julio S. Montaner, MD,^{1,4} James C. Johnston, MD¹⁻³

ABSTRACT

OBJECTIVE: Prior to the introduction of highly active antiretroviral therapy (HAART), active tuberculosis (TB) was a major contributor to HIV-related morbidity and mortality in Canada and other low-incidence regions. We performed this study to examine TB incidence, clinical manifestations and screening uptake in HIV-infected TB patients during the era of HAART therapy.

METHODS: We performed a retrospective study on all HIV-infected TB patients in British Columbia over a 10-year period (2003-2012). Demographic and clinical characteristics were extracted along with screening and treatment outcomes. Trends in provincial TB incidence, HIV testing and HAART prevalence were also examined.

RESULTS: In total, 2,839 TB cases were identified in BC during this period, including 129 HIV-infected TB patients. Surprisingly, only 64 HIV-infected TB patients (50%) had a documented screening tuberculin skin test (TST) prior to TB diagnosis. Of the 39 HIV-infected TB patients with prior TST positivity, 38 (97.4%) had not completed a course of isoniazid preventive therapy. TB incidence decreased significantly in the HIV-infected population of BC over the study period, from 1.9 to 0.5 TB cases per 1,000 HIV-infected individuals ($p < 0.001$).

CONCLUSION: The incidence of HIV-TB decreased significantly over the past decade despite suboptimal latent TB infection screening and prevention practices. This decrease in TB incidence is likely attributable to the increased uptake of HAART. Consideration should be given to intensifying prevention efforts to accelerate TB elimination in HIV-infected populations in low-incidence regions.

KEY WORDS: Tuberculosis; tuberculin test; latent tuberculosis; anti-retroviral agents; HIV

La traduction du résumé se trouve à la fin de l'article.

Can J Public Health 2014;105(4):e258-e262.

Tuberculosis disease (TB) represents an important source of morbidity and mortality in HIV-infected people worldwide.¹⁻³ In the absence of highly active antiretroviral therapy (HAART), HIV-infected individuals are up to 37 times more likely to develop TB compared with HIV-negative individuals.⁴ HIV-infected TB patients also have worse outcomes, with some low TB incidence regions reporting mortality in HIV-infected TB patients that is twice that of non-HIV-infected TB patients.⁵

To combat TB-related morbidity and mortality in the HIV-infected population, national guidelines in both the United States and Canada recommend screening all people at the time of HIV diagnosis, and annual TB screening thereafter in high-risk HIV-infected populations.^{6,7} Unfortunately, implementation of TB screening guidelines remains suboptimal, with North American TB programs reporting screening tuberculin skin test (TST) results in only 30-54% of HIV-infected individuals.^{8,9} Completion of therapy for latent TB infection (LTBI) is also poor, with less than 55% of HIV-infected individuals with LTBI completing preventive therapy in several programs.^{10,11} Suboptimal implementation may reflect perceived lack of diagnostic accuracy of TST, or perceived inefficacy of LTBI treatment.

More recently, HAART has emerged as a strategy for TB prevention in HIV-infected populations. HAART may decrease TB incidence in HIV-infected individuals by up to 90%.¹² Recent population-based studies have confirmed a link between the introduction of HAART and the decline in TB incidence in HIV-

infected populations in low-incidence regions.^{5,12-14} Unfortunately, despite the use of HAART in Canada throughout the past decade, reported TB incidence rate in HIV-infected populations remains in excess of 1 per 1,000 person-years.⁸ We therefore performed a retrospective study to examine the incidence and clinical manifestations of TB in HIV-infected people in British Columbia (BC). We examined the TB screening practices, clinical presentations and treatment outcomes in HIV-infected TB patients in a region with high HAART coverage and low TB incidence.¹⁵

METHODS

Population

The BC Centre for Disease Control (BCCDC) maintains a population-based registry of all active TB cases through laboratory, pharmacy, and clinical notification. Using the

Author Affiliations

1. Department of Medicine, University of British Columbia, Vancouver, BC
2. Division of Respiriology, University of British Columbia, Vancouver, BC
3. British Columbia Centre for Disease Control, Vancouver, BC
4. British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC

Correspondence: James Johnston, Division of TB Control, BC Centre for Disease Control, 655 West 12th Avenue, Vancouver, BC V5Z 4R4, Tel: 604-707-2692, E-mail: james.johnston@bccdc.ca

Conflict of Interest: Dr. Montaner is supported by the British Columbia Ministry of Health and by the US National Institutes of Health (R01DA036307). He has also received limited unrestricted funding from Abbvie, Bristol-Myers Squibb, Gilead Sciences, Janssen, Merck, and Viiv Healthcare. Other authors have no conflicts of interest to declare.

Figure 1. TB-HIV and HAART trends in BC (2003-2012): A) TB incidence in BC; B) HIV prevalence in BC; C) TB incidence in HIV-infected population of BC; D) Percentage of HIV-infected population on HAART treatment in BC

BCCDC TB registry, we identified all those who met the Public Health Agency of Canada case definition for active TB between January 1, 2003 and December 31, 2012. Within this group, we identified all individuals with laboratory-confirmed HIV infection identified before or 30 days after TB diagnosis. HIV-infected individuals who migrated to BC while on active TB therapy were excluded from analysis. Clinical data were extracted from the BCCDC electronic TB registry and paper charts for all identified HIV-infected TB patients. Population-based estimates of HAART use and HIV prevalence (2003-2012) were acquired from the BC Centre for Excellence in HIV/AIDS (BC-CfE), the single provider of free HAART in BC. Description of HIV prevalence estimates in BC have been published elsewhere.¹⁵ The BC-CfE's HAART guidelines have remained consistent with those of the IAS-USA since 1996.^{16,17} Ethical approval for this study was received from the University of British Columbia main campus and St. Paul's Hospital site.

Definitions

TST positivity was defined as a screening TST of 5 mm. High-risk features included the following: foreign birth, a history of TB contact, incarceration, homelessness, illicit drug use or residence in Vancouver's Downtown Eastside (DTES) – an inner city neighbourhood with a high density of socially and economically vulnerable residents. Ongoing high-risk features included homelessness, illicit drug use and living in the DTES. Disease site was classified as pulmonary, extra-pulmonary or both, according to national guidelines.⁶ Treatment outcomes were defined as treatment completed, absconded,* death, transfer out, and treatment failure, in accordance with reporting guidelines.¹⁸

Analysis

Descriptive statistics were computed using Stata version 12.0 (StataCorp, College Station, Texas). Wilcoxon rank sum test and

* Lost to follow-up before completion of 80% of recommended doses.

Table 1. Patient characteristics and outcomes

Patient characteristics	Total population* (n)	Outcome		p-value
		Favourable† (n)	Unfavourable (n)	
Population	121*	76	45	–
Male sex (%)	88 (73)	59	29	0.141
Median age [IQR]	43 [36-49]	42	45	0.412
Diagnosed 2003-2007 (%)	82 (68)	51	31	1
Mean CD4/mm ³ at diagnosis [IQR]	135 [60-240]	191	141	0.442
HAART use at diagnosis (%)	49 (40)	45	4	0.031
Smear positive (%)	75 (62)	52	23	0.081
Foreign born [%]	33 (27)	25	8	0.091
Homeless or under-housed [%]	15 (12)	7	8	0.253
Living in DTES (%)	43 (36)	29	14	0.556
History of illicit drug use (%)	72 (60)	42	30	0.253
History of incarceration (%)	11 (9)	8	3	0.745
History of smoking (%)	39 (32)	28	11	0.227

* 8 patients were excluded: 3 transfer out, 3 ongoing care, 2 insufficient data.

† Favourable: treatment completion/cure; Unfavourable: death, absconded, relapse.
IQR=interquartile range; DTES=Downtown Eastside.

Fisher's exact test were used in univariate analysis to test for an association between patient characteristics and treatment outcomes. Polynomial regression was used to examine provincial TB incidence and prevalence of HIV testing over time. Poisson regression was performed to model the association between number of individuals on antiretroviral therapy and the number of TB-HIV cases over time. For regression analysis, we used SAS version 9.3. Statistical significance was set at $p=0.05$ and all p -values were two-sided.

RESULTS

Population-level trends in TB incidence

From 2003-2012, there were 2,839 cases of active TB diagnosed in BC (Figure 1A), with annual provincial TB incidence decreasing significantly from 0.07 to 0.06 per 1,000 individuals over this period ($p=0.01$). We identified 129 (5%) HIV-infected individuals and 1,809 (64%) HIV-negative individuals, while the HIV status of 901 (32%) was unknown, including 14 (0.5%) who refused testing. The percentage with known HIV status increased over the decade, from 47% in 2003 to 74% in 2012 ($p<0.001$).

Population-level trends in HIV and HAART usage

From 2003-2012, the estimated number of people with HIV increased from 9,936 to 11,972 in BC (Figure 1B). Over the same period, the TB incidence decreased significantly from 1.9 to 0.5 per 1,000 HIV-infected individuals ($p<0.001$) (Figure 1C). This decline occurred at a rate of 13.7% per year, with no statistically significant break-points over this 10-year period. During the same period, effective HAART was expanded throughout the province, with the proportion of prevalent HIV-infected individuals on HAART increasing from 34% to 52% (Figure 1D). For each 1% increase in the percentage of individuals on HAART, the estimated number of HIV-infected TB patients decreased by 5% (RR 0.95; 95% CI: 0.93-0.97).

Patient characteristics

A total of 129 HIV-infected TB patients were identified, with a median age of 43 years (IQR 36-49); 94 (73%) were male, 34 (26%) were female and one (1%) was transgender. Most people (72%) were Canadian-born, while 117 (91%) had one or more high-risk features (Table 1). After excluding a history of previous TB contact and

Figure 2. Tuberculin skin test results

foreign birth, 87 (67%) had ongoing high-risk features. There were 90 people (70%) with a CD4 count available at diagnosis; median CD4 count was 130/mm³ (IQR 60-240). The median viral load available from 36 individuals (28%) at diagnosis was 32,391 copies/mL (IQR 17,000-100,000); 52 people (40%) were known to be taking HAART at the time of TB diagnosis. In terms of clinical presentation, 80 people (62%) were classified as pulmonary, 23 (18%) were extra-pulmonary, and 25 (19%) had both extra-pulmonary and pulmonary manifestations. Meningitis was diagnosed in 14 individuals (11%).

TB screening and preventive therapy

In total, 22 people (17%) were diagnosed with HIV concurrent with or subsequent to their TB diagnosis and 2 (2%) were previously treated for TB and had relapsed disease. After excluding these 24 people, 105 HIV-infected individuals were considered eligible for TST screening prior to their TB diagnosis (Figure 2). Of the 105, only 64 (61%) had a documented TST, and of those, 39 (37%) were TST positive. Of the 39 TST-positive individuals, 30 (77%) did not receive LTBI therapy and 8 (21%) did not complete LTBI therapy. Of 25 people with prior negative TST, 21 (84%) were not tested in the 12 months preceding their TB diagnosis, and 14 (56%) had at least one ongoing high-risk feature. Of the remaining 41 people without a screening TST, 29 (71%) had no prior testing known and 7 (17%) had a documented TST placement but no TST result recorded. Two

individuals (5%) were diagnosed with TB on chest x-ray imaging as part of immigration screening and three (7%) had insufficient information on whether or not they had TST screening.

Treatment outcomes

After the exclusion of people with ongoing active TB therapy and those transferred out of province, there were 121 with data available to evaluate outcomes; 76 (63%) achieved treatment completion, 32 (26%) died, 3 (2%) relapsed, and 10 (8%) absconded (Table 1). On univariate analysis, only HAART use at diagnosis was associated with successful outcomes ($P=0.031$). Of note, only 15 people completed TB treatment under directly observed therapy. There were 16 individuals with drug-resistant strains, including 7 with rifampin mono-resistance. Active TB was the specific cause of death in 6 people and contributed to death in 14. There was an association between HAART use at diagnosis and successful treatment outcome ($p<0.001$).

DISCUSSION

This population-based study demonstrated an association between HAART scale-up and a decline in TB incidence in the HIV-infected population of BC. Although other social and medical factors likely contributed to the reduction in TB incidence in the HIV-infected population, this association cannot be ignored. Over 10 years, the number of HIV-infected TB patients has declined nearly fourfold in the province of BC. Although this is certainly a positive trend, the fact remains that the incidence of TB in the HIV-infected population is approximately 10 times the Canadian average.⁶ Moreover, TB continues to affect the most socially vulnerable populations with devastating consequences; over one quarter of HIV-infected TB patients died while on anti-TB medications and less than two thirds of patients successfully completed therapy.

In our study population, the majority of patients did not have TST screening results recorded. In those with positive screening TSTs, over 90% did not start or complete LTBI therapy. This highlights the need to focus our attention on implementation strategies for TB screening in HIV-infected populations. TB programs do not suffer from ineffective tests or TB treatment; a positive TST is highly predictive for TB in HIV-infected populations and LTBI therapy is highly effective in HIV-infected populations in low-incidence regions. Indeed, a recent study in Switzerland estimated that treating 15 HIV-infected TST-positive individuals with LTBI therapy would prevent one new case of TB-HIV.¹⁹ Instead, the problem with TB prevention in HIV-infected populations appears to be related to implementation. Screening uptake and LTBI treatment completion both appear to be suboptimal in real world conditions, despite the high risk of TB in HIV-infected individuals.^{9,10}

Interferon gamma release assays (IGRAs) could potentially be used to improve screening uptake, as IGRAs can be drawn with other routine bloodwork after HIV diagnosis, and they do not require a 48-72 hour return visit for reading.⁶ However, IGRAs present their own challenges, including a lack of long-term follow-up data in HIV-infected populations, and high rates of conversion and reversion on serial testing.²⁰ In addition, we noted that only seven patients failed to return for TST reading in this study, indicating that the return for reading may not be a significant barrier to the effectiveness of TST screening.

Data from numerous cohort studies and randomized control trials have demonstrated that HAART is effective in reducing TB

risk in HIV-infected individuals.²¹⁻²⁹ On a population level, however, the exact contribution of HAART to the reduction in TB incidence in HIV-infected population is less well characterized.^{5,13} We could expect that contact structure may influence TB incidence at a population level, particularly if marginalized or populations at high risk for TB are targeted for HAART. Population-based data are beginning to emerge from low-incidence regions. Studies from California (1993-2008) and the United Kingdom (2002-2010) demonstrated a 71% reduction in TB incidence in HIV-infected populations.^{5,13} We note a similar reduction in our population-based study.

The association between HAART use at diagnosis and successful treatment outcome is also noteworthy, but is likely confounded by several factors, including access to health care, medication adherence, psychiatric co-morbidity, socio-economic status and delay in diagnosis. This association between HAART and improved outcomes does underline the need for early diagnosis and treatment of HIV.

This study has several strengths. First, the comprehensive data capture at the population level for both HIV and TB allows us to determine a valid estimate of TB incidence in the HIV-infected population of our province. Centralized reporting and recording of LTBI test results also allows us to understand the uptake of screening procedures prior to active TB diagnosis in this population while centralized HAART recording allows for accurate estimation of HAART uptake over time.

There are several limitations to this study. TST screening results may be incomplete, as some practitioners who treat HIV-infected patients may not uniformly report TST negative results to the BCCDC. We believe, however, that our comprehensive review of referral letters, patient narratives, and public health records was unlikely to miss a significant proportion of TB screening tests. Furthermore, the number of TST-positive individuals who were untreated or inadequately treated is larger by far than the number of treated individuals. This is consistent with the notion that on a population level, a positive TST is predictive of TB in people infected with HIV, and that LTBI therapy is likely protective in a low-incidence setting. Second, there is incomplete HIV screening data in TB patients over this period. Given the increased proportion of people screened for HIV over the decade, we feel it is unlikely that missed cases of HIV are responsible for the reduction in TB-HIV incidence.

We must consider the possibility that the association between HAART scale-up and reduction in TB incidence was confounded by other factors, including an overall decrease in provincial TB incidence, improved access to health care in HIV-infected populations, improved housing in high-risk communities, and a decrease in HIV incidence over the decade. Given the known association between the scale-up of HAART use and the dramatic reduction in TB incidence, however, we believe that HAART is at least partially responsible for this reduction in HIV-TB incidence.

In conclusion, the incidence of TB in the HIV-infected population of BC decreased significantly over the past decade despite suboptimal TB prevention practices. This is most likely attributable to the increased effectiveness of HAART. HIV-TB co-infection remains an important issue in BC, affecting vulnerable populations with high rates of substance abuse and co-morbidities. Our results suggest that further scale-up of HIV testing, and HAART

coverage, coupled with comprehensive TB screening and LTBI treatment, can lead to TB-HIV elimination in BC and in other low-incidence regions.

REFERENCES

- Barnabas RV, Webb EL, Weiss HA, Wasserheit JN. The role of coinfections in HIV epidemic trajectory and positive prevention: A systematic review and meta-analysis. *AIDS* 2011;25(13):1559-73.
- Corbett EL, Watt CJ, Walker N, Maher D, Williams BG, Raviglione MC, et al. The growing burden of tuberculosis: Global trends and interactions with the HIV epidemic. *Arch Intern Med* 2003;163(9):1009-21.
- WHO. Guidelines for intensified tuberculosis case-finding and isoniazid preventive therapy for people living with HIV in resource-constrained settings. Geneva, Switzerland: World Health Organization, 2011.
- WHO. Global Tuberculosis Report. Geneva: WHO, 2009.
- Metcalfe JZ, Portco TC, Westenhouse J, Damesyn M, Facer M, Hill J, et al. Tuberculosis-HIV Coinfection in California, USA, 1993-2008. *Emerging Infect Dis* 2013;19(3):400-6.
- Menzies D (Ed.). *Canadian Tuberculosis Standards*, 7th Edition. *Can Respir J* 2013;20(Suppl A).
- Kaplan JE, Benson C, Holmes KH, Brooks JT, Pau A, Masur H. Guidelines for prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: Recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. *MMWR Recomm Rep* 2009;58(RR-4):1-207.
- Brassard P, Hottes TS, Lalonde RG, Klein MB. Tuberculosis screening and active tuberculosis among HIV-infected persons in a Canadian tertiary care centre. *Can J Infect Dis Med Microbiol* 2009;20(2):51-57.
- Lee LM, Lobato MN, Buskin SE, Morse A, Costa OS. Low adherence to guidelines for preventing TB among persons with newly diagnosed HIV infection, United States. *Int J Tuberc Lung Dis* 2006;10(2):209-14.
- Li J, Munsiff SS, Tarantino T, Dorsinville M. Adherence to treatment of latent tuberculosis infection in a clinical population in New York City. *Int J Infect Dis* 2010;14(4):e292-7.
- Marks SM, Taylor Z, Qualls NL, Shrestha-Kuwahara RJ, Wilce MA, Nguyen CH. Outcomes of contact investigations of infectious tuberculosis patients. *Am J Respir Crit Care Med* 2000;162(6):2033-38.
- Suthar AB, Lawn SD, del Amo J, Getahun H, Dye C, Sculier D, et al. Antiretroviral therapy for prevention of tuberculosis in adults with HIV: A systematic review and meta-analysis. *PLoS Med* 2012;9(7):e1001270.
- Rice B, Elford J, Yin Z, Kruijschaar M, Abubakar I, Lipman M, et al. Decreasing incidence of tuberculosis among heterosexuals living with diagnosed HIV in England and Wales. *AIDS* 2013;27(7):1151-57.
- Badri M, Wilson D, Wood R. Effect of highly active antiretroviral therapy on incidence of tuberculosis in South Africa: A cohort study. *Lancet* 2002;359:2059-64.
- Montaner JS, Lima VD, Barrios R, Yip B, Wood E, Kerr T, et al. Association of highly active antiretroviral therapy coverage, population viral load, and yearly new HIV diagnoses in British Columbia, Canada: A population-based study. *Lancet* 2010;376(9740):532-39.
- Carpenter CC, Fischl MA, Hammer SM, Hirsch MS, Jacobsen DM, Katzenstein DA, et al. Antiretroviral therapy for HIV infection in 1996. Recommendations of an international panel. International AIDS Society-USA. *JAMA* 1996;276(2):146-54.
- Thompson MA, Aberg JA, Hoy JF, Telenti A, Benson C, Cahn P, et al. Antiretroviral treatment of adult HIV infection: 2012 recommendations of the International Antiviral Society-USA panel. *JAMA* 2012;308(4):387-402.
- Canadian Tuberculosis Reporting System. Reporting form Completion Guidelines version 1.9 For use with: Active Tuberculosis Case Report Form. Available at: <http://www.phac-aspc.gc.ca/tbpc-latb/ctrs-scdt-eng.php> (Accessed September 19, 2013).
- Elzi L, Schlegel M, Weber R, Hirschel B, Cavasini M, Schmid P, et al. Reducing tuberculosis incidence by tuberculin skin testing, preventative treatment, and antiretroviral therapy in an area of low tuberculosis transmission. *Clin Infect Dis* 2007;44(1):94-102.
- Aichelburg MC, Reiberger T, Breitenacker F, Mandorfer M, Makristathis A, Rieger A. Reversion and conversion of interferon-gamma release assay results in HIV-1-infected individuals. *J Infect Dis* 2014;209(5):729-33.
- Samandari T, Agizew TB, Nyirenda S, Tedla Z, Sibanda T, Shang N, et al. 6-month versus 36-month isoniazid preventive treatment for tuberculosis in adults with HIV infection in Botswana: A randomised, double-blind, placebo-controlled trial. *Lancet* 2011;377(9777):1588-98.
- Badri M, Wilson D, Wood R. Effect of highly active antiretroviral therapy on incidence of tuberculosis in South Africa: A cohort study. *Lancet* 2002;359:2059-64.
- Golub JE, Pronyk P, Mohapi L, Thsabangu N, Moshabela M, Struthers H, et al. Isoniazid preventive therapy, HAART and tuberculosis risk in HIV-infected adults in South Africa: A prospective cohort. *AIDS* 2009;23(5):631-36.
- Golub JE, Saraceni V, Cavalcante SC, Pacheco AG, Moulton LH, King BS, et al. The impact of antiretroviral therapy and isoniazid preventive therapy on tuberculosis incidence in HIV-infected patients in Rio de Janeiro, Brazil. *AIDS* 2007;21(11):1441-48.
- Jerene D, Naess A, Lindtjorn B. Antiretroviral therapy at a district hospital in Ethiopia prevents death and tuberculosis in a cohort of HIV patients. *AIDS Res Ther* 2006;7(3):10.
- Dembélé M, Sali N, Carvalho AC, Saouadogo T, Hien AD, Zabsonre I, et al. Incidence of tuberculosis after HAART initiation in a cohort of HIV-positive patients in Burkina Faso. *Int J Tuberc Lung Dis* 2010;14(3):318-23.
- Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med* 2011;365:493-505.
- Lannoy LH, Cortez-Escalante JJ, Evangelista Mdo S, Romero GA. Tuberculosis incidence and risk factors among patients living with HIV/AIDS in public health service institutions in Brasília, Federal District. *Rev Soc Bras Med Trop* 2008;41(6):549-55.
- Miranda A, Morgan M, Jamal L, Laserson K, Barreira D, Silva G, et al. Impact of antiretroviral therapy on the incidence of tuberculosis: The Brazilian experience, 1995-2001. *PLoS ONE* 2007;2(9):e826.

Received: September 23, 2013

Accepted: May 5, 2014

RÉSUMÉ

OBJECTIF : Avant l'avènement de la thérapie antirétrovirale hautement active (TAHA), la tuberculose progressive était l'un des principaux facteurs de morbidité et de mortalité liées au VIH au Canada et dans d'autres régions à faible incidence. Notre étude visait à examiner l'incidence de la tuberculose, ses manifestations cliniques et le recours au dépistage chez les patients tuberculeux infectés par le VIH à l'ère de la TAHA.

MÉTHODE : Nous avons mené une étude rétrospective de tous les patients tuberculeux infectés par le VIH en Colombie-Britannique sur une période de 10 ans (2003-2012). Nous avons extrait leurs caractéristiques démographiques et cliniques, ainsi que les données sur le dépistage et les effets du traitement. Nous avons aussi examiné les tendances de l'incidence de la tuberculose, du dépistage du VIH et de la prévalence de la TAHA dans la province.

RÉSULTATS : En tout, 2 839 cas de tuberculose ont été signalés en C.-B. au cours de la période, dont 129 patients tuberculeux infectés par le VIH. Étonnamment, seuls 64 patients tuberculeux infectés par le VIH (50 %) avaient subi un test cutané à la tuberculine (TCT) consigné en dossier avant leur diagnostic de tuberculose. Sur les 39 patients tuberculeux infectés par le VIH ayant eu un TCT positif au préalable, 38 (97,4 %) n'avaient pas suivi un traitement préventif complet à l'isoniazide. L'incidence de la tuberculose a considérablement diminué dans la population infectée par le VIH en C.-B. au cours de la période de l'étude, passant de 1,9 à 0,5 cas de tuberculose pour 1 000 personnes infectées par le VIH ($p < 0,001$).

CONCLUSION : L'incidence de la comorbidité VIH-tuberculose a considérablement diminué au cours de la dernière décennie malgré les pratiques sous-optimales de prévention et de dépistage de la tuberculose latente. Cette incidence réduite de la tuberculose est probablement imputable au recours accru à la TAHA. Il faudrait envisager d'intensifier les efforts de prévention afin d'accélérer l'élimination de la tuberculose au sein des populations infectées par le VIH dans les régions à faible incidence.

MOTS CLÉS : tuberculose; test tuberculinique; tuberculose latente; antirétroviraux; VIH