Purified protein derivative as intralesional immunotherapy for treatment of warts: Selection of the appropriate population is crucial

To the Editor: We read with great pleasure the superbly written article "Intralesional immunotherapy for the treatment of warts: A network meta-analysis."[1] The authors comprehensively evaluated the comparative efficacy of various intralesional immunotherapies for the treatment of verruca vulgaris and delineated challenges faced when selecting an appropriate immunotherapy for the treatment of primary or recalcitrant warts. On the basis of the results of their meta-analysis, the authors suggest that the tuberculin purified protein derivative (PPD) and measles, mumps, and rubella (MMR) vaccines are the most effective immunotherapies to achieve recovery. However, we offer 1 caveat: the effectiveness of PPD immunotherapy depends on a host's inherent immune response to mycobacterial antigens. This varies by country and by exposure to the bacille Calmett-Guerin (BCG) vaccine, which contains attenuated *Mycobacterium bovis*.[2]

The studies included in the meta-analysis, which examined the use of PPD immunotherapy, took place in either the Islamic Republic of Iran or Egypt, where the BCG vaccine is universally required in the general population.[3,4] This suggests that the populations included in the meta-analysis are more likely to be tuberculin-sensitized, predisposing them to a more robust immune response to PPD immunotherapy than are populations in which the BCG vaccine is not required. We suggest that the PPD vaccine may not elicit the appropriate immunologic response necessary to induce remission in countries such as the United States, where exposure and immunity to tuberculin antigen are limited. Further study is needed in these populations before recommendation for use. In countries that do not require BCG vaccination programs for the general population, the MMR vaccine may be a more effective immunotherapy to stimulate a robust immunologic response.

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