Determinants of time to sputum smear conversion (TSSC) during lung tuberculosis therapy in a French cohort

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I - Objectives

The infectivity of patients with active lung tuberculosis (TB) is linked to bacterial load in sputum. Such patients are usually maintained in isolation room until the initiation of anti-mycobacterial therapy and sputum smear conversion. The time to sputum smear conversion (TSSC) is highly variable; unforeseen long-term persistence of positive sputum smear may lead to a suspicion of absorption issues, resistance, or poor compliance, and a prolonged respiratory isolation time may be poorly tolerated by patients.

We aimed to determine the factors associated with delayed sputum conversion in patients with pulmonary TB after anti-TB treatment introduction.

III - Results

Eighty-eight patients were included (mean 49+/-22 years, 29 females and 59 males) (fig. 1). Most of them were born in Western Europe (fig. 2).

The median time to sputum smear conversion was 21 days (5 to 141 days); 15 patients had a TSSC of more than 40 days (fig. 2).

The median time to sputum culture conversion was 42 days (5 to 116 days); 21 patients had a median time of more than 40 days (fig. 3).

II - Methods

All adult patients with sputum culture-proven pulmonary TB referred to our institution (University Hospital of Grenoble) between 1998 and 2013 were retrospectively reviewed. Patients with an initial sputum smear positive (Ziehl-Nielsen staining) and a sputum smear follow-up during anti-mycobacterial therapy were included.

Log-rank test was performed.

In univariate analysis, the number of infected lung lobes was statistically associated with prolonged TSSC; a trend was noted for an association between prolonged TSSC and a body mass index <20, diabetes, lung cavern, and initial quantity of acid-fast bacilli (table 1).

IV - Conclusions

Physician and patients must expect a median TSSC of 21 days. A multilobar disease, a body mass index <20, diabetes, lung cavern, and abundant acid-fast bacilli on the initial sputum may be associated with a prolonged TSSC.