Risks Factors for Colorectal Precancerous and Cancerous Lesions in HIV-infected Patients

Doris P. Yimgang[1], Lawrence S. Magder[1] , Kristen A. Stafford[1], Lydia H. Fisher[2], Nicole R. Cullen[3], David J. Riedel[2], Minji Kang[4], Ellen K. Innis[5], Elizabeth W. Wang[6], Andrea N. Riner[5], Lori E. Fantry[2]

[1]Department of Epidemiology and Public Health, University of Maryland School of Medicine
[2]Institute of Human Virology and Division of Infectious Diseases, University of Maryland School of Medicine
[3] Novant Health
[4] Department of Medicine, University of Maryland School of Medicine
[5]University of Maryland School of Medicine
[6]Geisinger Medical Center

ABSTRACT

Although data are conflicting, some studies suggest that HIV-infected patients may have a higher risk for colorectal cancer. The purpose of this study is to analyze the relationship between known and potential HIV specific risk factors on the incidence of precancerous and cancerous lesions found on colonoscopy in HIV-infected individuals. This is a retrospective analysis of clinical data collected on 263 HIV-infected patients.

Twenty-one percent (n= 56) of the patients had neoplastic lesions. Individuals who had diabetes mellitus had a prevalence of neoplastic lesions that was 1.74 times as high as those without diabetes mellitus (p= 0.025). In diabetic patients who had never smoked, the prevalence of polyps was 5.44 times as high as patients who were neither diabetic nor smokers (p= 0.0016). Patients with CD4 cell count greater than 200 had a higher risk of neoplastic lesions than those with CD4 cell counts < 200 cells/μL (p=0.047). These data provided no evidence of an association between the presence of neoplastic polyps and sex, hepatitis C infection, other cancers, antiretrovirals (ARVs), nonsteroidal anti-inflammatory drugs (NSAIDs), cigarette smoking, injection drug use (IDU), men who have sex with men (MSM), family history, or body mass index (BMI).

INTRODUCTION

Colorectal cancer is the third most common cancer in the United States and second only to lung cancer as a cause of cancer death, so an increase of the disease among HIV-infected individuals represents a significant health problem for the HIV infected patients. Although not a universal finding, there have also been reports of increased risk for colorectal cancer in HIV-infected patients. Currently, little is known about risk factors associated with colorectal cancer in HIV-infected patients.

METHODS

Data were collected on 263 HIV-infected individuals aged 40-75 years old who received a colonoscopy at UMMC in Baltimore, MD between 7/16/2002 and 12/31/2013, the colonoscope reached the cecum, and the bowel preparation was adequate. Multivariable-adjusted prevalence ratios controlling for age, sex, reasons for colonoscopy, BMI, and/or HIV viral load, were computed.

RESULTS

Variables	Proportion (%)
Age	
40-49 y	26/263 (9.9)
50-59 y	197/263 (74.9)
≥60 y	40/263 (15.2)
Male	152/263 (57.8)
Race	
White	19/263 (7.2
African American	238/263 (90.5)
Other	4/263 (1.5)
Diabetes Mellitus	49/263 (18.6)
Hepatitis C	120/240 (50.0)
Other Cancers	21/263 (8.0)
ARV Use	231/262 (88.2)
NSAID Use	66/260 (25.4)
Family History	14/232 (6.0)
Smoker	206/263 (78.3)
IDU	101/255 (39.6)
MSM	25/110 (22.7)
BMI	
< 25 kg/m^2	94/262 (35.9)
25-29.99 kg/m^2	80/262 (30.5)
≥ 30 kg/m^2	88/262 (33.6)
CD4 Count	
<200 cells/ μL	25/234 (10.7)
200-499 cells/ μL	89/234 (38.0)
≥ 500 cells/μL	120/234 (51.3)
HIV Viral Load <500 copies/mL	195/235 (83.0)
Indication for Colonoscopy[a]	
Screening	199/263 (75.7)
Fecal Occult Blood Positive (FOB +) or Hematochezia	40/263 (15.2)
Diarrhea	16/263 (6.1)
Other	35/263 (13.3)

Table 1. Patients Characteristics

Groups	Proportion with lesions (%)	Prevalence Ratio[d] (95% CI)	P-value
Not diabetic and never smoker	4/48 (8.3)	1.0 (Reference Group)	
Not diabetic and ever smoker	35/166 (21.1)	2.04 (0.86, 4.84)	0.11
Diabetic and never smoker	5/9 (55.6)	**5.44 (1.90, 15.59)**	**0.0016**
Diabetic and ever smoker	11/40 (27.5)	**2.64 (1.00, 6.97)**	**0.050**

Table 3. Interaction between Diabetes and Smoking

a Some patients had more than one indications
b Adjusted prevalence ratio controlling for age, gender, and reasons for colonoscopy
c Model controlling for age, gender, reasons for colonoscopy, and HIV viral load
d Adjusted prevalence ratio controlling for age, gender, reasons for colonoscopy and BMI

Risk Factors	Proportion with lesions (%)	Prevalence Ratio[b] (95% CI)	P-value
Age			
<50	2/26 (7.7)	1.0 (Reference Group)	
50-59	41/197 (20.8)	2.82 (0.70, 11.25)	0.14
≥ 60	13/40 (32.5)	4.06 (0.98, 16.77)	0.053
Gender			
Male	34/152 (22.4)	1.13 (0.68, 1.86)	0.64
Female	22/111 (19.8)	1.0 (Reference Group)	
Diabetes Mellitus			
Yes	16/49 (32.7)	**1.77 (1.07, 2.93)**	**0.025**
No	40/214 (18.7)	1.0 (Reference Group)	
Hepatitis C			
Yes	26/120 (21.7)	1.10 (0.67, 1.79)	0.70
No	24/120 (20.0)	1.0 (Reference Group)	
Other Cancers			
Yes	5/21 (23.8)	0.99 (0.44, 2.23)	0.98
No	51/242 (21.1)	1.0 (Reference Group)	
ARV Use			
Yes	50/231 (21.6)	1.0 (Reference Group)	
No	6/31 (19.4)	1.04 (0.41, 2.62)[c]	0.94
NSAID Use			
Yes	17/66 (25.8)	1.23 (0.74, 2.02)	0.42
No	39/194 (20.1)	1.0 (Reference Group)	
Family History			
Yes	4/14 (28.6)	1.33 (0.55, 3.21)	0.53
No	49/218 (22.5)	1.0 (Reference Group)	
Smoking Status			
Ever	46/206 (22.3)	1.25 (0.67, 2.32)	0.48
Never	10/57 (17.5)	1.0 (Reference Group)	
IDU			
Ever	23/101 (22.8)	1.09 (0.68, 1.75)	0.72
Never	31/154 (20.1)	1.0 (Reference Group)	
MSM			
Yes	2/25 (8.0)	0.30 (0.08, 1.13)	0.075
No	25/85 (29.4)	1.0 (Reference Group)	
BMI			
< 25 kg/m^2	18/94 (19.1)	1.0 (Reference Group)	
25-29.99 kg/m^2	19/80 (23.8)	1.38 (0.78, 2.47)	0.27
≥ 30 kg/m^2	19/88 (21.6)	1.25 (0.70, 2.23)	0.45
CD4 Count			
< 200 μL	1/25 (4.0)	**0.14 (0.02, 0.98)**	**0.047**
200-499 μL	18/89 (20.2)	0.79 (0.47, 1.33)	0.37
≥ 500 μL	33/120 (27.5)	1.0 (Reference Group)	
Screening			
Yes	43/199 (21.6)	1.35 (0.51, 3.53)	0.54
No	13/64 (20.3)	1.0 (Reference Group)	
FOB + or Hematochezia			
Yes	7/40 (17.5)	1.02 (0.37, 2.78)	0.97
No	49/223 (22.0)	1.0 (Reference Group)	
Diarrhea			
Yes	5/16 (31.2)	1.77 (0.66, 4.76)	0.26
No	51/247 (20.6)	1.0 (Reference Group)	
Other			
Yes	8/35 (22.9)	1.26 (0.55, 2.92)	0.58
No	48/228 (21.1)	1.0 (Reference Group)	

Table 2. Risk Factors for Neoplastic Lesions

CONCLUSION

There was evidence of an association between diabetes mellitus and colorectal precancerous and cancerous lesions in HIV-infected patients. There was also evidence that immunosuppression did not increase the risk of neoplastic lesions. Patients with lowest CD4 counts actually had the lowest rate of lesions. These findings suggest that HIV-infected patients who have diabetes mellitus may benefit from closer clinical supervision in regards to screening for colorectal cancer.