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ABSTRACT BOOK

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PS-94754-05 Zinc cream augments paediatric tuberculin skin test reactions

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Background: The tuberculin skin test is an important tool for diagnosing childhood tuberculosis (TB), but groups at highest risk can have false-negative results due to impaired cellular immunity. Zinc deficiency is an important cause of suppressed cellular immunity and zinc supplementation can augment anti-mycobacterial immune responses. We therefore investigated whether zinc cream increased the reliability of tuberculin skin testing in children living in an area with high TB incidence.

Methods: We recruited children being assessed for suspected TB infection or disease. A baseline tuberculin skin test was injected in the right forearm and read 48–72 hours later. Then a second tuberculin skin test was injected in the left forearm with zinc cream or placebo cream applied under an occlusive dressing until reading 48–72 hours later. Zinc cream or placebo allocation was randomized 2:1 and all procedures were double-blind.

Results: The baseline tuberculin skin test result was positive (>5 mm) in 46% (77/166) of participants. Second tuberculin skin tests to which cream was applied were completed for 71 children and the median diameter of the second tuberculin skin test (see graph) was larger for those with zinc cream than placebo cream (5.0 mm vs. 1.0 mm respectively, $P = 0.005$). Zinc cream caused significant augmentation of the second tuberculin skin test compared with the first, such that the median increase in size was 5.0 mm with zinc cream vs. 0.0 mm with placebo cream ($P = 0.02$). Zinc cream caused tuberculin skin test conversion from negative to positive (>5 mm) in 64% (27/42) of children vs. 19% (4/21) with placebo cream ($P = 0.001$).

Conclusion: The application of zinc cream caused a clinically significant increase in the size of tuberculin skin test reactions in children with suspected TB. This implies that false-negative tuberculin skin tests were common and that the diagnostic sensitivity of the tuberculin skin test was increased by zinc cream.

