



The role of tuberculin

skin test in BCG vaccination in Hilla city

El papel de la prueba cutánea de la tuberculina en la vacunación con BCG en la ciudad de Hilla

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Abstract

Introduction: Tuberculosis is currently one of the planet's most serious healthy issues. Search the effect of BCG vaccine on tuberculin skin test results. **Patients and methods:** From January 2018 to January 2019, 1109 patients were enrolled in the trial, which took place at the Tuberculosis Center in Babylon Province. Tuberculin skin testing was done using the mantoux method, which involved injecting 0.1 unit of pure tuberculin protein intradermally and reading the result after 48 hours (mm). **Result:** This cross-sectional revision of 1109 patients aged 1 to 85 years old in Babylon province who had BCG immunization at birth. Females outnumbered males in terms of percentage (52 percent versus 48 percent). The BCG vaccinated cases were 966 (87%) while the number of non-BCG vaccinated cases was 143 (13%). The quantity of tuberculin skin test diameters (0-5mm) are 1007 (90.8%) patients in non-vaccinated patients 129 (12.8%) and vaccinated patients 878 (87.2%), diameter (6-10mm) 33 (3%) patients in non-vaccinated 6 (18.2%) and vaccinated 27 (81.8%) and tuberculin skin diameter (> 11mm) 69 (6.2%) patients in non-vaccinated 8 (11.6%) and vaccinated patients 61 (88.1%). Vaccinated subjects had a larger skin test diameter than not received vaccine, and the difference was critical (p value=0.029). **Conclusion:** There is a statistically significant link between the BCG vaccine,positivity and the diameter of the tuberculin test.

Keywords: The role, tuberculin skin, BCG vaccination, Hilla city

Resumen

Introducción: La tuberculosis es actualmente uno de los problemas de salud más graves del planeta. Desde 1921, la vacuna BCG se ha utilizado en todo el mundo. Dado que todos los niños reciben la vacuna BCG desde el nacimiento, la vacuna produce resultados positivos de TST y algunos pacientes con una infección latente no obtienen una terapia completa. El valor predictivo de una prueba de Mantoux (TST) positiva da como resultado la búsqueda de tuberculosis latente. infección (LTBI) es la probabilidad de que el individuo que se somete a la prueba esté realmente infectado y, como resultado, podría beneficiarse de la quimioterapia preventiva. **Objetivo:** Buscar el efecto de la vacuna BCG en los resultados de la prueba cutánea de la tuberculina. **Pacientes y métodos:** desde enero de 2018 hasta enero de 2019, se inscribieron 1109 pacientes en el ensayo, que tuvo lugar en el Centro de Tuberculosis de la provincia de Babilonia. La prueba cutánea de la tuberculina se realizó mediante el método de mantoux, que consistió en inyectar 0,1 unidades de proteína tuberculina pura por vía intradérmica y leer el resultado después de 48 horas (mm). **Resultado:** esta revisión transversal de 1109 pacientes de 1 a 85 años de edad en la provincia de Babilonia que recibieron la vacuna BCG al nacer. Las mujeres superaron en número a los hombres en términos de porcentaje (52 por ciento frente a 48 por ciento). El número de casos vacunados con BCG fue de 966 (87 %) mientras que el número de casos no vacunados con BCG fue de 143 (13 %). La cantidad de prueba cutánea de tuberculina diámetros (0-5mm) son 1007 (90,8%) pacientes en pacientes no vacunados 129 (12,8%) y vacunados 878 (87,2%), diámetro (6-10mm) 33 (3%) pacientes en no vacunados 6 (18,2%) y vacunados 27 (81,8%) y tuberculina diámetro de piel (> 11mm) 69 (6,2%) pacientes en no vacunados 8 (11,6%) y vacunados 61 (88,1%). Los sujetos vacunados tenían un diámetro de prueba cutánea mayor que los que no recibieron la vacuna, y la diferencia fue crítica (valor de p =0,029). **Conclusión:** Existe una relación estadísticamente significativa entre la positividad de la vacuna BCG y el diámetro de la prueba de la tuberculina.

Palabras clave: El papel, piel tuberculina, vacuna BCG, ciudad de Hilla

Introduction

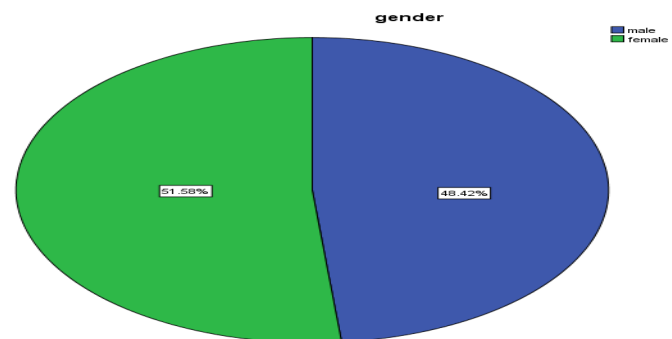
Since 1921, the BCG vaccine has been used all throughout the world. The bovis mycobacterium bacteria is used to make this vaccine. The vaccine's protective effect is estimated to be 60-40%, with tuberculosis meningitis and Miliary tuberculosis protection estimated to be 90-80%¹. In our nation, BCG vaccine is given when he was born, and the dose for children beneath the age of one year is 0/5ml, which is inoculated into the right deltoid arm². In children's medicine, the tuberculin test is regarded a reliable method for determining tuberculosis infection caused by *Mycobacterium tuberculosis*³. There are erroneous positive and negative answers on this test. In general, results of tuberculin tests are readed with amount of induration of >15 mm regard TB infection and < 5 mm regard of negative outcomes in tuberculin tests. The non-tuberculosis effect was 5 to 9 mm, and 10 to 14 mm can be interpreted more carefully⁴. According to scientific sources, BCG vaccination has a large effect in evaluating tuberculin tests in the first years of infancy, but it gradually diminishes over time and has no effect in school age⁵. It was advised until 2005. that every child in the United Kingdom receive BCG vaccine between the ages of ten and fourteen. In addition, for children who are at a higher risk of contracting tuberculosis, a targeted immunization should be administered immediately after birth. This included children born into families from high-incidence nations and children living in high-prevalence areas⁶. Different TST cut-offs were advised in the 2006 NICE guidance for the kids who had already been immunized with BCG (15 mm hardening) and those without (6 mm hardening)). The reasoning for this became that a previous BCG injection could result in false positive outcomes and reduced TST specificity. the amount of the induration, however, was thought to differentiate between BCG and tuberculosis infection, the bigger the hardening, the more likely the reaction was caused by TB contamination⁷. It's possible that some of this advice dates back to the days when BCG was given to adolescents and had a substantial influence on TST response. However, numerous Clinical professionals were apprehensived that an in a BCG-vaccinated youngster, a reaction of <15 mm can nevertheless indicate tuberculosis infection and should not be dismissed. Regardless of BCG status, international recommendations recommend a positive TST test with a cut-off of 10 mm induration⁸. The aim of study: Search the effect of BCG vaccine on tuberculin skin test results.

Patients and methods

This study is cross sectional study, curried From January 2018 to January 2019, 1109 patients were enrolled in the trial, which took place at the Tuberculosis Center in Babylon Province. The history included information on gender, address, age, history of BCG vaccination and history of contact with tuberculosis patients. Tuberculin skin testing was done using the mantoux method, which involved injecting 0.1 unit of pure tuberculin protein intradermally and reading the result after 48 hours (mm). Negative people have induration of less than 5 mm, suspects have induration of 5 to 9 mm, and positives have induration of more than 10 mm. The data was analyzed with SPSS version 22, with descriptive analysis for demographic data and cross tabulation for discovering Variables have relationships. A p value of < 0.05 was considered statistically significant.

Results: this is a cross-sectional study of 1109 participants aged 1 to 85 years old in Babylon province who had BCG immunization at birth. Females outnumbered males in terms of percentage (52 percent versus 48 percent).

FIG (1) demographic data



The BCG vaccinated cases were 966 (87%) while the number of non BCG vaccinated cases was 143 (13%).

FIG (2) BCG vaccinated people

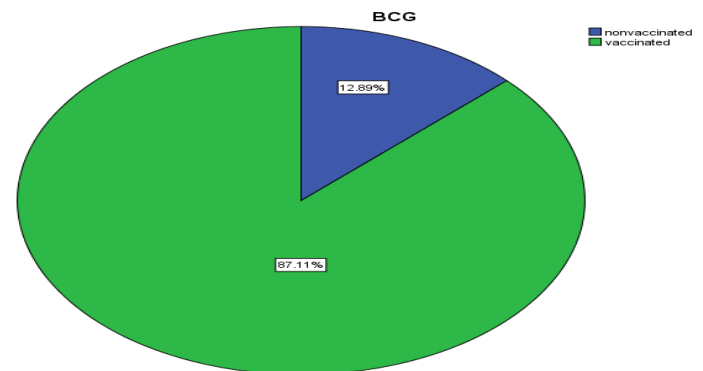
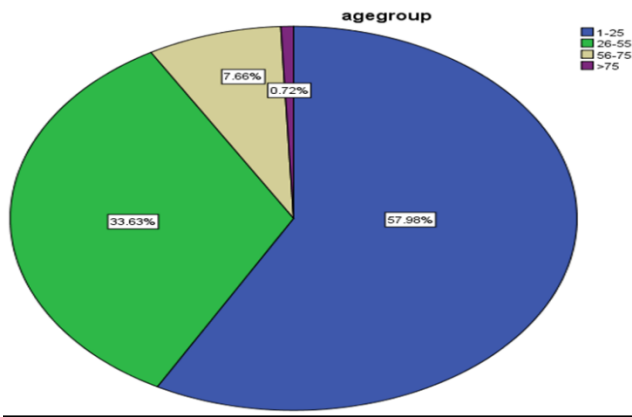


FIG (3) percentage of age group



The number of tuberculin skin test diameter (0-5mm) are 1007 (90.8%) patients in non-vaccinated patients 129 (12.8%) and vaccinated patients 878 (87.2%), diameter (6-10mm) 33 (3%) patients in non-vaccinated 6 (18.2%) and vaccinated 27 (81.8%) and tuberculin skin diameter (> 11mm) 69 (6.2%) patients in non-vaccinated 8 (11.6%) and vaccinated patients 61 (88.1%). Vaccinated subjects had a larger skin test diameter than not received vaccine, and the difference was significant (p value=0.029). See table.

Table (1) Relation between BCG vaccination and diameter of tuberculin skin test

			BCG		Total
			Non-vaccinated	vaccinated	
Diameter of tuberculin test	0-5 MM	Count	129	878	1007
		% within diameter	12.8%	87.2%	100.0%
	6-10 MM	Count	6	27	33
		% within diameter	18.2%	81.8%	100.0%
	>11 MM	Count	8	61	69
		% within diameter	11.6%	88.4%	100.0%
Total		Count	143	966	1109
		% within diameter	12.9%	87.1%	100.0%

P VALUE=0.029.

FIG (4) Relation between BCG test and diameter of tuberculin skin test P VALUE=0.029.

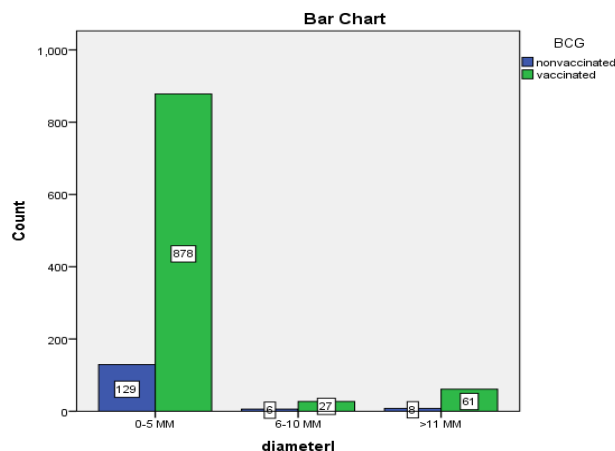
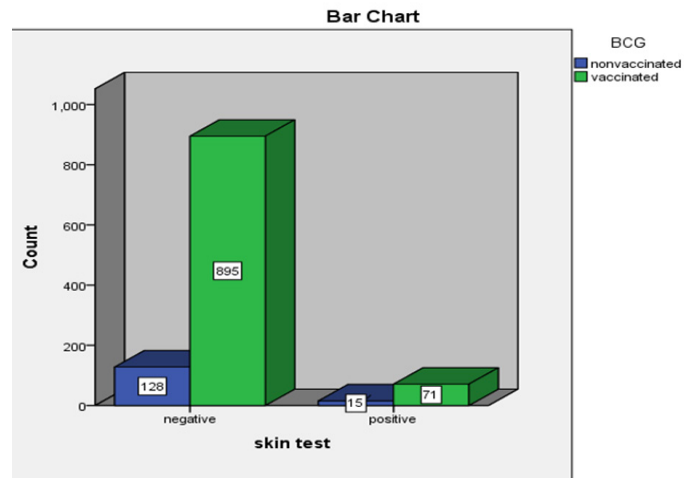


Figure (5) Appears that the number of positive skin tests was higher in inoculated patients than in non-vaccinated people, and the contrast was critical (p=0.039).



Discussion

For a long time, the effect of BCG vaccination prior to tuberculin reactivity is well known⁹⁻¹¹. Previous revision, found that among people who had been inoculated at the time of birth, hardening of 10 mm in distance across was the foremost delicate and particular limit esteem intended for anticipating the improvement of tuberculosis in research including schoolchildren¹². From previous findings above were consistent with our results as in table 1 and figure 4. Teenagers who had been revaccinated had a 16 mm induration that was more predictive than those who had only been vaccinated once. The length and proximity of interaction among infectious patients' contacts in The Gambia were related to the dimension of the TST response but was unaffected by the presence of a BCG scar¹³. Wang et al. found that a positive reaction of 15 millimeter in diameter was a lot of doubtless to be produced by *M. tuberculosis* contamination than with the aid of using preceding BCG vaccination in a meta-analysis that included 26 research distributed from 1966 to 1999 (but as it were 4 revisions given discrete information for appraisal of TST responses)¹⁴. The existence of BCG vaccination should not be considered for determining whether or not to treat latent *M. tuberculosis* infection, according to the Guidelines from the Centers for Disease Prevention and Control (CDC). A TST reaction of more than 15 mm in width According to the guidelines, in persons at low risk for tuberculosis, it should also be regarded diagnostic of latent *M. tuberculosis* infection¹⁵. The proportion of BCG recipients who have positive reactions and non-recipients differed significantly in our study figure (5). Although a tuberculin, reaction of more than 15 mm in width is usually thought to be a useful standard for detection of latent *Mycobacterium tuberculosis* infection in vaccinated people at low risk of TB infection¹⁶, our findings are in line with those made by De March-Ayuela previously¹⁷.

Conclusion

Since 1921, the BCG vaccine has been used all throughout the world. Since all kids receive BCG vaccinum starting at birth, positive TST findings is produced by vaccination, and a few patients with a dormant infection don't obtain complete therapy. The predictive value of a positive Mantoux test (TST) result in searching for latent tuberculosis infection (LTBI) is the likelihood that the individual being tested is genuinely infected and, as a result, could benefit from preventive chemotherapy. There is a statistically significant link between the BCG vaccine, positivity and the diameter of the tuberculin test.

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