



## Letter to editor

## Bacillus Calmette-Guerin (BCG) vaccine in Iran

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Tuberculosis (TB) has been reported as one of the leading causes of death among infectious diseases by World Health Organization (WHO) in the last two decades, especially in developing countries [1]. In Iran, despite the existence of effective control programs, TB continues to be a major challenge with an estimated 10,000 notified cases in 2016 [1]. Vaccination with the Bacillus Calmette-Guerin (BCG) is among the most important TB control strategies in Iran [2]. According to Iranian neonatal vaccination policy, BCG has been given as a single dose at children aged <6 years, shortly after birth or at first contact with the health services [3]. Despite advantages of BCG vaccine, local and systemic adverse reactions have been reported by several authors in the world [4–8]. Two most severe of these are lymphadenitis and disseminated BCG infection [4]. Despite the fact that adverse reactions after BCG vaccination are well described, studies report very different rates. This could be due to different vaccination procedures and BCG vaccine strains [2,9]. There are a number of distinct BCG vaccines in the world, including six that are currently in use: Pasteur 1173 P2, the Danish 1331, the Glaxo 1077, the Tokyo 172-1, the Russian BCG-I, and the Moreau RDJ strains [10]. According to WHO data sheet, the Pasteur 1173 P2 is known to induce more adverse reactions than the other strains [10].

We have recently indicated that all of the BCG vaccine strains in Iran were BCG-Pasteur 1173p2 strain and no genetic diversity among stocks and ready-for-use vaccine vials were detected [2].

As Iran lacks a post-vaccination surveillance system, available information regarding BCG adverse reactions in Iran is limited by the lack of microbiological confirmation [3]. However, based on local studies in Iran, lymphadenitis was the most common adverse effect of BCG vaccination in infants. Likewise, in our previous study, we confirmed the presence of infection due to *Mycobacterium bovis* BCG strain Pasteur in all investigated patients aged <6 years with lymphadenitis [4].

Other factors may also cause complications after BCG vaccination, including dose of the vaccine, intradermal inoculation of BCG vaccine and age at vaccination [10].

In conclusion, although, BCG vaccination is among the effective tools for control of TB, however, as long as Iran uses the Pasteur BCG strain which is generally more reactogenic than other available strains,

it is difficult to avoid the possibility of such adverse reactions as seen in our previous study. Establishing a post-vaccination surveillance system as well as a regular quality and quantity analysis of BCG vaccines are strongly recommended.

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