

Response rate of HBV vaccination in various stages of chronic kidney disease

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Background

HBV infection of hemodialysis (HD) patients is informative in terms of virus transmission, reactivation after kidney transplantation, and the progression of liver disease. Although hepatitis B virus (HBV) vaccination is recommended for all dialysis patients, the response rate of HBV vaccination in dialysis patients is very low. Therefore, we tried to investigate the necessity of early HBV vaccination in pre-dialysis patients analyzing the response rate of vaccination in various stages of chronic kidney disease (CKD)

Patients and methods

A total of 87 patients in 3 different stages of CKD was enrolled in this study. Patients in stage 3 (n=30) and 4 (n=28) were received the HBV vaccine as standardized schedule, consisting of 1 mL of the recombinant vaccine, Hepavax-gene TF at 0, 1, and 6 months. And then, the patients with stage 5 (n=29) were received the same vaccine for doubling doses at 0, 1, 2, 6 months. Three months after each of the last vaccination, serum level of Anti-HBs was measured in all patients.

Study design

This study is observational cross-sectional study.

Results

There was no significant difference in baseline characteristics including, age, sex, presence of DM and cancer, hemoglobin (Hb), serum cholesterol, albumin among the 3 groups. The overall seroconversion rate after vaccination was 79.4%. The seroconversion rate was significantly higher in patients with stage 3 than other patients (stage 3 : 94%, stage 4 : 79%, stage 5: 66%, p=0.031).

Analyzing based on dialysis, seroconversion rate was also significantly higher in pre-dialysis patients than that in dialysis patients (pre-dialysis group : 87%, dialysis group: 60%, p=0.02). There was no significant factor to contribute seroconversion in multivariate analysis.

Table 1. baseline characteristics of the patients and seroconversion rate of HBV vaccination

	CKD stage III (n=30)	CKD stage IV (n=28)	CKD stage V (n=29)	P value
Age, year	58 ± 12	56 ± 11	60 ± 14	0.07
Male, gender, n (%)	19(63)	19(67)	18(62)	0.89
DM, n (%)	15(50)	16(57)	20(69)	0.32
Cancer, n (%)	2(6)	3(11)	2(6)	0.64
Hb, g/dL	13.9 ± 1.6	11.3 ± 0.8	10.3 ± 0.9	0.54
AST, mg/dL	25 ± 11	19 ± 14	18 ± 15	0.07
ALT, mg/dL	21 ± 12	18 ± 15	14 ± 12	0.08
Cholesterol, mg/dL	147 ± 34	128 ± 29	131 ± 25	0.09
Albumin, g/dL	4.0 ± 0.2	3.8 ± 0.4	3.7 ± 0.3	0.06
IgG anti-Hbc-positive, n (%)	17	12	11	0.34
Seroconversion, n(%)	28	22	19	0.03

	Non-dialysis group (n=62)	Dialysis group (n=25)	P value
IgG anti-Hbc-positive, n (%)	32 (52)	14(56)	0.47
Seroconversion, n (%)	54(87)	15(60)	0.02

Conclusion

Our study showed the high seroconversion rate after HBV vaccination in CKD patients with stage 3 and pre-dialysis. Therefore, the HBV vaccination should be considered in early CKD stages.

