MULTIFOCAL TUBERCULOUS OSTEOMYELITIS IN AN 11-YEAR-OLD INDIGENOUS MALE FROM NORTHEASTERN ONTARIO: CASE VIGNETTE AND LITERATURE REVIEW

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A previously healthy 11-year-old Indigenous male child from northwestern Ontario presented with osteomyelitis (OM) of unknown duration of the right proximal ulna and left 5th metatarsal with soft tissue involvement. He failed to improve despite surgical debridement and antibiotic treatment aimed at typical causative pathogens. Bone cultures eventually grew Mycobacterium tuberculosis. He was started on first-line therapy for drug-susceptible tuberculosis (TB) with complete resolution after almost one year of treatment. Osteoarticular TB should be considered in cases where patients fail to respond to standard antibiotic therapy for pyogenic infections, especially in those individuals with high epidemiological risk for TB. In Canada, the burden of TB infection falls disproportionately on foreign-born individuals and First Nations, Métis and Inuit peoples living on-reserve and in geographically isolated communities. Clinicians should maintain a high degree of suspicion for TB, including at extra-pulmonary sites, in individuals at increased epidemiological risk who fail to respond to usual antibiotic therapy.

CASE VIGNETTE

Healthy 11-year-old Indigenous male child; history of autism & speech delay, from First Nations reserve in northwestern Ontario

Pathology of the right proximal ulna bone tissue showed chronic osteomyelitis with sinus formation and extensive necrotizing granulomatous inflammation. Occasional acid-fast bacilli were seen on special stains. Cultures of the left 5th metatarsal bone tissue were negative, but pathology showed granulomatous inflammation.

Sputum samples x 3 and mycobacterial blood cultures were negative for M. tuberculosis. Chest x-ray showed a slight pleural effusion but was otherwise unremarkable. The patient had no history of travel outside of northwestern Ontario. HIV testing was negative. Treatment for drug-susceptible TB was initiated with rifampin, isoniazid, pyrazinamide and ethambutol (RIPe).

Within a few days of initiating RIPe therapy he developed a pruritic maculopapular rash with mild eosinophilia. RIPe medications were held. Once his rash improved and lab normalized each agent was re-introduced following a graded drug challenge protocol. He tolerated treatment well after re-introduction with no further adverse effects noted. On follow-up he has demonstrated clinical and radiographic improvement (Figure 2), with complete resolution after almost one year of therapy.

DISCUSSION

• Approximately 10-25% of extra-pulmonary tuberculosis (TB) cases worldwide present with osteoarticular involvement; more than half of cases involve the vertebral column.1,3

• Joints, especially the hip and knee, are the next most common site of infection.1 TB osteomyelitis (OM) of the peripheral skeleton is less common, with incidence less than 1% in retrospective studies.5 The long bones, possibly related to vascular supply at growth plates, and ribs are most commonly affected.6

• 7-21% of osteoarticular cases are multifocal,1,4 but incidence of multifocal disease limited to the peripheral skeleton is unclear.

• Concomitant pulmonary involvement is limited to less than one-thirds of patients.4,5

• This case illustrates the clinical presentation and difficulties in diagnosing TB OM (see Box 3).

• Treatment of drug-susceptible TB OM is similar to pulmonary TB, with isoniazid, rifampin, pyrazinamide, and ethambutol employed initially. Duration of treatment varies and patients may require 9-12 months of total treatment.4 Incision and drainage may be needed in the case of larger abscesses or if there is joint involvement.5

• In 2010 in Canada 39 of 1,577 TB cases (2.5%) involved the bones and joints. Incidence may be higher in other countries owing to higher rates of HIV coinfection or differences in health care access and pulmonary TB screening.6 TB burden in Canada is not equally distributed (Box 2).

Box 2: Key features of osteomyelitis

• Pain & swelling over bony site, “cold” abscess with limited erythema or warmth, development of draining sinus tract.2,3

• Fever & systemic symptoms uncommon.5,5

• Often patients are immunocompetent, children frequently affected.4

• In some cases suspected tissue & bone culture & histopathology are recommended to confirm the diagnosis & guide treatment.6,6

Box 3: TB in Canada

Although foreign-born individuals account for most cases of TB in Canada, Canadian-born Indigenous (First Nations, Métis and Inuit) peoples make up the second largest group of cases, particularly those living on-reserve and in geographically isolated communities (see Figure 3).3

Furthermore, the incidence of TB in Canadian-born Indigenous peoples is substantially higher than in the general population (21.5 vs. 4.9 per 100,000 population in 2017).3

In 2018 the Public Health Agency of Canada released a report highlighting how societal inequities contribute to TB infection rates in the Canadian Indigenous population.7 Factors such as systemic racism, poverty, poor housing, overcrowding, food insecurity and access to health care play a role in the disproportionately high burden of TB in Canadian Indigenous communities.3 Addressing these inequalities is a key component of public health interventions aimed at eliminating TB in Canada.

CONCLUSIONS

Mycobacterium tuberculosis should be considered as an etiologic agent in peripheral osteoarticular infections not responding to usual management, particularly in populations at high epidemiological risk - including Canadian First Nations, Métis and Inuit peoples living on-reserve and in geographically isolated communities.

Public health interventions aimed at eliminating tuberculosis in Canada should remain a priority, especially in those populations that are disproportionately affected.

REFERENCES


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