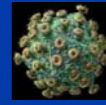




Response to Hepatitis A Vaccine in HIV Positive Patients



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Background

- Hepatitis A is a highly contagious virus seen commonly in an HIV+ population
- 30-50% of HIV+ patients in the U.S. are co-infected with hepatitis C
- Superinfection with hepatitis A in hepatitis C carrier can lead to fulminant hepatic failure
- USPHS/IDSA guidelines recommend that all HIV/HCV co-infected patients who are not immune to hepatitis A receive hepatitis A vaccination
- Immune response to hepatitis A vaccine has not been well studied in HIV positive patients

Objectives

- To assess the immune response to hepatitis A vaccination in HIV positive patients
- To assess the effect of viral load, CD4 nadir, CD4 count at vaccination, on immune response rates to hepatitis A vaccination in HIV positive patients
- To assess the effect of current ART use, hepatitis B and hepatitis C co-infection on immune response rates

Methods

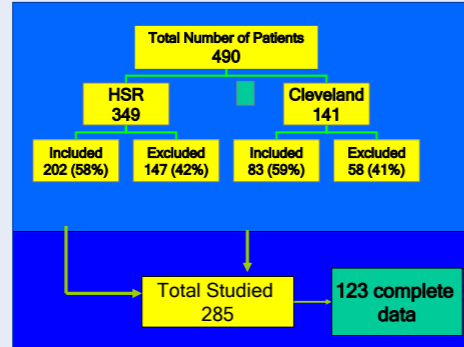
- HIV positive patients were tested for HAV IgG antibodies (HAV ab).
- Patients with negative HAV ab received two HAV vaccines (HAVRIX®) 6 to 12 months apart.
- Post HAV ab response was measured after the 2nd vaccine.
- Medical charts were reviewed. Data on race, age, gender, CD4 count, viral load, ART use, and hepatitis B and C status was collected.
- Bivariate and multivariate analysis was done using SPSS software.

Inclusion Criteria

- All HIV positive patients seen at Hospital of Saint Raphael (HSR) HIV Clinic and Louis Stokes Cleveland VAMC HIV clinic who had hepatitis A serologies checked prior to vaccination

Exclusion Criteria

- Hepatitis A IgG positivity prior to hepatitis A vaccination
- Patients that had contraindications for Hepatitis A vaccination



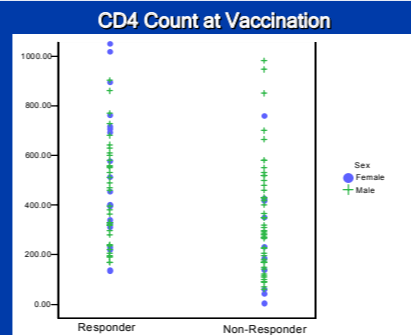
	Excluded	Included	p-value
Age mean (yrs)	46.0	41.9	<0.001
<50 years (%)	72%	84%	0.001
White race	27%	36%	0.04
Male	71%	66%	0.17
HIV risk group			<0.001
MSM	27%	29%	
IVDU	28%	9%	
Hetero	45%	62%	
CD4 nadir (mean, cells/mm ³)	244	216	0.39
CD4 nadir <200 (%)	54%	56%	0.47
HCV +	39%	32%	0.14
Hep B exposure	13%	10%	0.19

Characteristics of Included and Excluded Patients

- All excluded patients had prior HAV ab
- Older age, HIV risk group, and non-white race were associated with prior HAV ab positivity

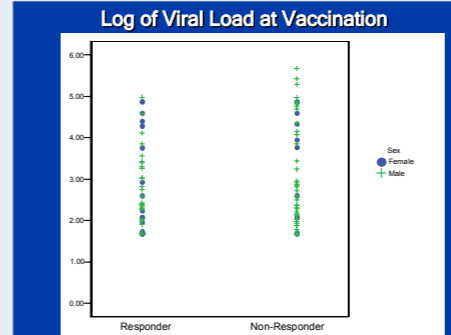
Predictors of Response to Vaccine			
Characteristic	Responder n=61	Non responder n=62	P*
Age (mean±SD)	43.9 ± 8.4	44.7 ± 8.0	0.6
Age > 50 years (%)	22.0	30.6	0.3
Gender (male) (%)	62.3	82.3	0.01
Race (white) (%)	35.0	42.6	0.4
HIV Risk Group			0.9
MSM	34%	33%	
IVDU	7%	9%	
Hetero	59%	58%	

Predictors of Response to Vaccine			
Characteristic	Responder n=61	Non-Responder n=62	P*
CD4 at vaccine (mean±SD, cells/mm ³)	486±267	358±285	0.02
CD4 at vaccine <200 (%n)	12% (7)	32% (20)	0.008
ART Therapy (yes) (%n)	85% (51)	84% (51)	0.84
VL at vaccine (mean±SD, copies/ml)	6099 ±19,093	26,848 ±73,163	0.04
Log VL at vaccine (mean±SD)	2.58±0.99	2.51±1.24	0.11
VL at vaccine <400 (%n)	67% (40)	56% (36)	0.32



Predictors of Response to Vaccine			
Characteristic	Responder n=61	Non responder n=62	P*
HCV Positive (%n)	48% (28)	36% (21)	0.17
Hep B Exposure (%n)	4% (2)	6% (4)	0.46
CD4 nadir (mean, ±SD cells/mm ³)	241±197	195±175	0.19
CD4 nadir < 200 (%n)	52% (31)	61% (38)	0.29

Multivariate Logistic Regression			
Variables	OR	95% CI	P value
Sex (female)	3.33	1.20-9.25	0.02
CD4 nadir (mean, cells/mm ³)	1.00	0.99-1.00	0.90
CD4 count <200 cells/mm ³ at Vaccine	0.28	0.09-.84	0.02
HCV positive	1.89	0.84-4.20	0.12
Study Site	1.60	0.66-3.87	0.30



Results

- 123 patients had completed their hepatitis A vaccine series and had post vaccine hepatitis A IgG results available for analysis
- Of the 123 patients included in the analysis, 72% were male with a mean age of 43 years
- 61 of 123 patients (50%) had a positive post vaccine hepatitis A IgG titer (Responders)
- 62% of Responders were male vs. 82% of Nonresponders (p=0.01)
- 68% of women were Responders vs. 43% of men (data not shown)
- Mean CD4 count nadir of Responders vs. Nonresponders is 241 cells/mm³ vs. 195 cells/mm³, (p=0.19)
- 52% of Responders vs. 61% of Nonresponders had CD4 count nadirs <200 cells/mm³ (p=0.29)
- The mean CD4 count at vaccine was 486 cells/mm³ for Responders vs. 358 cells/mm³ for Nonresponders (p=0.02)
- 12% of Responders had CD4 counts of <200 cells/mm³ at vaccine vs. 32% of Nonresponders (p=0.008)
- The mean log HIV viral load at vaccine was 2.58 for Responders vs. 2.51 for Nonresponders (p=0.11)
- 67% of Responders had HIV viral load <400 copies/ml at vaccine vs. 56% of Nonresponders (p=0.32)
- 85% and 84% of Responders and Nonresponders, respectively, were on antiretroviral therapy at the time of HAV vaccine
- The scatter plots show that there is a wide range of CD4 count and viral load levels for Responders and Nonresponders. There is not a CD4 count or HIV viral load level that predicts nonresponse to HAV vaccine.

Conclusions

- 50% of HIV positive patients responded to a series of two hepatitis A vaccination. This is much lower than reported response rates of 96% and 100% response in HIV negative populations.
- Responders to vaccine had higher CD4 counts at the time of vaccination and were more likely to be female than nonresponders.
- CD4 nadir and HIV viral load did not predict response to hepatitis A vaccine.
- Age, race, ART use, Hepatitis B and C status did not predict response to vaccine.

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