

## Tuberculosis Meningitis, still Misunderstood

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### Introduction

World Health Organization (WHO) estimates 9 millions of people developed tuberculosis in 2013, and 1.5 million died, including 360 000 people who were infected with human immunodeficiency virus (HIV) [1]. 133 years after Robert Koch discovered the bacillus that cause the disease, tuberculosis remains a major global health problem.

Tuberculosis meningitis (TM) represents nearly 2% of all the cases. In HIV-infected patients the rate increases roughly 10%. This form of presentation is particularly important because of the significant high rate of mortality and disability (about half of the people affected) [2]. Reason why it is considered the most severe mode of tuberculosis in children, adult and particularly in HIV diseased patient's. The vaccination (Bacillus Calmette-Guérin) offers protection against disseminated forms of childhood tuberculosis, especially meningitis, but is not available worldwide.

Scholars and guidelines recommend early initiation of empiric therapy in patients with suspected TM. Despite it has been recognized as the main factor determining outcome [3].

### Cover Letter

Treatment delay is the strongest risk factor for death. However, the premature diagnosis remains a challenge. Even when clinical features of TM are well described, the initial symptoms are non-specific or vague in children and adults and can be mimics to those of another cause of meningitis. Furthermore, diagnostic tests available have a low sensitivity and the majority of patients come from undeveloped countries where usually not the adequate accesses to health care have. Also, complementary tests as CT scan and MRI are frequently useless to rule out or support the diagnosis [3]. Nonetheless the search for the diagnosis in developed countries still continues. In last 15 years, researchers have been proposed about nine scales to define the positive diagnostic of

TM in clinical practice and research. Finally, a consensus of case definition has been made in Cape Town in 2009. In this one patient are given a definitive, probable, possible or not TM diagnostic depending on clinical, laboratory and cerebral imaging findings. The case definition is applicable irrespective of the patient's age, HIV infection and the resources available, which from our point of view is an important fact in low income countries where TM prevalence is higher [4]. Doctors face important challenge in medical practice because clinical features are nonspecific and laboratory tests are insensitive. Diagnostic rules have been developed on the basis of predictable variables, but only the Vietnam Rule has been tested in different populations [5-8]. The major limitation of this rule is the detection of TM in HIV-infected patients (low sensitive and specific rate).

The principles of TM treatment still come from observational studies and clinical practice, and not from controlled clinical trials. Even when diagnosis is satisfactorily made and treatment started untimely, drug-resistant is an increasingly widespread medical trouble.

Defy is to detect early fail in treatment for starting alternative drugs and preventing death and disability. There exist not recommendations for multidrug resistant TM [9]. The antituberculosis agent should be chosen by probable susceptibility and cerebrospinal fluid penetration, including corticosteroid therapy to reduce mortality.

Despite the advances in diagnosis and treatment of TM, there persist numerous unclear interrogations. There should be designate additional economic and human resources for investigation. The effort made until today is not enough, and HIV-infected patients represents worrying group. The main way to improve survival is the prompt diagnosis and treatment. To bear in mind the insensitive tests currently available is not simple to arrive early to a correct diagnosis. Likewise, the multidrug resistant restrict the healing possibilities. There still are more questions than answers, an approach is urgently needed.

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### Conflict of interests

Authors declare that not exist any conflict of interest.

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