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Detection of spleen abscesses facilitates diagnosis of melioidosis in Malaysian children

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ABSTRACT

Objectives: Melioidosis is associated with extremely high case fatality ratios. The aim of this study was to determine whether detection of abdominal visceral abscesses can facilitate diagnosis of melioidosis in children.
Methods: We conducted a retrospective analysis of all children who had liver and/or spleen abscesses on abdominal ultrasonography admitted to Bintulu Hospital in Sarawak, Malaysia, from January 2014 until December 2018.
Results: Fifty-three children had liver and/or spleen abscesses. Spleen abscesses were present in 48 (91%) cases; liver abscesses in 15 (28%). Melioidosis was confirmed by culture in 9 (17%) children; small occult splenic abscesses were present in all cases. In 78% of these cases, the lesions were detected before any positive culture (or serology) results were available. Four (8%) children had bacteriologically-confirmed tuberculosis. Two (4%) had *Staphylococcus aureus* infection. Of the remaining 38 (72%) culture-negative cases, 36 (95%) had clinical and imaging characteristics similar to that of children with culture-confirmed melioidosis and improved with empirical melioidosis antibiotic therapy.
Conclusions: A large number of children in Bintulu Hospital in Sarawak, Malaysia, were found to have spleen abscesses. Melioidosis was the most common etiology identified in these children. Abdominal ultrasonography is extremely useful in facilitating the diagnosis of pediatric melioidosis.

Introduction

Melioidosis, caused by the environmental saprophyte *Burkholderia pseudomallei*, is an important source of morbidity and mortality in Southeast Asia and northern Australia (Gassiep et al., 2020). An expanding geographic distribution has been described, and recent disease modelling suggests that more people are killed annually by melioidosis than by better known infections such as dengue and leptospirosis (Limmathurotsakul et al., 2016). Case fatality ratios exceeding 40% continue to be reported (Hantrakun et al., 2019).

Various factors contribute to the high case fatality ratios of melioidosis. *B. pseudomallei* is intrinsically resistant to many commonly used antibiotics, and without timely initiation of appropriate treatment, the infection may rapidly progress to fulminant septicaemic shock, especially in those with underlying co-morbidities (Churuangsuk et al., 2016). Patients present with a myriad of clinical manifestations, hampering early recognition, while confirmatory laboratory diagnosis is often difficult (Wiersinga et al., 2018). Bacterial culture, although specific, may lack sensitivity due to both inadequate sampling and low bacterial loads in clinical samples (Hoffmaster et al., 2015). Other methods

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