



Increasing Awareness of Low Incidence Disease as Immigration Rates Increase: A Recent Case of Pott's Disease in Atlantic Canada

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ABSTRACT

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As Canada experiences and prepares for notable increases in immigration, health care professionals need to be aware of emerging cases of low incidence diseases, particularly when found in higher rates in the foreign-born population. Therefore, we report the case of a 20-year-old male immigrant presenting to a Canadian emergency department with a one year history of worsening back pain. In the emergency department, thoracic radiographs showed pathologic fractures at T10 and T11 with destructive changes from T8 to T12. Further, a computed tomography scan identified a large paravertebral abscess from T6 to L1, with osseous destruction and spinal stenosis. Magnetic resonance imaging showed bony deformity, epidural, pre- and paravertebral, and bilateral psoas abscesses, and a right-sided pleural effusion. Diagnosis was confirmed with direct molecular testing and treatment was initiated in a timely and efficacious manner. This case report highlights the need for health care providers to have a high index of suspicion and consideration of atypical presentations of low incidence diseases, particularly within the burgeoning immigrant population, to ensure quality health care services are delivered.

Introduction

Immigrant populations in Canada are disproportionately affected by tuberculosis (TB) [1]. The bacteria that causes TB, *Mycobacterium tuberculosis*, primarily affects the lungs of the host, causing pulmonary TB. The estimated incidence of TB in Canada is low (5.3 cases per 100 000 population), but is much higher in many immigrant countries of origin [2]. However, in up to one-third of cases with active disease, the bacteria can cause illness at sites outside the lungs, causing extrapulmonary TB (EPTB) [3]. Spinal TB, also known as Pott's disease, occurs when *M. tuberculosis* infects the spine causing abscess formation and painful vertebral body destruction [4]. Pott's disease constitutes 50% of cases of skeletal TB and 1% of all TB cases [5]. It can present with a variety of manifestations, including constitutional symptoms, back pain/tenderness, paraplegia/paraparesis, and spinal deformities [6]. Conventional radiographs offer lower-resolution images and are limited in their capacity to detect small lesions; thus, magnetic resonance imaging (MRI) is the most sensitive imaging modality in detecting earlier stage radiologic signs, though definitive diagnosis requires microbiological testing [4]. In Canada, pulmonary TB and EPTB are more likely to be diagnosed in foreign-born individuals [7].

Canada welcomed 405,000 immigrants in 2021, the largest cohort in the history of our country [8], with plans to accept close to half a million new immigrants annually over the next three years [9]. Health disparities among immigrant populations are well documented [10, 11, 12], while best practices to address these health inequities for immigrant populations have been slow to develop [13, 14]. One recommendation has included generating heightened awareness of risk factors for unfamiliar diseases in unfamiliar populations [15]. Thus, increasing the visibility and hence, the awareness of low incidence diseases that may disproportionately affect immigrant populations may contribute to mitigating these disparities. Case reports are a vehicle for a relatively quick dissemination of accurate information to practitioners, policy makers, and researchers [16]. With increasing and changing patterns of immigration, it is anticipated that there will be an increasing number of active TB cases to be managed by health care providers (HCPs) and/or public health staff. This case report was compiled in order to raise awareness of this.

Case Presentation

A 20-year-old male of Africa descent presented to his local emergency department with a one year history of worsening back pain. He had immigrated to Canada eight months prior. He had no neurologic or constitutional symptoms and no known close contacts with any documented cases of TB. Thoracic radiograph showed pathologic fractures at T10 and T11 with destructive changes from T8 to T12 (Figure 1). Computed tomography (CT) scan identified a large paravertebral abscess from T6 to L1, with osseous destruction and spinal stenosis (Figure 2). Magnetic resonance imaging (MRI) showed the bone deformity, epidural, pre- and paravertebral, and bilateral psoas abscesses, and a right-sided pleural effusion. On direct smear, pleural fluid was negative for acid-fast bacilli; however, paraspinal abscess drainage was smear-positive and consistent with *M. tuberculosis* complex on direct molecular testing and subsequently confirmed on culture.

Paraspinal abscess culture revealed growth of *M. tuberculosis* after seven days of incubation. A four-drug anti-tuberculous medication regimen of INH/RIF/PZA/EMB was initiated while

awaiting the results of antimicrobial susceptibility testing. Radiographs documented stable drainage, with CT scan 16 days after presentation demonstrating resolution of the effusion, well-drained abscesses, and unchanged bony destruction (Figure 3).

Figure 1. Lateral radiograph of the thoracic spine with pathologic fractures at T10-T11 and gibbous deformity.

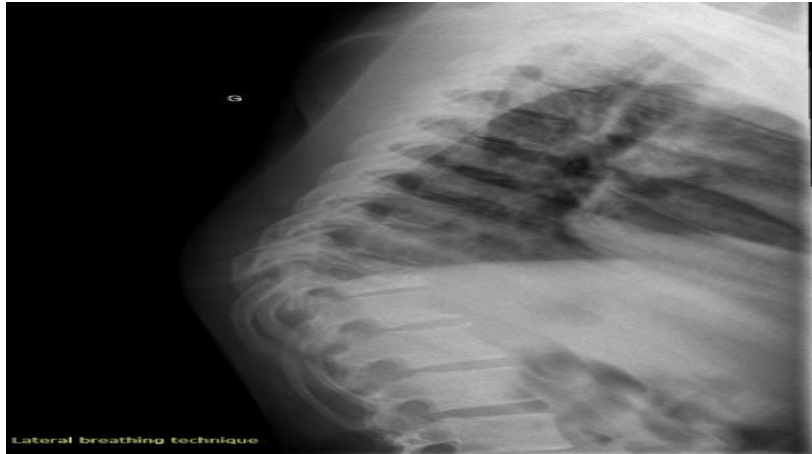


Figure 2. Sagittal reformat of CT performed the same day re-demonstrating bony destruction as well as large abscess.

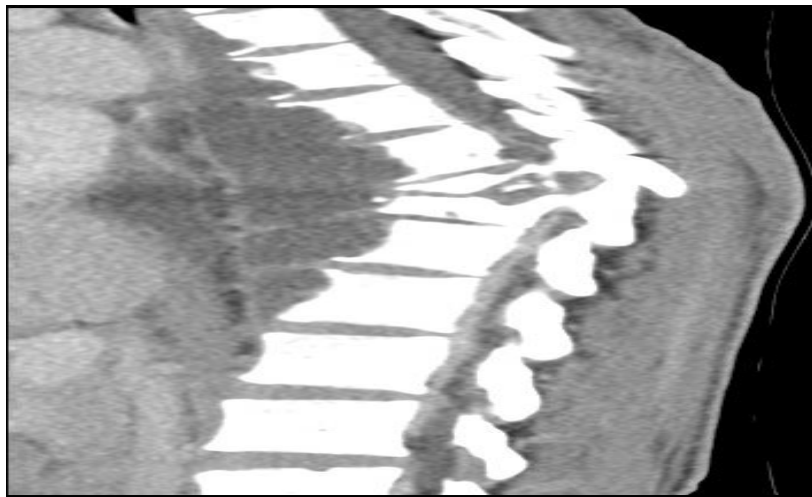
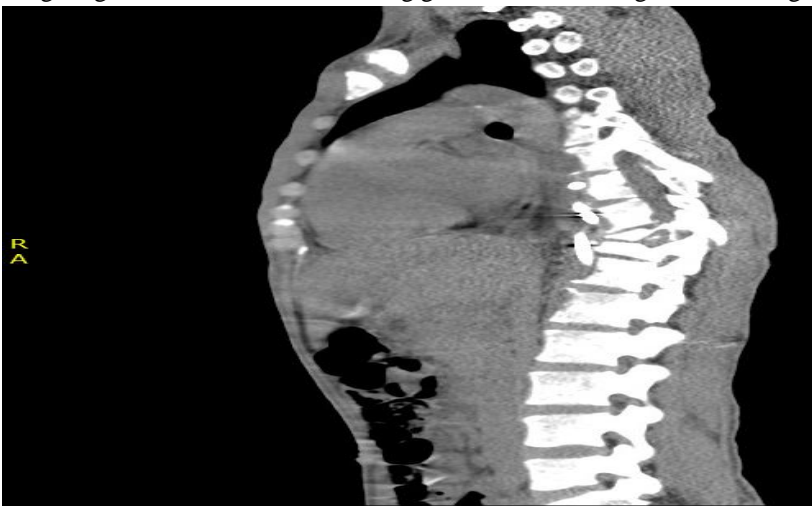


Figure 3. Post-drainage sagittal reformat of CT showing good abscess drainage and unchanged bony destruction.



Discussion

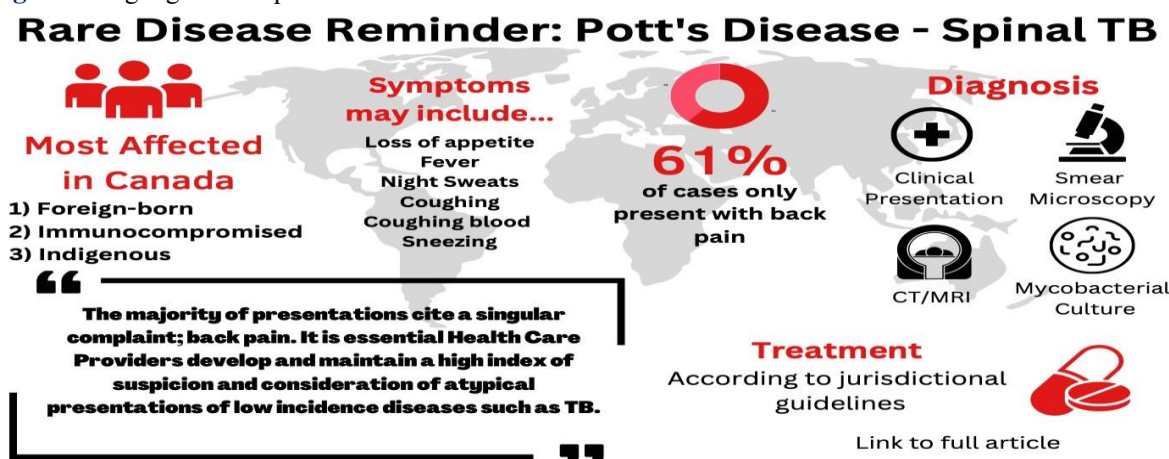
In 2020, there were 1,772 active cases of TB in Canada, 73.5% of whom were foreign-born individuals [1]. Cases of spinal TB during that year were less than 1% of all active cases in Canada [5, 17]. As immigration rates currently soar in Canada, HCPs need timely information on the incidence of low-prevalence diseases that disproportionately affect foreign-born Canadians [18]. This case report highlights the potential for low incidence extrapulmonary manifestations of TB to present in Canada. Although Pott's disease is rare, this case presented in a typical fashion, as 61% of spinal TB cases present with only one symptom: back pain [6]. Other symptoms could have included night sweats, weight loss, fever, and fatigue [19]; however, when these symptoms are absent, HCPs are more likely to misdiagnose or delay diagnosis, which can eventually lead to serious neurological disorders, including paraplegia [17, 20]. Prognosis is heavily dependent on accurate, early diagnosis [21].

Pott's disease can result from an active or latent TB infection (LTBI) [5]. Approximately 5-15% of LTBI will develop into an active TB case [2]. For over a decade, researchers have been citing the need for governing health bodies to increase surveillance systems for infectious diseases, including LTBI [15]. Currently, Immigrants, Refugees and Citizens of Canada does not effectively screen for LTBI [22]. Developing a national strategy for screening and identifying LTBI cases upon entry into the country could facilitate HCP diagnosing early-stage spinal TB by obtaining pertinent patient history, i.e., LTBI [23].

Future considerations for targeted screening and diagnostics should also include those living with HIV infection [24, 25] as well as Indigenous persons, noting their perennial, unaddressed, disproportionately high rates of TB [7, 26, 27]. These vulnerable sub-populations, as well as foreign-born Canadians, would benefit from efforts in early detection/screening programs for LTBI, training front-line practitioners to recognize risk factors for the disease and initiating research specific to local contexts [15].

Finally, the dissemination of accurate medical information often lags from publication to clinical practice [28, 29]. It has been suggested that practitioners value visual, high-density information sources, such as infographics, to facilitate learning new information pertinent to bedside care [30]. To facilitate this effective practical form of knowledge translation suggested by the literature [31, 32, 33], a printable infographic depicting the content of this article can be found in Figure 4 with a corresponding hyperlink for practitioners to make copies for the clinical settings they service.

Figure 4. Highlights of important information about Pott's disease.



Conclusion

The clinical presentation of Pott's disease can be highly variable; however, HCPs should be aware that most presentations cite a singular complaint; back pain. It is essential HCPs develop and maintain a high index of suspicion and consideration of atypical presentations of low incidence diseases such as TB. This case report highlights the potential for less common presentations of active TB in Canada.

Declarations

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Disclosure Statement

No potential conflict of interest was reported by the authors.

Ethics Approval

Ethics approval was obtained from the University of New Brunswick Research Ethics Board (REB- File #2023-009). Ethics approval is not required for Case Reports by the Horizon Health Network where the patient presented and was managed.

Consent for Publication

Written informed consent for publication of the case report was obtained from the patient.

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