286. Hepatitis B Vaccine Compliance: Comparing 2-Dose and 3-Dose Vaccines

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Background. Less than 1 in 3 US adults who initiated the 3-dose (0, 1, 6 months) hepatitis B vaccine series have completed it. HepB-CpG (Heplisav-B; Dynavax) is a new licensed adjuvanted vaccine that requires only 2 doses (0, 1 month). As part of a cluster study performed at Kaiser Permanente Southern California, we compared compliance with second dose and series completion for HepB-CpG vs. comparator vaccine (Engerix-B; GlaxoSmithKline) recipients.

Methods. The cohort included adults not on dialysis who received their first dose of hepatitis B vaccine in family or internal medicine departments from 8/7/2018 to 2/1/2019. Second dose compliance was assessed for the full cohort, but series completion was assessed for a subset vaccinated from August 7, 2018 to September 30, 2018 to allow at least 6 months' follow-up. Compliance rates were estimated using the Kaplan Meier method. Adjusted hazard ratios (aHR) were estimated using Cox proportional hazard regression with robust variance to account for within medical center correlation, adjusting for age, race/ethnicity, census block income and education, prior healthcare utilization, and factors that trigger alerts for hepatitis B vaccination (diabetes and testing for sexually transmitted infections).

Results. There were 6500 HepB-CpG and 7733 comparator vaccine recipients (1,442 and 2,604 prior to September 30, 2018). Rates of second dose compliance at 60 days were 32.9% for HepB-CpG and 29.1% for comparator vaccine, and rates of series completion at 210 days were 56.9% and 20.6%. There was no significant difference in second dose compliance (aHR 1.14, 95% CI: 0.91, 1.47), but HepB-CpG recipients were 5 times more likely to complete the series (aHR 5.17; 95% CI: 3.84, 6.98). Second dose compliance and series completion were significantly less likely among Blacks compared with Whites and significantly more likely among Asians, adults ≥60 years compared with those < 30 years, and adults living in census blocks with a median annual income of $40,000–69,000 compared with < $40,000.

Conclusion. Overall, second dose compliance was similar, but series completion was better for HepB-CpG recipients than comparator vaccine recipients, suggesting that the 2-dose vaccine could lead to improvements in coverage and protection against hepatitis B virus.

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287. Exploring the Natural History and Clinical Outcomes of Hepatitis B Core Antibody Positive Hemodialysis Patients in a Large Metropolitan Tertiary Care Hospital System with a Focus on Occult Hepatitis B

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Background. Occult Hepatitis B (OHB) is defined as hepatitis B core antibody (HBcAb) positivity in the absence of surface antibody (HBsAb) or surface antigen (HBsAg) positivity. The reported incidence ranges from 0.3% to 58% in the hemodialysis (HD) population. Our study is among the first in the United States to examine the natural history of OHB patients (patients). This work is of interest in HD patients to estimate Hepatitis B transmission risk.

Methods. We performed a retrospective analysis of 352 Hep B cAb positive HD patients between 2010 and 2017 in the Henry Ford Health System and Greenfield Dialysis Centers in SE Michigan. This system contains 5 hospitals including a 900-bed tertiary referral center in Detroit, serving a high-risk, medically complex population. Our primary outcomes were the development of HBsAb positivity, considered protective, or development of HBsAg positivity or new Hepatitis B viremia, considered adverse events. Univariate and multivariate logistic regression analysis was performed to study pertinent risk factors for the clinical outcomes comparing OHB and Non-OHB patients. Statistical analysis was performed using SAS 9.4.

Results. Of the 352 HBcAb patients studied, 98 (27%) were OHB patients. Each group shared similar baseline demographics apart from OHB patients having higher ALT and a greater proportion of drug use and Hepatitis C (Hep C) compared with non-OHB patients (Table 1). There were 15 adverse events in the non-OHB group, including 10 viremias. Only 1 adverse event was seen in the OHB group, a patient who developed viremia of 19 copies/mL (Table 2). Conversely, OHB status was a statistically significant predictor of protective HBsAb development in follow-up ($P < 0.01$), occurring at a 7-fold increased rate compared with non-OHB patients. Univariate analysis showed that a history of liver disease, Hep C, and drug use predicted HBsAb development (Table 3). When studying adverse outcomes, history of liver disease raises the risk of adverse events in unadjusted models ($P < 0.05$) (Table 4).

Conclusion. OHB patients in our center tend to develop protective HBsAb titers over time rather than develop viremia or antigenemia in contrast to non-OHB patients. Our study finds that OHB confers minimal risk of potential transmission of Hepatitis B among HD patients.

Table 1: Hepatitis B Core Antibody Positive Patients at HFHS and Greenfield Dialysis Centers, SE Michigan. 2011-2018. Total N = 352

Demographics	Non-Occult Hepatitis B (N = 254)		Occult Hepatitis B (N=98)		P Value
Age in Years (Mean, SD)	68.57	12.8	68.65	10.10	0.9472
Gender (N Male, %)	152.00	59.8	63.00	64.30	0.4435
Baseline AST (Mean, SD)	25.45	18.11	33.82	43.59	0.0689
Baseline ALT (Mean, SD)	19.21	15.21	30.72	48.10	**0.0236**
Baseline Bilirubin (Mean, SD)	0.50	0.34	0.53	0.39	0.6246
Baseline INR (Mean, SD)	1.29	0.55	1.22	0.28	0.2167
Baseline Albumin (Mean, SD)	3.42	0.62	3.57	2.37	0.556
History of Liver Disease (N, %)	66.00	26.0	29.00	29.6	0.3989
History of Hepatitis C (N, %)	81.00	31.9	48.00	49.0	**0.0017**
Diabetes (N,%)	140.00	55.1	52.00	53.1	0.8262
HIV (N,%)	12.00	4.7	5.00	5.1	0.7878
IVDU (N,%)	29.00	11.4	24.00	24.5	**0.0014**
Organ Transplant (N, %)	34.00	13.4	7.00	7.1	0.0972

Table 2: Outcomes Examined - Clinical Endpoints

Endpoint	Non Occult Hepatitis B Patients N=254		Occult Hepatitis B patients N=98		P-Value
Acute Viremic Patients, N, %	10	3.9	1	1.0	0.3026
Total Conversions of Serum Antibody - N, %	13	5.1	32	32.7	**<.0001**
Total Conversions of Serum Antigen - N, %	11	4.3	1	1.0	0.191
Maximum Viremia level (Mean, SD)	4002748	62750171.0	0.1939	1.9	0.3103
Received Hep B Treatment - N, %	11	4.3	0	0.0	0.0677
Adverse Outcome (Ag Conversion or Viremia) N,%	15	5.91	1	1.0	0.1295
Protective Outcome (Ab Conversion Alone) N,%	11.00	4.3	31.00	31.6	**<.0001**

Table 3: Odds of HepB Sab conversion As a Function of Various Risk Factors

Univariate Analysis

Variable	Odds Ratio Estimate	95% Confidence Limits		P Value
Age	0.987	0.961	1.013	0.3225
Gender Male	1.315	0.666	2.598	0.4298
Baseline AST	1.1487	0.9844	1.3405	0.0784
Baseline ALT	1.0291	0.8873	1.1936	0.7045
Baseline Bilirubin	0.7953	0.5242	1.2066	0.2815
Baseline INR	0.8349	0.5579	1.2493	0.3802
Baseline Albumin	0.899	0.583	1.387	0.6314
History of Liver Disease	**2.467**	**1.274**	**4.778**	**0.0074**
Hepatitis C Antibody Positive	**2.527**	**1.312**	**4.866**	**0.0056**
Diabetes	0.984	0.512	1.892	0.9617
HIV	0.965	0.213	4.378	0.9627
IVDU	**3.417**	**1.65**	**7.078**	**0.0009**
Organ Transplant	1.021	0.377	2.766	0.9672
Occult Hepatitis B Status Positive	**10.221**	**4.881**	**21.404**	**<.0001**

Multivariate Analysis

Variable	Odds Ratio Estimate	95% Confidence Limits		P Value
Age	0.987	0.952	1.023	0.4731
Gender Male	0.978	0.438	2.183	0.9573
History of Liver Disease	2.169	0.935	5.03	0.0713
Hepatitis C Antibody Positive	0.882	0.354	2.196	0.7874
Diabetes	1.003	0.467	2.155	0.9929
IVDU	2.243	0.846	5.947	0.1045
Occult Hepatitis B Status Positive	**11.887**	**5.335**	**26.484**	**<.0001**

Table 4: Odds of HepB SAg Conversion or Viremia As a Function of Various Risk Factors

Univariate Analysis

Variable	Odds Ratio Estimate	95% Confidence Limits		P Value
Age	0.974	0.937	1.013	0.1819
Gender Male	1.561	0.537	4.532	0.4132
Baseline AST	1.0579	0.8274	1.3526	0.6537
Baseline ALT	1.0885	0.9243	1.2818	0.3093
Baseline Bilirubin	0.97	0.206	4.568	0.969
Baseline INR	0.628	0.095	4.169	0.6298
Baseline Albumin	0.53	0.247	1.136	0.1025
History of Liver Disease	**2.782**	**1.013**	**7.639**	**0.0471**
Hepatitis C Antibody Positive	0.689	0.237	2.002	0.4938
Diabetes	1.245	0.442	3.51	0.6781
HIV	1.275	0.158	10.265	0.8192
IVDU	1.361	0.371	4.994	0.6426
Organ Transplant	1.798	0.49	6.596	0.3766
Occult Hepatitis B Status Positive	0.332	0.075	1.48	0.1482

Multivariate Analysis

Variable	Odds Ratio Estimate	95% Confidence Limits		P Value
Age	0.978	0.939	1.019	0.2899
Gender Male	1.415	0.451	4.438	0.5518
History of Liver Disease	3.259	0.994	10.69	0.0512
Hepatitis C Antibody Positive	0.3	0.074	1.218	0.0921
Diabetes	1.658	0.506	5.437	0.4037
IVDU	2.595	0.552	12.204	0.2272
Occult Hepatitis B Status Positive	0.185	0.023	1.491	0.113

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288. Hepatitis B Virus Reactivation in Patients with Hematologic Malignancies after Anticancer Therapy Which Included Ibrutinib

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