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CASE SERIES OF LATENT TUBERCULOSIS INFECTION IN HEALTH PROFESSIONALS IN A TERTIARY HOSPITAL IN NORTHERN PORTUGAL

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INTRODUCTION

Tuberculosis is a preventable disease with effective treatment. In low-incidence countries such as Portugal, healthcare workers are considered a high-risk group for infection by *Mycobacterium tuberculosis* (Faria, 2022). The Directorate-General for Health advocates that all health institutions should adopt mechanisms for the early detection of cases of active tuberculosis and tuberculosis infection (TBIL) among their staff. Occupational health services are responsible for assessing and managing occupational exposure to this level 3 biological agent (Directive 2000/54/EC). Regardless of the risk of the institution, all health professionals should be screened for TBIL during medical examination. Professionals in low-risk institutions are only screened again if there is unprotected exposure to a case of pulmonary tuberculosis, while workers in medium- and high-risk institutions, in addition to any contact screening, should undergo periodic screening (DGS, 2014).

There is still no way to directly identify the infection, and guidelines for screening and treatment are based on the likelihood of progression from TBIL to Tuberculosis in risk groups (Erkens *et al*, 2010; CDC, 2020). There are two immunological tests available for TBIL: Tuberculin Sensitivity Test (TST) and *Interferon Gamma Release Assay* (IGRA). The use of both tests simultaneously is not recommended, except in immunocompromised individuals (National Society of Tuberculosis Clinicians and National Tuberculosis Controllers Association, 2021).

There is no recent data on incidence of TBIL among health workers, the number of reported cases of tuberculosis has been decreasing over the last few decades (WHO, 2022).

OBJECTIVE

To evaluate the incidence of TBIL among health professionals in a tertiary hospital located in a low-risk geographical area (Portugal) over three consecutive years (2021-2023).

MATERIALS AND METHODS

A retrospective observational study was carried out with a convenience sample. The clinical files of workers included in the Occupational Health service database with TBIL screening carried out between January 2021 and December 2023 were reviewed. The screening method was the *Interferon Gamma Release Assay* (IGRA). The following data was also collected for each worker: age, gender and professional category.

RESULTS

1,010 TBIL screenings were carried out during the study period. Of these, 699 were admission tests, 21 were periodic tests and 290 were contact tests. A total of 27 workers were excluded from the study because hadn't been tested. Of the 983 validated tests, 53 had a positive result, corresponding to 5.39% of the professionals screened. 356 doctors, 325 nurses and 215 operational assistants were screened. In terms of the distribution of screenings, 4.29% of admission screenings were positive, as were 4.83% of contact screenings. Of the distribution by professional category, 43.40% of the positives were in operational assistants, 22.64% in doctors, 22.64% in nurses, the rest in other categories.

DISCUSSION

The diagnosis of TBIL was made using the IGRA test, which, unlike the TST, is not positive with the Bacillus Calmette Guérin (BCG) vaccine or with most non-tuberculous mycobacteria. In the absence of a *gold standard* for diagnosis, this method was preferred because of its increased specificity. The number of screenings in periodic exams was lower than expected, since the hospital under study does not fall into the low-risk classification, and workers in medium and high-risk institutions, in addition to any contact screenings, should undergo periodic screenings annually (or at least every 2/2 years) (DGS, 2014). This is not the recommendation of the *Centers for Disease Control and Prevention* (CDC), which argues that the periodic evaluation of professionals who carry out their activity in medium-risk settings is not recommended, except in the case of known previous exposure or ongoing active transmission (CDC, 2022)., this should be considered on a case-by-case basis and may apply to certain risk groups such as pulmonologists and laboratory workers who handle *Mycobacterium tuberculosis* (Thanassi *et al.*, 2020; Sosa *et al.*, 2019).

The professional group with the most positive cases, operational assistants, raises the question of whether the operational team is

at greater risk due to a lack of knowledge of infection prevention. Investing in training and informing workers, as well as providing adequate protective equipment and collective protection measures should be measures to improve.

In view of the results found, it is necessary for occupational physicians to maintain TBIL screening in all admission exams, so that the necessary measures can be taken to protect workers, namely through the timely treatment of TBIL cases, and to stop the spread of the disease in the hospital environment.

CONCLUSIONS

The existence of well-defined action plans for healthcare workers exposed to *Mycobacterium tuberculosis* is fundamental, since they make it possible to minimize the occurrence of intra-hospital transmission chains and the subsequent infection of people at greater risk of progressing to active disease and complications. Carrying out appropriate surveillance of workers' health, providing a succinct review of clinical and preventive data of this pathology is extremely important in all examinations carried out by the occupational physician. When deciding whether to treat TBIL, the limitations of the test must be taken into , as well as individual, occupational and epidemiological factors.

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