The association between hepatitis B virus infection and mortality in incident end-stage renal disease patients

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Background

Hepatitis B virus (HBV) infection is a significant risk factor for morbidity and mortality in the general population. However, there are limited data on the natural history of HBV infection in end-stage renal disease (ESRD). Few studies have investigated the influence of HBV infection on mortality in patients with ESRD, and the results were controversial. This study evaluated the association between HBsAg seropositivity and mortality in incident ESRD patients.

Methods

The study included all adult patients (≥ 18 years of age) starting dialysis for ESRD between January 2000 and December 2011. We analyzed 1,090 patients with ESRD: 763 undergoing hemodialysis (HD) and 327 undergoing peritoneal dialysis (PD).
The patients were followed from the initiation of dialysis until the end of the study (December 31, 2011) or death. Patients were censored on the date of loss to follow-up or renal transplantation.

Results

Table 1. Characteristics of all patients

Variable	Total (n=1090)	HBsAg (+) (n=80)	HBsAg (-) (n=1010)	p
Age (year)	55±14	49±12	55±14	<0.001
Sex (male)	610 (56.0%)	55 (68.8%)	555 (55.0%)	0.017
ESRD cause				0.045
Diabetes	604 (55.4%)	33 (41.3%)	571 (56.5%)	
Hypertension	97 (8.9%)	8 (10.0%)	89 (8.8%)	
Glomerulonehritis	79 (7.2%)	11 (13.8%)	68 (6.7%)	
Dialysis modality				0.800
Hemodialysis	763 (70.0%)	57 (71.3%)	706 (69.9%)	
Peritoneal dialysis	327 (30.0%)	23 (28.7%)	304 (30.1%)	
Anti-HCV sero-positive	20 (1.8%)	0 (0%)	20 (2.0%)	0.391
Baseline comorbidity				
Diabetes	631 (57.9%)	39 (48.8%)	592 (58.6%)	0.085
CVD	89 (8.2%)	4 (5%)	85 (8.4)	0.395
COPD	14 (1.3%)	0 (0%)	14 (1.4%)	0.616
Systemic vasculitis	14 (1.3%)	1 (1.3%)	13 (1.3%)	>0.999
Dementia	31 (2.8%)	0 (0%)	31 (3.1%)	0.161
Cancer	43 (3.9%)	2 (2.5%)	41 (4.1%)	0.764
Laboratory				
Hemoglobin (g/dL)	8.4±1.7	8.5±1.6	8.3±1.7	0.499
Creatinine (mg/dL)	8.0±4.0	8.0±4.0	8.0±4.0	0.925
Total protein (g/dL)	6.2±0.9	6.3±0.8	6.1±0.9	0.218
Albumin (g/dL)	3.3±0.6	3.2±0.6	3.3±0.6	0.508
Total bilirubin (mg/dL)	0.5±0.4	0.5±0.3	0.5±0.5	0.617
AST (U/L)	29±132	26±22	30±137	0.832
ALT (U/L)	23±111	22±22	23±115	0.897
INR	0.97±0.33	1.07±0.39	0.96±0.32	0.004
Ca x P (mg^2/dL^2)	43±17	42.1±14.6	43.3±16.7	0.533

Table 2. Characteristics of HBsAg sero-positive patients

Variable	Total (N=80)
HBeAg positive	21 (25.9%)
HBeAb positive	48 (59.3%)
HBV DNA detected	43 (53.8%)
Conversion to HBsAg negative [a]	7 (8.8%)
Liver cirrhosis	35 (43.2%)
Hepatocellular carcinoma [a]	7 (8.8%)

[a] during follow-up period

Table 3. Hazard Ratios (HRs) and 95% Confidence Intervals (CIs) for mortality by univariate cox proportional hazards analysis

Variable	HR	95% CI	p-value
HBsAg sero-positive	0.927	0.557-1.544	0.772
Anti-HCV seropositive	2.081	0.923-4.694	0.077
Age at initiation of dialysis (years)	1.044	1.033-1.055	<0.001
Diabetes	1.797	1.348-2.396	<0.001
CVD	1.375	0.858-2.206	0.186
Hemoglobin (g/dL)	1.015	0.943-1.092	0.687
Albumin (g/dL)	0.662	0.529-0.827	<0.001
Total bilirubin (mg/dL)	1.282	1.053-1.562	0.013
AST > 40 U/L	1.364	0.840-2.214	0.210
ALT > 40 U/L	1.320	0.813-2.143	0.262
CaxP > 55 mg^2/dL^2	0.753	0.519-1.092	0.135

Figure 1. Survivals between HBsAg sero-positive and HBsAg sero-negative patients (n=1090)

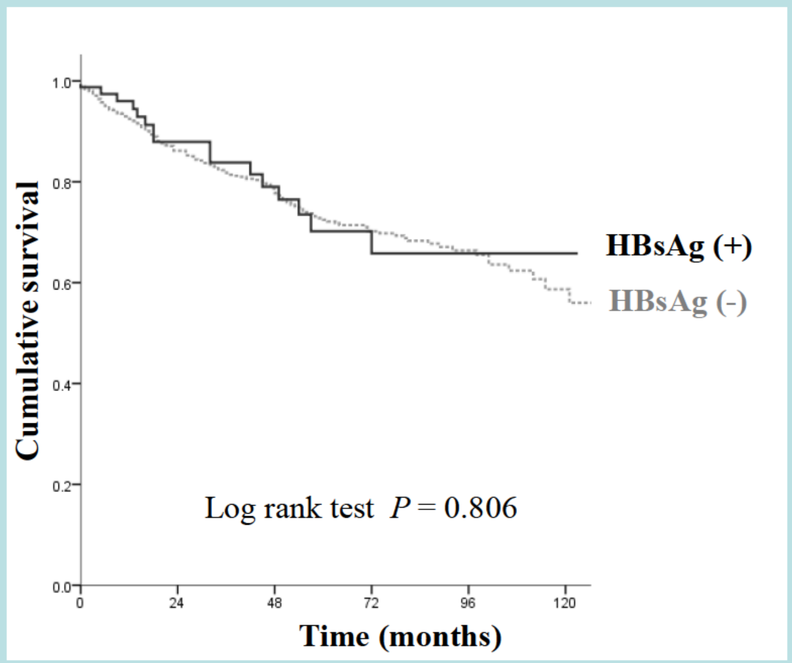
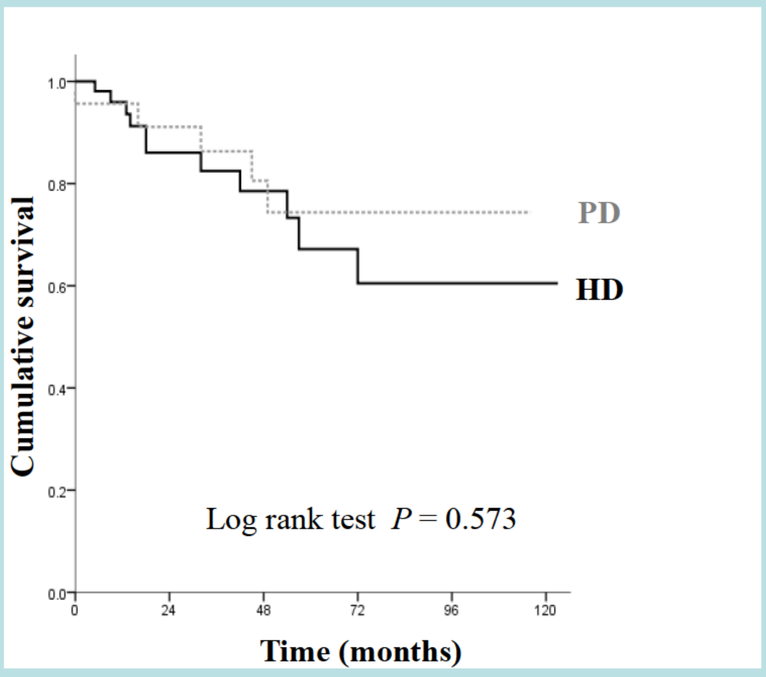


Figure 2. Survivals between HD and PD in HBsAg sero positive patients (n= 80)



Conclusion

Our results suggest that hepatitis B surface antigenemia is not associated with increased mortality in incident ESRD patients. Among HBsAg seropositive patients beginning dialysis, the survival of patients undergoing PD and HD was comparable.

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