Guidelines for the Investigation of Individuals Who Were Placed Under Surveillance for Tuberculosis Post-Landing in Canada

There are 2 parts to this article. Part 1 is a preamble, jointly prepared by Immigration and Overseas Health Services, Medical Services Branch and the Bureau of Communicable Disease Epidemiology, LCDC, Department of National Health and Welfare, to provide background information regarding the medical assessment of immigrants prior to their arrival in Canada. The actual examination includes a history, a physical and a review of indicated laboratory results, and is usually performed by a physician appointed by the Department of National Health and Welfare. Results of this examination are sent to medical officers of the Department of National Health and Welfare who determine the medical admissibility of the applicant.

The examination and assessment process is designed to determine the presence of several diseases including active or inactive tuberculosis. The medical examination includes a chest x-ray for all applicants 11 years or older. When indicated by history or examination findings, additional investigations are ordered to determine the tuberculosis status of an individual.

Applicants residing outside of Canada found to have active tuberculosis are referred for treatment. At least 6 months of anti-tuberculosis therapy is required before medical admissibility is reassessed. Individuals who are subsequently admitted to Canada are referred for public health surveillance following their arrival. Applicants with inactive tuberculosis at the time of medical assessment are referred for public health surveillance following their arrival in Canada.

Presently, the immigration medical examination of refugee claimants (individuals who apply for refugee status after arriving in Canada) are placed under surveillance for tuberculosis post-landing in Canada.
Canada) may only be carried out after a formal hearing has taken place to establish the validity of the refugee claim. This process may take several weeks or even months, thereby delaying the medical examination. If a refugee claimant is found to have active tuberculosis, the claimant is referred for treatment while refugee claimants found to have inactive tuberculosis are referred for public health surveillance.

Changes have recently been proposed by Employment and Immigration Canada to require that all refugee claimants undergo immigration medical examination within 60 days of entry to Canada.

Part 2

Guidelines for the Investigation of Individuals Who Were Placed Under Surveillance for Tuberculosis Post-Landing in Canada

Individuals newly arrived in Canada, therefore, may have been placed under surveillance for tuberculosis by the Medical Services Branch of the Department of National Health and Welfare because of a previous history of tuberculosis or an abnormal chest x-ray suggestive of inactive tuberculosis. Following their arrival in Canada, these persons are required to report to a designated clinic to establish whether or not active tuberculosis does exist.

The following guidelines, jointly prepared by the Canadian Thoracic Society, the Tuberculosis Directors of Canada and the provincial and territorial epidemiologists, have been approved by the Canadian Lung Association and the Canadian Thoracic Society.

Although there are no specific regulations, individuals should be followed for at least 3 to 5 years since the highest incidence of active tuberculosis in recent arrivals to Canada develops within the first 3 to 5 years of their immigration.

At the first visit obtain:

- a) A complete history, including a review of previous treatment of tuberculosis, and a physical examination
- b) A chest x-ray and/or other appropriate radiological examinations
- c) At least 1 but preferably 3 sputum specimens (may be induced), or gastric lavage specimens for smear and culture for Mycobacterium tuberculosis
- d) Other appropriate laboratory tests, including a tuberculin test if appropriate
- e) Medical information and chest x-rays (if available) from Medical Services Branch, Department of National Health and Welfare

Follow-up after initial assessment:

1. If a diagnosis of active tuberculosis is established, treatment for at least 6 months with an appropriate regimen should be instituted. The treatment regimen chosen should account for the possibility of drug-resistant tuberculosis being present when the individual has immigrated from a country with a high prevalence of tuberculosis.

2. If a diagnosis of inactive tuberculosis is established and if the individual has had no or inadequate treatment for active tuberculosis in the past, then consideration should be given to initiate appropriate chemoprophylaxis. Follow-up of individuals after completion of a course of chemoprophylaxis will be at the discretion of the jurisdiction involved.

Trials using alternative chemoprophylaxis regimes are currently being conducted to determine appropriate regimes when trials using alternative regimes are currently being conducted to determine appropriate regimes when

changes have recently been proposed by Employment and Immigration Canada to require that all refugee claimants undergo immigration medical examination within 60 days of entry to Canada.

Deuxième partie

Lignes directrices pour l'examen des personnes devant faire l'objet d'une surveillance pour la tuberculose après leur arrivée au Canada

Ainsi, les nouveaux arrivants au Canada peuvent être suivis dans le cadre d'un programme de surveillance de la tuberculose administré par la Direction générale des services médicaux du ministère de la Santé nationale et du Bien-être social à cause d'antécédents d'infection tuberculeuse ou d'une radiographie anormale évocatrice d'une tuberculose non évolutive. Ces personnes doivent se présenter dans une clinique désignée au Canada après leur arrivée pour qu'on puisse déterminer si elles souffrent ou non d'une tuberculose évolutive.

Les lignes directrices qui suivent ont été préparées conjointement par la Société canadienne de thoracologie, les directeurs des services de lutte contre la tuberculose au Canada et le ministère de la Santé nationale et du Bien-être social, en consultation avec les épidémiologistes des provinces et des territoires et ont été approuvées par l'Association pulmonaire canadienne et la Société canadienne de thoracologie.

Bien qu'il n'existe aucune règle précise, ces personnes devraient être suivies pendant au moins 3 à 5 ans, étant donné que les taux les plus élevés de tuberculose évolutive chez les nouveaux arrivants au Canada, s'observent dans les 3 à 5 années suivant leur arrivée au pays.

Première consultation - il faut obtenir :

- a) une anamnèse, y compris une évaluation de tout traitement antituberculeux antérieur, et un examen physique ;
- b) une radiographie pulmonaire ou tout autre examen radiologique indiqué, ou les deux ;
- c) au moins 1 (mais, de préférence, 3) échantillon(s) d'expectorations (pouvant être provoquées) ou recherche de Mycobacterium tuberculosis dans un frottis et une culture du liquide de tubage gastrique ;
- d) tout autre épreuve de laboratoire indiquée, notamment un test à la tuberculine, s'il y a lieu ;
- e) communication avec la Direction des services médicaux du ministère de la Santé nationale et du Bien-être social pour obtenir des renseignements médicaux et des échelles radiographiques, (s'il en existe).

Suivi après l'évaluation initiale :

1. Si l'on diagnostique une tuberculose évolutive, il faut administrer un régime thérapeutique approprié pendant au moins 6 mois. Lorsqu'on choisit le régime thérapeutique, il faut tenir compte de la possibilité d'une tuberculose multirésistante si la personne vient d'un pays où la prévalence de la tuberculose est élevée

2. Si l'on diagnostique une tuberculose non évolutrice et si, dans le passé, la personne n'a pas été traitée pour une tuberculose évolutive ou si le traitement n'était pas adéquat, il faut alors envisager d'administrer un traitement prophylactique approprié. Les autorités concernées décideront ou non de poursuivre le suivi une fois le traitement prophylactique terminé.

On procède actuellement à des essais de chimiothérapies de relais afin de déterminer les régimes thérapeutiques à appliquer dans les cas...
multidrug-resistant tuberculosis is suspected. Consultation with a tuberculosis authority is recommended if multidrug-resistant tuberculosis is suspected.

3. If a diagnosis of inactive tuberculosis is made and the individual has had adequate treatment, then the individual should be followed for at least 3 to 5 years. Follow-up should occur at approximately 3, 9 and 21 months and yearly thereafter. An appropriate history, physical examination and x-rays as well as other appropriate laboratory tests should be obtained at each follow-up visit.

References


GUIDELINES FOR THE IDENTIFICATION, INVESTIGATION AND TREATMENT OF INDIVIDUALS WITH CONCOMITANT TUBERCULOSIS AND HUMAN IMMUNODEFICIENCY VIRUS INFECTION

Infection by the human immunodeficiency virus (HIV) is a very important risk factor for the development of tuberculosis (Mycobacterium tuberculosis, M. bovis, M. africanum) worldwide. The incidence of tuberculosis in HIV-infected individuals is dependent on the overlap of populations infected with HIV and populations infected with the tubercle bacillus.

The following recommended guidelines, jointly prepared by the Canadian Thoracic Society, the Tuberculosis Directors of Canada, and the Department of National Health and Welfare in consultation with the provincial and territorial epidemiologists, AIDS coordinators and HIV caregivers, and approved by the Canadian Lung Association and the Canadian Thoracic Society are provided to assist health care workers who are caring for patients in the overlapping group.

A. INVESTIGATION OF HIV-INFECTED INDIVIDUALS WITHOUT SYMPTOMS SUGGESTIVE OF TUBERCULOSIS

After confirmation of HIV-positive status, history of tuberculosis or tuberculosis contact, BCG vaccination, results of previous tuberculin skin testing and chest x-rays should be obtained as part of baseline information. All individuals who have received preventive treatment or treatment for active tuberculosis should be further assessed to determine compliance and adequacy of previous treatment.

All individuals without a previous history of tuberculosis should have 5 TU PPD tuberculin and delayed-type hypersensitivity (cutaneous anergy) testing performed as part of their baseline testing[1,2]. Individuals with evidence of induration to delayed-type hypersensitivity antigens (i.e., individuals who are not anergic) and a negative 2-step tuberculin test should have repeat tuberculin tests performed at yearly intervals.

Note: In HIV-positive patients, a positive tuberculin skin test occurs if the induration is > 5 mm[3].
1. If the tuberculin test is positive, i.e., 5 mm or greater (BCG history and previous tuberculin reaction status irrelevant), a chest x-ray should be performed (Diagram A):
   a) If the chest x-ray is normal: administer preventive therapy (see D below)
   b) If the chest x-ray is abnormal: obtain appropriate secretions
      i) if the secretions are negative on smear or culture or both: administer preventive therapy (see D below)
      ii) if the secretions are positive on smear or culture or both: treat as active tuberculosis (see E below).

2. If the tuberculin test is negative by 2-step tuberculin testing and the individual is from a high-risk tuberculosis group, the diagnosis of tuberculosis should be considered (Diagram B).

   High-risk groups include the following:
   - peoples of the First Nations
   - injection drug users
   - immigrants from a country with a high prevalence of tuberculosis
   - those economically disadvantaged
   - those greater than 65 years of age.

   A negative 2-step tuberculin test may occur because an individual infected with tuberculosis is unable to mount a delayed-type hypersensitivity response as a result of immune suppression OR because the individual does not have tuberculosis.

   The relationship between CD4 counts and delayed-type hypersensitivity immune response is complex. Less than 10% of HIV-positive patients with a CD4 count > 500 demonstrate...
anergy cutanée\(^2\). Toutefois, deux tiers des patients qui possèdent moins de 200 CD4 sont anergiques. L'algorithme présenté est fondé sur l'existence d'une anergie ou sur l'absence de celle-ci et, par conséquent, il est conforme aux algorithmes utilisés chez d'autres personnes immunodéprimées, p. ex., chez les greffés.

Dans chaque cas, le médecin traitant devrait évaluer le type et la durée de l'exposition du patient séropositif à une ou plusieurs personnes atteintes de tuberculose. On devrait tenter d'obtenir les résultats des cuit-réactions antérieures.

a) Si la personne fait partie d'un groupe à haut risque ET n'est pas anergique :
   i) si la radiographie pulmonaire est normale, il faut effectuer un suivi clinique;
   ii) si la radiographie pulmonaire est anormale, il faut suivre le protocole recommandé (voir 1.b ci-dessus);

b) Si la personne fait partie d'un groupe à haut risque ET est anergique :
   i) si la radiographie pulmonaire est normale, il faut envisager d'administrer un traitement prophylactique (voir D ci-dessous);
   ii) si la radiographie pulmonaire est anormale, il faut suivre le protocole recommandé (voir 1.b ci-dessus);
   iii) il faut déterminer si le patient souffre d'une tuberculose extrapulmonaire et faire faire les épreuves de laboratoire indiquées.

B. INVESTIGATION OF HIV-INFECTED INDIVIDUALS WITH SYMPTOMS SUGGESTIVE OF TUBERCULOSIS

Individus qui ont des symptômes compatibles avec la tuberculose devraient être rétestés en utilisant un 5 TU PPD test cutané, à moins que l’on sache qu’elles sont anergiques ou qu’elles aient été transplantes.

1. In instances où les symptômes sont présents, même si le test cutané est négatif ou que l’acte X est normal, des prélèvements seraient envoyés pour mycobactériologie.
positive. Appropriate pulmonary and extrapolmonary investigations should be performed to determine if active tuberculosis is present. A high degree of clinical suspicion regarding the possible development of tuberculosis is required when managing HIV-infected individuals.

Recent studies have demonstrated that individuals infected with HIV and tuberculosis present with a wide spectrum of clinical disease. Individuals early in the course of their HIV infection who have a mildly or moderately depressed immune system may present with symptoms and signs of pulmonary tuberculosis. However, individuals with a more severely depressed immune system frequently develop extrapolmonary disease. Active tuberculosis in an extrapolmonary site should be diagnosed by submitting appropriate specimens, including biopsy specimens, for microscopy and culture. Individuals found to have active tuberculosis should be treated (see E below).

Outbreaks of multidrug-resistant tuberculosis have occurred in the United States among HIV-positive individuals. Such outbreaks have not yet been reported in Canada.

C. INVESTIGATION OF INDIVIDUALS WITH PROVEN ACTIVE TUBERCULOSIS, INACTIVE TUBERCULOSIS OR POSITIVE TUBERCULIN REACTIONS OF 5 MM OR GREATER

All individuals diagnosed as having active tuberculosis should be offered HIV testing after appropriate counselling is provided and consent is obtained. Individuals at high risk of acquiring HIV infection should be encouraged to have their HIV serological status determined after appropriate counselling is provided and consent is obtained.

a) persons with unusual site(s) for active tuberculous disease:
   i) extrapolummary: peritoneal, pericardial, miliary, CNS, other
   ii) pulmonary: diffuse bronchopneumonia, lower lobes
b) sexual partner of known HIV-positive individual(s)
c) males who have sex with males
d) injection drug users and other individuals who share needles, including athletes
e) female and male sex-trade workers
f) persons having sexual contact with individuals from Pattern II* countries
g) recipients of blood/blood products between 1978 and November 1985
h) children of an HIV-positive mother
i) any one who has had sexual contact with a person at risk (a-h)
j) individuals symptomatic of possible HIV-related disease
k) persons with multidrug-resistant tuberculosis

D. PREVENTIVE TREATMENT

The drug of choice for preventive therapy is isoniazid (INH) daily for 12 months unless the index case is suspected of having multidrug-resistant tuberculosis. If INH cannot be tolerated, rifampicin should be used. B6 therapy should be considered when INH is prescribed.

Trials using more than one drug for preventive therapy are currently being conducted in an attempt to shorten the duration of

* A Pattern II country is one in which most HIV transmission is attributed to heterosexual activity.

* On classe parmi les pays de modèle II les pays où la transmission du VIH s'effectue la plupart du temps par contact hétérosexuel.
preventive treatment. Trials using alternative preventive treatment regimens are also currently being conducted to determine appropriate regimens when the index case has multidrug-resistant tuberculosis. Consultation with a tuberculosis authority is recommended if multidrug-resistant tuberculosis is suspected.

E. TREATMENT OF ACTIVE TUBERCULOSIS IN THE PRESENCE OF HIV INFECTION

Initial therapy
- 3 or 4-drug therapy daily for 2 months, directly observed or frequently monitored - INH, rifampin, pyrazinamide, streptomycin or ethambutol

The increasing incidence of multidrug-resistant tuberculosis in HIV-positive patients has resulted in many physicians using a 4-drug treatment regimen rather than a 3-drug regimen when treating HIV-infected patients.

Individual patients may require more than 2 months of therapy on this regimen.

Followed by
- 2-drug therapy twice a week, directly observed or frequently monitored - INH, rifampin

Consideration should be given to continuing treatment for at least 6 months following conversion of the last positive sputum culture to negative for acid-fast bacilli and for a minimum of 9 months of therapy. Longer courses of therapy will be required if INH and/or rifampin cannot be tolerated. B6 therapy should be considered when INH is prescribed.

Therapy can be modified in regard to mode of administration and length of treatment.

If drug resistance is present, the treatment regimen should be modified according to the most recent antibiogram.

Appropriate contact tracing must be initiated.

References


Editorial Comment

The immune deficiency caused by HIV provides an ideal opportunity for the re-activation of tuberculosis or the acquisition of tuberculosis. Unlike other many opportunistic infections associated with HIV, tuberculosis can be transmitted to other household residents, friends and health care workers with normal or abnormal immune systems. Prevention of reactivation of tuberculosis and early identification of active tuberculosis cases is important for the individual and for public health reasons.

HIV-positive patients generally develop tuberculosis prior to the development of disease by Pneumocystis carinii or M. avium-intracellulare. A recent Canadian study showed that HIV-positive individuals with active tuberculosis had a mean CD4 count of 200 +10. Multidrug-resistant tuberculosis was not documented in this study.

Several important issues must be considered when managing HIV-infected individuals with possible tuberculosis infection.

1. A number of studies from the United States have shown that HIV-positive patients are more likely to develop extrapulmonary tuberculosis than HIV-negative patients. Careful examination is required to rule out the possibility of extrapulmonary tuberculosis.

2. Strains of tuberculosis that are resistant to more than 5 anti-tuberculosis drugs have been responsible for several outbreaks of tuberculosis in HIV-infected individuals. Although multidrug-resistant tuberculosis in HIV-infected individuals has not been reported in Canada at this time, health care providers must be aware of the serious consequences of multidrug-resistant tuberculosis. Early diagnosis and treatment of tuberculosis cases and the initiation of appropriate infection control measures, particularly during administration of aerosolized pentamidine and hospital admission, are required to prevent outbreaks.

Reference


Commentaire de la rédaction

Le déficit immunitaire causé par le VIH crée un terrain idéal pour la réactivation de la tuberculose ou pour une primo-infection tuberculeuse. À la différence de nombreuses autres infections opportunistes associées au VIH, la tuberculose peut être transmise à d'autres membres du ménage, aux amis et aux travailleurs de la santé, quel que soit l'état de leur système immunitaire. Dans l'intérêt de chaque individu et de la santé publique, il importe de prêter attention à la réactivation de la tuberculose et d'effectuer un dépistage précoce des cas évolutifs.

Les patients séropositifs contractent généralement la tuberculose avant une infection à Pneumocystis carinii ou M. avium-intracellulare. Une étude canadienne récente a montré que les personnes séropositives pour le VIH et atteintes d'une tuberculose évolutive possédaient en moyenne 200 CD4 ou plus. Les chercheurs ne se sont pas penchés sur la tuberculose multirésistante dans cette étude.

Il faut tenir compte de plusieurs questions importantes lorsqu'on traite des personnes infectées par le VIH et peut-être atteintes d'une infection tuberculeuse.

1. Un certain nombre d'études américaines ont révélé que le risque d'être atteint d'une tuberculose extrapulmonaire est plus important chez les patients séropositifs pour le VIH que chez les personnes sérénégatives. Il faut effectuer un examen minutieux afin d'éviter toute possibilité de tuberculose extrapulmonaire.

2. Des souches de bacilles tuberculeux résistantes à plus de 5 médicaments antituberculeux ont été à l'origine de plusieurs éclissions de cas de tuberculose chez des personnes infectées par le VIH. Bien qu'aucun cas de tuberculose multirésistante n'ait encore été signalé au Canada chez des personnes infectées par le VIH, les travailleurs de la santé doivent être conscients des graves conséquences de la tuberculose multirésistante. Pour prévenir de telles éclissions, il est impératif de diagnostiquer et de traiter rapidement les cas de tuberculose et de prendre des mesures adéquates de lutte contre l'infection, particulièrement durant l'administration de pentamidine en aérosol et l'hospitalisation.

Référence