Diaskin and tuberculin skin test as tuberculosis diagnostics in Russian children: comparative observational study

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Background

- The Diaskintest (DT) is an intradermal skin test using recombinant ESAT-6/CFP-10 for diagnosis of tuberculosis (TB)
- The DT has been licenced in the Russian Federation (RF) since 2009.
- Both tuberculin skin test (TST) and DT are used in TB annual screening.
- The aim of this study was to describe the DT performance in paediatric routine clinical data.

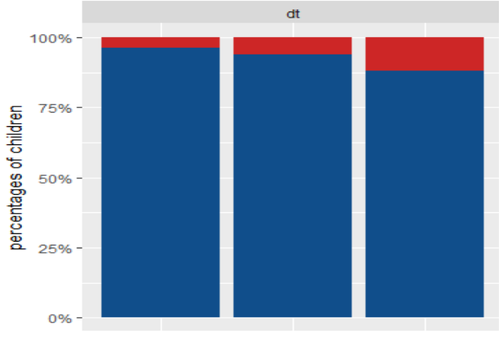
Results

- Of 2726 children, TST was reported for 767 (28%) and DT for 2616 (96%).
- 88% had a TST >5 mm, 62% TST ≥10 mm and 12% a positive DT.
- Test agreement between TST ≥10 mm and DT was poor: TST+/DT+ in 50, TST-/DT- in 33 and TST+/DT- in 468 (Kappa 0.01).
- For children investigated for contact tracing positive DT results increased with the contagiousness of the index case **(Fig.1).**
- In multivariable logistic regression, a positive DT was associated with older age and having a positive TST after adjustment for sex and contact to an index case with an aOR of 1.14 (95% CI 1.05-1.23) for age and 7.5 (95% CI 2.09-25.8) for positive TST.
- Of children with TB infection (defined as TST ≥10 mm or positive DT) 27% were treated, whereas of the 73% not treated children, a small proportion received earlier prophylactic treatment (**Fig. 2**).

Design/Methods

- Inclusion of children aged <18 years referred to the TB dispensary in Archangelsk (RF) between 1 January 2018 and 31 December 2019.
- TST cut-offs were defined as >5 mm and ≥10 mm induration and DT as an induration of any size.
- DT results were compared with TST in children with both tests performed within an interval of 91 days and conclusive results.

Fig. 1: DT positivity rate children with contact tracing. Contact to a smear positive index case (right), molecular/culture confirmed (middle), unconfirmed index case (left).



Conclusions

Our data indicate high prevalence of TST positivity in a setting with high proportions of annually screened and BCG-vaccinated children.

Positivity was lower based on DT, likely due to its higher specificity.

Fig. 2: Euler diagram showing children with a positive TST (≥ 10 mm induration) in orange and a positive DT (any size of induration) in pink.

The proportion of children receiving treatment is shown in lilac.