Prevention in children and adolescents
AEPap/PAPPS

Tuberculosis screening

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RECOMMENDATIONS

Clinical questions

a. Is it necessary to perform latent tuberculosis infection universal screening in children and adolescents who belong to risk groups?
b. What is the most appropriate screening test for the detection of latent tuberculosis infection in children and adolescents?

Evidence synopsis

There is evidence that latent tuberculosis infection (LTI) universal screening in areas of low incidence has a poor efficiency, it produces a high number of false positives and is not cost effective.
There is evidence that screening of LTI in groups at high risk of developing an active tuberculosis infection (ATI), improves the efficiency of the diagnostic tests, the benefit-risk balance and therefore it should be one of the strategies to reduce tuberculosis impact. Risk groups are children prevenient from high incidence areas (≥40/100.000 inhabitants), those that have been in contact with people suffering from active tuberculosis and those that are immunosuppressed.
There is a dilemma of what are the most efficient strategies (tuberculin skin test [TST] alone, measure of interferon gamma liberation [IGRA] alone or TST followed by IGRA) for the diagnosis of LTI. There is variability in the clinical guidelines, in the institutions' recommendations and in the research studies' conclusions, although most of the recommendations go in the same sense of what this document proposes.

Primary research, systematic reviews and meta-analysis have important methodological limitations. Most of the studies are heterogeneous, with diverse epidemiological situations, incidence rates, vaccines, age, nutritional status, number of patients studied, etc., which limits the studies' comparability and the interpretation of the results. A gold standard for the diagnosis of LTI is lacking and variable criteria are used: load of illness in the area, percentage of risk by age and type of contact, different threshold in the tuberculin reaction diameter. Frequently, the active infection is used as gold standard in order to calculate the tests' sensibility and specificity, but it is a poor gold standard because bacteriological confirmation in children is difficult and diagnosis has to be accomplished also taking

clinical signs into consideration. To help clarify the scene, subgroup analysis are performed for meta-analysis, but this practice reduces the number of children included in each group thus lowering the quality of the studies. All these limitations make the available studies of low or moderate quality.

IGRA were developed to improve tuberculin test sensibility and, especially specificity, but the evidence in children is not clear. Criteria to perform one strategy or the other are based, apart from the scientific evidence, on clinical and epidemiological criteria.

There is evidence that IGRA perform better in people vaccinated with BCG and in individuals infected with nontuberculous mycobacteria, but there is no evidence of having better results than TST in children with higher risk of tuberculous infection, children less than 5 years old or immunosuppressed. In a study on LTI diagnosis in migrants, IGRA proved to have a good performance, as a first test or as a second test after tuberculin skin test, improving specificity and reducing the number of false positives (probably due to BCG vaccination), being cost-effective because they reduced the number of treatments and unnecessary tests. Nevertheless, new studies with longer follow-up to better assess the sensibility of the test are needed.

Sequential strategy performing TST first, considering the epidemiological conditions, and then performing IGRA, is the most reasonable option in some circumstances, such as in children coming from high TB incidence countries, in immunosuppressed children or in less than 5 years olds. In children coming from high TB incidence countries, who probably are vaccinated with BCG, is relevant to avoid false positive results, so the sequential strategy of performing PCT fist and then IGRA if positive result, is the most appropriate. In children immunosuppressed and in less than 5 years olds there is a higher risk of developing active tuberculous illness, so it is important to improve the sensibility and avoid false negative results; in these cases sequential strategy of performing tuberculin skin test fist and then IGRA if negative result, seems the most appropriate.

PrevInfad recommendations (GRADE)

1. PrevInfad recommends against universal latent tuberculosis infection screening in children and adolescents in Spain.
2. PrevInfad recommends performing latent tuberculosis infection screening in children and adolescents at risk.
3. PrevInfad suggests the use of tuberculin skin test as the first screening test of latent tuberculosis infection in children and adolescents in Spain.
4. PrevInfad suggests the use of IGRA in children and adolescents five years old or older with positive tuberculin skin test and history of BCG vaccination, in order to improve the specificity of the screening test.