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Review Article

EFFECT OF BCG VACCINE ON TUBERCULOSIS - A REVIEW

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Abstract

Introduction: Tuberculosis is one of the most important lethal infectious diseases and one of the biggest health problems in the world. About one third of the world's population is infected with Bacillus, which in 10 years of age is transformed into tuberculosis. Thus, it is quite essential to pay more attention to this.

Method: The present study searches were conducted Google scholars, science direct pub med, ISI, PsycINFO and Web of Science. Keywords used in this research are: tuberculosis, vaccine and BCG. At first 100 studies were conducted on the search for various information bases Among them, studies that did not have criteria for entering the study were excluded from the study and Finally, were used the 20 studies that were more consistent with the subject of this study. In this study was discussed the effect of BCG vaccine on tuberculosis.

Conclusion: Despite having several disadvantages, BCG is still the best, and safest, vaccine produced against tuberculosis infection. It should be noted that the vaccine is only one aspect of the control of TB infection and the other, such as identifying infections and new cases of infections in children and adults, properly and timely treatment of affected people, training medical staff and individuals, have a significant role in controlling and controlling the disease.

Keywords: Tuberculosis, BCG, review

Introduction

Tuberculosis is one of the most important lethal infectious diseases and one of the biggest health problems in the world. About one third of the world's population is infected with Bacillus, which in 10 years of age is transformed into tuberculosis (1). Thus, it is quite essential to pay more attention to this. Each week, 52,000 deaths occur, equivalent to about 7,000 deaths per day. In developing countries of Asia, Africa, the Middle East, and Latin America, which are used to diagnose and treat conditions and limited facilities, 98% of deaths and 95% of infliction cases occur (2). The Iranian Ministry of Health's

disease management center has reported the incidence rate of this disease to be 14 in 100,000 people and 28 in 1,000,000. The disease is caused by Bacillus or Mycobacterium tuberculosis. The bacteria usually occur in children, and then the immune deficiency of the cell causes it to become active (3). Tuberculosis involves the lungs and affects other systems of the body, as well. The main symptoms of this disease include chronic cough associated with blisters, fever, night sweats and weight loss. Cells can be tested with chest radiographs skin, tuberculin, and other laboratory tests. Treatment is required for at least 6 to 12

months to prevent it from getting serious and treatment-resistant strains require at least two drugs (4). The most important drugs used are rifampin, isoniazid, pyrazinamide and ethambutol. Due to the resistance to antibiotics and the progression of these issues, it is quite important to prevent his infectious disease. The most common way to fight this disease is to identify and treat people with the disease. Preventing this disease with BCG vaccine, the first turn of which is injected at the time of birth (5).

Materials and Methods

The present study searches were conducted Google scholars, science direct pub med, ISI, PsycINFO and Web of Science. Keywords used in this research are: tuberculosis, vaccine and BCG. At first 100 studies were conducted on the search for various information bases Among them, studies that did not have criteria for entering the study were excluded from the study and Finally, were used the 20 studies that were more consistent with the subject of this study. In this study was discussed the effect of BCG vaccine on tuberculosis.

Results

The use of BCG as a vaccine against TB infection does not induce immunity against the recurrence of pulmonary infection in adults; it may even worsen the existing infection. The deterioration of disease following vaccination after the initial infection with basil tuberculosis has also been observed in the animal model, and this could be one of the reasons for the failure of BCG vaccination in endemic areas (6). In endemic areas where bacteria are high, BCG vaccination is again carried out, leading to an increased risk of active tuberculosis. It has been reported that non-TB mycobacteria, especially mycobacteria of the periphery *Nd Mycobacterium auome* and *Mycobacterium intercellular* are responsible for the development of non-economic immune responses against mycobacterium (7). The introduction of BCG to people who have had previous non-specific immune responses against

mycobacterium does not enhance immunity against tuberculosis. Therefore, these medicine is quite ineffective for these people, whom are referred to as 'bearing'. In contrast, the immunity created by *Mycobacterium* environments leads to inhibition of proliferation and prevents immunization against the vaccine, a hypothesis which is called blocked hypothesis (8). Tuberculosis has played an important role throughout history of natural selection and susceptible individuals have been naturally eliminated and more resistant individuals have survived. For example, Europeans are more resistant to this disease than African ones. It seems that this difference is due to differences in genes related to immune responses, including mutations in receptors and chemokine (9). UV radiation, especially UVB from the sun, can affect the effectiveness of the vaccine. UVB levels are geographically higher in areas near the equator. In fact, studies have shown that UV radiation in the sun tends to inhibit antimicrobial immunity (10). UV radiation before and after BCG vaccination reduces immunity to tuberculosis in guinea pigs. Typically, BCG immunization leads to quantitative complications such as pain and scarring at the injection site; vaccines should be intravenously injected (11). As the vaccine is injected subcutaneously, it may lead to local infection or spread of infection to the lymph nodes. Lymphatic drainage ultimately can lead to lymphadenitis (12). Osteomyelitis include infections that may occur following BCG vaccination, which is very rare but very dangerous and threatening. If people who have a weakened immune system, such as those infected with AIDS, are injected with an infectious disease, it can become quite dangerous for them. The incidence of disseminated infectious bronchitis is one case per million infections (13). In 2007, the World Health Organization recommended that BBG should not be infused with children infected with AIDS, even if these people are exposed to tuberculosis. Despite having several disadvantages, BCG is still the best, and safest, vaccine produced against tuberculosis infection (14). It should be noted that the vaccine is only one aspect of the control of TB infection

and the other, such as identifying infections and new cases of infections in children and adults, properly and timely treatment of affected people, training medical staff and individuals, have a significant role in controlling and controlling the disease (15).

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