Efficacy of Low Dose Intra-Dermal Hepatitis B Vaccination Schedule

Bader Faiyaz Zuberi, Muhammad Ramzan Rajput, Lala Muzaffar, Noorunisa Jatoi, Wazir Muhammad Shaikh
Department of Medicine, Chandka Medical College, Larkana.

Abstract

Efficacy of low-dose, intra-dermal hepatitis B vaccination was assessed among sixty-one doctors and paramedical staff of Chandka Medical College Hospital, Larkana. Subjects were randomly divided into two groups. Group-A (n=25) received 20 ug of purified Hepatitis B Surface Antigen (Euvax B, LG Chemicals) by i.m. injection in the deltoid by 0,1 and 6 schedule while group B (n=36) received 5 µg intra-dermally by same schedule. The mean value of HBsAb titers checked 4 weeks after the last dose in group A were 158.6±51.8 mIU/ml and that in Group B were 68.2±26.6 mIU/ml (p<0.0001; 95% C.I. 69.2 and 111.5). Number of subjects attaining the protective titers of 10 mIU/ml in group A was 95.7% and that in group B was 90.9% (p=0.5). We conclude that 5 µg intradermal hepatitis B vaccination is effective (JPMA 48:377, 1998).

Introduction

Massive increase is reported in cases of Hepatitis B all over the world in the last decade. The programs of targeted immunization of high-risk groups have failed to check the increasing rate of infection. In USA alone, 300,000 new cases of hepatitis B infection occur each year leading to 350-450 fulminant deaths, 27000-42000 chronic carriers and ultimately 4000-5500 deaths per year from cirrhosis and primary liver cancer[1]. In Pakistan the hepatitis B carrier state has been reported to be 10.7-11.3%[2,3]. The World Health Organization (WHO) recommends that hepatitis B vaccine should be incorporated into national universal vaccination programs by 1997. The Viral Hepatitis Prevention Board (VHPB) supported the recommendation of the World Health Organization (WHO) that hepatitis B vaccine should be incorporated into national universal vaccination programs by 1997[4,5]. The cost of vaccination is an important issue in a developing country like Pakistan, as majority of the population at risk is not in a position to afford it. Recently some workers have reported the successful protection achieved by low dose vaccination[6]. Keeping in view the WHO recommendations of universal vaccination and poverty of our country we decided to check the response to the low dose vaccination against hepatitis B in our setting.

Subjects and Methods

Doctors and paramedical staff of Chandka Medical College, Larkana, without previous history of jaundice who were negative to HBsAg were inducted after informed consent. Complete blood counts and liver chemistries were done in all the selected subjects. Subjects were divided into two groups with the help of random tables. Group-A received 20 µg of purified Hepatitis B Surface Antigen (Euvax B, LG Chemicals) by i.m. injection in deltoid at 0,1 and 6 month schedule and group-B received 5 µg of same vaccine same schedule but by intra-dermal injection in forearm. HBsAb was done 4 weeks after the third dose to assess the efficacy of vaccination. Titers of 10 mIU/ml or more were considered protective[7,8]. HBsAg and HBsAb were done utilizing standard ELISA kit. Complete blood counts were done on Sysmex K-4500 automated cell counter while liver chemistries were done on BM Photometer 5010 using Boehringer Mannheim reagents.

Statistical analysis

All results for continuous variables are expressed as means±SD. The Mann-Whitney U test and t-test were used to compare continuous variables between different groups. The p values for comparisons of categorical variables were generated by the chi-square test for proportions and values of less than 0.05 were considered statistically significant. The values of HBsAb were re-coded into a different variable with values <10 mIU/ml re-coded as '0' and values of >10 mIU/ml re-coded as '1' for non-parametric analysis by Mann-Whitney U test. All calculations were done with SPSS 7.0 (SPSS, Chicago).

Results

Sixty-one subjects were selected fulfilling the criteria described earlier and were allotted randomly into two groups. Twenty-five were allotted to group-A and thirty-six to group B. Mean age of subjects in group-A was 28±3.1 years and that in group-B was 30±2.8 years. Two subjects from group-A and three from group-B did not report for HBsAb testing and were excluded. The mean value of HBsAb titers in Group-A was 158.6±51.8 mIU/ml and that in group-B was 68.2±26.6 mIU/ml. The difference in the antibody titers was statistically significant (p<0.0001; 95% C.I. 69.2 and 111.5). Number of subjects attaining the protective titers of ≥10 mIU/ml in group A was 22/23 (95.7%) and that in group-B was 30/33 (90.9%). Using Mann-Whitney U test to see significance of difference between the subjects of two groups attaining the protective antibody titers, the mean and sum of ranks in group-A was 29.28 and 673.5 respectively and that in group-B was 27.95

and 922.5 respectively. The 2-tail significance was found 0.5 showing that the difference in number of subjects attaining protective titers of antibodies in two groups was not significant.

Discussion

Hepatitis B is emerging as a major health problem in our country. About 30% of acute viral hepatitis in Pakistan are due to hepatitis B[9]. The consequences of the infection could be fatal and require lot of national resources and individual expenses on the management of its sequelae without much favourable results. It has been shown that the hepatitis B vaccination is extremely cost effective in terms of the cost incurred on the management, hospitalization and work loss[10-12]. The present study shows that the low dose of 5 ug is effective in mounting the immune protective response in 90.9% and in reducing the cost of immunization by 75%. Different centres are experimenting with different ages and schedule[13-15]. Adequate immune responses are reported with doses as small as 2 µg[15,16]. In this study, the mean HBsAb titers were higher in group A (158.6 mIU/ml) than those in group B (68.2 mIU/ml), but still they were much higher than the 10 mIU/ml which is taken as level of protection[7,8]. The protective levels were attained in 90.9% of subjects in low dose group showing good efficacy of this schedule. The non-responders to primary immunization are benefited by an extra dose of vaccine[17]. Due to the presence of anamnestic response, the booster dose of hepatitis B vaccine is currently not recommended[18].

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Praziquantel for Treatment of Malaria

Noori S. Dawood Al-Waili

Dubai Medical College, Islamic Establishment for Education, Dubai, United Arab Emirates.

Abstract

The possible effect of oral praziquantel on malaria parasites was studied. Nine patients with P. falciparum and one patient with P. vivax were treated with 30 mg/kg/day of praziquantel in three divided doses for a maximum of 8 days. The results showed that eight patients had complete cure within 4-6 days of using praziquantel. Two patients with P. falciparum complicated by jaundice and severe anemia showed no response and required antimalarial drugs. One patient had bloody diarrhoea. It could be concluded that praziquantel might represent a new line for treatment of malaria (JPMA 48:378, 1998).

Introduction

Malaria is generally endemic in tropics with extension into the subtropics. It is endemic in 91 countries and P. falciparum is the predominant species. At present, 300 million people are affected globally and there are between 1-1.5 million malaria deaths per year[1]. Various drugs used to treat malaria include chloroquine, amodiaquine, primaquine, pyrimethamine and quinine. Two major problems observed with the use of antimalarial drugs are drug resistance and side effects. The latter include serious hypoglycaemia, nausea, vomiting, hypotension, diarrhoea and coma. Some of them are contraindicated in pregnancy. Drug resistance has been reported with all antimalarial drugs except artemisnin and its derivatives[2]. Therefore, drug resistant malaria has become one of the most important problems in malaria control in recent years. Various plasmodium falciparum strains have now attained resistance to all commonly used and generally available antimalarial drugs[2].