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Clinical Study

Comparison of brucellar and tuberculous spondylodiscitis patients: results of the multicenter "Backbone-1 Study"

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Abstract

BACKGROUND CONTEXT: No direct comparison between brucellar spondylodiscitis (BSD) and tuberculous spondylodiscitis (TSD) exists in the literature.
PURPOSE: This study aimed to compare directly the clinical features, laboratory and radiological aspects, treatment, and outcome data of patients diagnosed as BSD and TSD.
STUDY DESIGN: A retrospective, multinational, and multicenter study was used.
PATIENT SAMPLE: A total of 641 (TSD, 314 and BSD, 327) spondylodiscitis patients from 35 different centers in four countries (Turkey, Egypt, Albania, and Greece) were included.
OUTCOME MEASURES: The pre- and peri- or post-treatment spinal deformity and neurologic deficit parameters, and mortality were carried out.
METHODS: Brucellar spondylodiscitis and TSD groups were compared for demographics, clinical, laboratory, radiological, surgical interventions, treatment, and outcome data. The Student *t* test and Mann-Whitney *U* test were used for group comparisons. Significance was analyzed as two sided and inferred at 0.05 levels.
RESULTS: The median baseline laboratory parameters including white blood cell count, C-reactive protein, and erythrocyte sedimentation rate were higher in TSD than BSD (p<.0001). Prevertebral, paravertebral, epidural, and psoas abscess formations along with loss of vertebral corpus height and calcification were significantly more frequent in TSD compared with BSD (p<.01). Surgical interventions and percutaneous sampling or abscess drainage were applied more frequently in TSD (p<.0001). Spinal complications including gibbus deformity, kyphosis, and scoliosis, and the number of spinal neurologic deficits, including loss of sensation, motor weakness, and paralysis were significantly higher in the TSD group (p<.05). Mortality rate was 2.22% (7 patients) in TSD, and it was 0.61% (2 patients) in the BSD group (p=.1).
CONCLUSIONS: The results of this study show that TSD is a more suppurative disease with abscess formation requiring surgical intervention and characterized with spinal complications. We propose that using a constellation of constitutional symptoms (fever, back pain, and weight loss), pulmonary involvement, high inflammatory markers, and radiological findings will help to differentiate between TSD and BSD at an early stage before microbiological results are available.

Keywords: Brucellosis; Complication; Outcome; Sequelae; Spondylodiscitis; Tuberculosis

FDA device/drug status: Not applicable.

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Introduction

Spinal infection involving the intervertebral discs and the adjacent vertebrae, interchangeably termed as spondylodiscitis, disc space infection, or vertebral osteomyelitis, is an infectious complication that is difficult to treat. Although nowadays mortality from spondylodiscitis is rare because of the availability of antimicrobial treatment compared with the pre-antibiotic era [1], patients still experience therapeutic failure, frequent relapses, and sequelae [2]. The etiologic agents can be broadly divided into conventional bacterial pathogens causing pyogenic infection (such as staphylococci, streptococci, and Gram negatives) and atypical pathogens such as *Brucella* sp. and *Mycobacterium tuberculosis*. Brucellar spondylodiscitis (BSD) and tuberculous spondylodiscitis (TSD) are endemic in many parts of the world [3–5]. For instance, a local study from the Mediterranean Region, where brucellosis is endemic, showed that one-third of all spondylodiscitis cases were due to brucellosis whereas TSD accounted for only 5% of the cases [6].