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Paper Poster Session VI

Tuberculosis - clinical issues

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

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Objectives

The infectivity of patients with 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 the resultant 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 who were given anti-TB treatment.

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 conversion during anti-mycobacterial therapy were included. We collected the sex, age, weight and body mass index (when available), smear grade (bacillary load), initial antibiotic regimen (quadri- or tritherapy, i.e. rifampicin, isoniazid, pyrazinamide +/- ethambutol)(when known), and the time to the first negative sputum smear once treatment was introduced. Smear was graded as 1 to 9 acid-fast bacilli (AFB) in 100 fields (grade 1), 10 to 99 AFB in 100 fields (grade2), 1 to 10 AFB per field (grade 3), or more (grade 4). Log-rank test and non-parametric tests (Spearman correlation test, Mann-Whitney test) were performed.

Results

Sixty-four patients were included (mean/median age 48/42 years, 18 females and 46 males). For the 45 patients for whom the information was available, quadritherapy was used in 4 patients and tritherapy in 5. The median time to smear conversion was 15 days (6 to 98 days); eight patients had a TSSC of more than 40 days. Age, sex and antibiotic regimen were not significantly linked with TSSC. Patients with an initial smear grade of 1 or 2 (n=23) had a shorter TSSC than Patients with a smear grade of 3 or 4 (n=41) (median 10 vs 18 days, p=0.005). Patients with a body mass index (reported for 23 patients) below and above 20 had a respective median TSSC of 21 and 12 days (p=0.022).

Conclusions

Physician and patients must expect a median TSSC of 15 days. A high initial sputum smear bacilli count and a poor nutritional status may be used to schedule long-term isolation to ease expectations of both the patient and the medical staff. The investigation of clinical factors that affected conversion is in progress.