

November 20-22, 2013 DoubleTree by Hilton Baltimore-BWI Airport, MD, USA

## Disseminated BCG-itis in children with primary immunodeficiency

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**Background:** Bacille Calmette-Guérin (BCG) vaccine is a live attenuated vaccine derived from *Mycobacterium bovis*, which is compulsory at birth in many non-industrial countries to prevent tuberculosis. The overall prevalence of primary immunodeficiency (PID) is 1:2,000 live births and characterized by increased susceptibility to various types of pathogens, like *Mycobacterium bovis* in BCG vaccine and others. BCG vaccine is considered to be generally safe; however, *Mycobacterium bovis* in BCG vaccine was reported to cause devastating complications and high mortalities in children with underlying primary immunodeficiency.

**Method:** We conducted retrospective study over 6-years period, between 2007 and 2012, at tertiary care center, King Abdulaziz Medical City-WR, Saudi Arabia for patients diagnosed with disseminated BCGitis.

**Results:** Out of 19 susceptible immunodeficiency patients given BCG vaccine compulsory at birth, disseminated BCG-itis developed in 7 patients (36.8%); one patient with chronic granulomatous disease (CGD) and 6 patients with severe combined immunodeficiency. The average age at time of diagnosis was 10½ months (range from 3 to 30 months), one patient was diagnosed post-bone marrow transplantation. The diagnosis confirmed by microbiologic stain, DNA and TB cultures from lungs, gastrointestinal tract and skin biopsies. All patients received 4 anti-tuberculous (TB) drugs (deferent combination), except patient with chronic granulomatous disease (CGD) who received five anti-TB (including streptomycin) and one SCID patient with multiple cytokine deficiency who received 6 anti-TB and IFN- $\gamma$  treatments. In comparison to studies from non-industrial countries reporting their survival rates that ranged between zero to 50%, we achieved the best survival rate (71.4%) and one patient developed chronic lung disease.

**Conclusion:** Our results highlight the importance of high index of suspicion of primary immunodeficiency (PID), early diagnosis of BCG-itis and promote intervention with anti-TB drugs. However, because of prolonged anti-TB therapies and risk for high fatality rates of BCG-itis in countries where BCG vaccine is compulsory at birth, we recommend suspending BCG vaccine for susceptible PID newborns till such diagnosis ruled out. Live attenuated vaccines should remain contraindicated in suspected patients with underlying CGD and cell mediated immune deficiencies, including combined immune deficiency and T-cell disorders.

## Biography

Daifulah Al Zahrani, M.D., FAAP, ABAI, received bachelor's degree of medicine and surgery from King Saud University in 1994. He completed pediatric residency training program between July 2000 and June 2003 at University of B. C. Vancouver, Canada. He received American Board of Pediatrics in October 2003 then moved to McMaster University for 2 years of Allergy and Clinical Immunology fellowship till June 2005. He got fellowship training in bone marrow transplant and primary immunodeficiency at Hospital for Sick Children, University of Toronto, Canada. He received American Board of Allergy and Immunology (ABAI) in October 2006. Since 2007, he has been working as consultant allergy, immunology and BMT at King Abdulaziz Medical City, WR, Jeddah Saudi Arabia.

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