



# Epidemiology of Spinal Infections: Retrospective Review of the Patients with Osteomyelitis, Discitis, and Epidural Abscesses

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## Introduction

Spinal infections are one of the more difficult, complex, and multi-disciplinary conditions faced by health professionals. The diversity of the causes, symptoms, and treatments has made spine infections a challenge for physicians in a number of fields. Although numerous literatures have been published, clear management guidelines for frontline physicians are lacking. We collected data on the demographic picture of the patients with spinal infections and analyzed clinical characteristics and MRI findings that could influence outcome and the need for surgery.

## Methods

A retrospective chart review was conducted, obtaining information from adult patients (>18 years old) with osteomyelitis, discitis, or epidural abscesses admitted to the Royal University Hospital in the last eight years. This included patient demographics, clinical presentation, diagnosis, dates of all relevant medical events, method of bacteria isolation and results, type and duration of treatment (including surgery), and outcome. MRI analysis by a radiologist was then conducted on the patients with a diagnosis of epidural abscess to determine pre-operative MRI findings. Tuberculosis and post-operative infections were excluded from the study. Patients in the study were given an outcome measure based on the following two categories:  
**Outcome 1- Good to moderate:** ranging from no symptoms, to moderate disability requiring some help, but able to walk unassisted (Modified Rankin Scale Categories 0-3)  
**Outcome 2- Poor:** serious disability, including unable to walk unassisted, unable to attend to own needs without assistance, and/or completely bedridden (Modified Rankin Scale Categories 4 & 5)  
Eight patients with an outcome of Modified Rankin Scale Category 6 (death) were excluded from statistical analysis. Causes of death of these eight patients included infectious endocarditis (3 patients), sepsis (2 patients), and other systemic complications (3 patients).

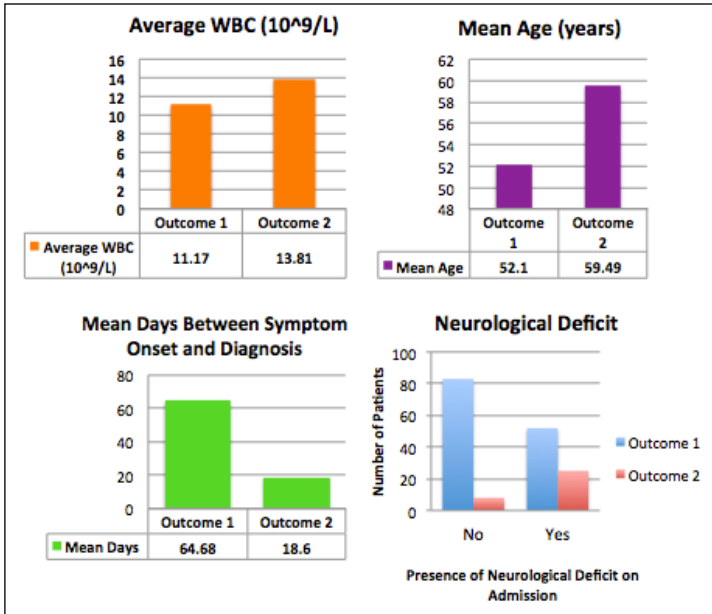
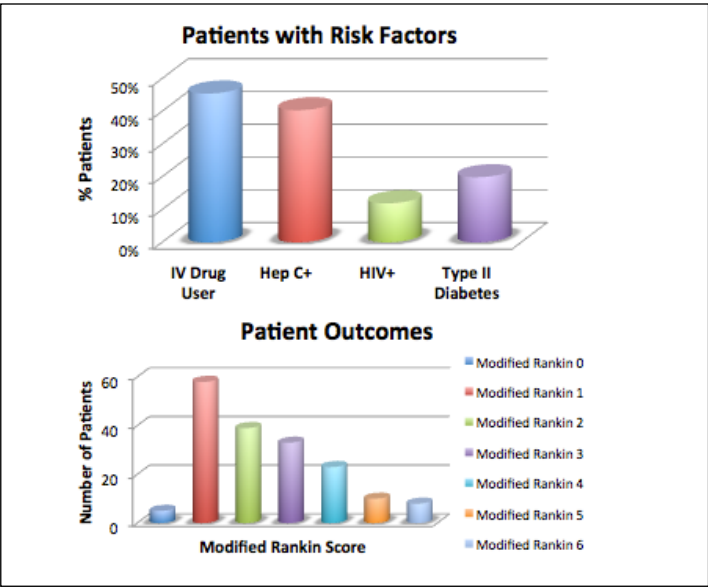
## Results

This study included 176 adults, of whom 60% were male and 40% were female. The mean age was 54 years old. 69% had osteomyelitis, 45% had an epidural abscess, and 41% had discitis. 45% of patients were intravenous drug users, 40% were Hepatitis C positive, and 12% were HIV positive. 36% of patients underwent surgery. Six variables were identified as statistically significant in relation to poor outcome. They are as follows:

- Presence of an epidural abscess
- Presence of a neurological deficit on admission
- Older age
- Higher white blood cell count
- Shorter duration between onset of symptoms and admission
- Longer duration of admission in hospital

Four variables were identified as statistically significant in relation to need for surgery. They are as follows:

- Presence of an epidural abscess
- Presence of a neurological deficit on admission
- Higher white blood cell count
- Longer duration of admission in hospital



## Discussion

Our data confirmed the seriousness of this condition. The mortality was 4.5% and 19% ended up with severe disability. High incidence of IV drug use was also noted which has an important implication in terms of prevention, from the perspective of social service and public health. We identified a few patient characteristics that can influence the outcome of the patients. These factors can be used to predict the prognosis and need for surgery of the patients. It seems that there are two groups of patients; one being patients with a slow, indolent course and the other being patients with an acute and rapidly deteriorating course. It is important to distinguish these two groups of patients, as they may behave differently in their clinical course.

## Conclusions

In our study, we were able to identify the factors that influence clinical outcome and the need for surgery. Identifying high risk patients at the beginning of treatment could lead to the better management of patients with this serious condition.