Student number: 836359

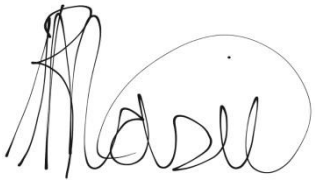
A dissertation submitted to the Faculty of Health Sciences, University of the Witwatersrand in fulfilment of the requirements for the degree of Master of Science.

Johannesburg

19 October 2021.

Declaration

I Rethabile Masiu declare that this Dissertation is my own, unaided work. It is being submitted for the Degree of Master of Science in Medicine at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



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(Signature of candidate)

19 October 2021 in Johannesburg

Abstract

Tuberculosis is an infectious disease. Skeletal TB is the extra-pulmonary manifestation of *Mycobacterium tuberculosis* infection and occurs in about 1-5% of all TB cases. The aim of this study was to assess the sensitivity and specificity of skeletal lesions to accurately diagnose TB in a pre-antibiotic South African skeletal sample. For this purpose, 23 skeletal lesions were assessed on 436 skeletons from the Raymond A. Dart Skeletal Collection. These skeletons were divided into three groups: individuals where TB was recorded as cause of death (n=177), individuals where other pulmonary diseases were recorded as cause of death (n=109) and individuals where a variety of diseases, excluding TB and other pulmonary diseases, were recorded as causes of death (n=150). Chi-squared and Fisher's Exact tests were used to assess differences between groups. The skeletal lesions' respective sensitivities and specificities were also calculated and compared to a similar study by Dangvard Pedersen *et al*. (2019a). Lesions on the ventral surface of thoracic and lumbar vertebral bodies were observed significantly more in TB cases than in controls. This lesion type was also found to be the most valuable indicator with a high sensitivity and 55% probability of a true TB diagnosis if observed. An association between skeletal lesions and TB could only be found for rib and vertebral lesions. Distinct differences between this study and the study by Dangvard Pedersen *et al*. (2019a) indicated that TB-related changes were likely to be observed in a South African skeletal sample even when individuals were not documented to have died of the disease.

Human Research Ethics Committee (Medical)

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Ref: W-CJ-140604-1 25/01/2016

TO WHOM IT MAY CONCERN:

Waiver: This certifies that the following research does not require clearance from the Human Research Ethics Committee (Medical).

Investigator: School of Anatomical Sciences (Head: Prof M Steyn - Previously Prof T J M Daly, initial approval 04/06/2014 – recertified 27/01/2016).

Project title: Research on Cadaveric Material.

Reason: In terms of Chapter 8, sections 62-64 of the National Health Act No 61 of 2003 donated bodies and their tissues may be used for, among other purposes, health, and research. Use of such Material is subject only to permission from the responsible person in the School of Anatomical Sciences – the Head or person designed by the Head.

Professor Peter Cleaton-Jones

Chair: Human Research Ethics Committee (Medical)

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