368. Incidental Findings on Brain MRI in People Living with HIV

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Session: 46. HIV Complications: Neurologic Complications
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Background. HIV infection is associated with an array of neurocognitive changes, collectively referred to as HIV-Associated Neurocognitive Disorder (HAND). These changes have been the subject of a great deal of study, often including structural MRI of the brain. Incidental findings (IF) are a well-known complication of imaging studies done for both diagnostic and research indications, and can pose important ethical and clinical dilemmas. Little is known about the rates and types of IF found on brain MRI in patients with HIV infection. We identified and characterized such findings in participants who participated in a study of neurophysiological markers of HAND.

Methods. The parent study included 108 HIV-infected adults and 125 demographically matched uninfected controls without cognitive impairment who had undergone T1-weighted structural brain MRI for research purposes. Demographic and diagnostic data were abstracted from the research records. Each MRI study was read by the same neuroradiologist, blind to the participant's HIV status. IF were classified as vascular, neoplastic, congenital, other neurologic, or non-neurologic. Categorical measures were compared using Pearson chi-square tests while continuous measures were compared using *t*-tests.

Results. Among HIV-infected participants, 36/108 (33.3%) had IF compared with 33/125 (26.4%) of controls ($P = 0.248$). Rates of IF were significantly correlated with increased age in both HIV-infected and control participants. We found no correlation among presence or absence of IF and sex, race/ethnicity, or CD4 count and HAND status for the HIV-infected cohort. The most common categories were neurologic (27), followed by non-neurologic (8), vascular (6), and neoplastic (2) (Table 1).

Conclusion. If were common in both HIV-infected participants and controls, at higher rates than previously reported, possibly because of increased sensitivity of MRI machines over time. Surprisingly, we found no significant difference between the groups and no correlation with HAND status or CD4 count. Age was the only factor correlated with rates of IF in either HIV-infected participants or controls. To our knowledge, this study is the first of its kind to characterize incidental findings in HIV-infected patients.

Table 1: Incidental Findings in HIV Patients and Controls

Finding	Pts No. (%)	Controls No. (%)
Neurologic	27 (62.8)	19 (44.2)
White Matter Loss	20 (46.5)	9 (20.9)
Empty Sella/Pseudotumor Cerebri	6 (14)	8 (18.6)
Basal Ganglia Disease	1 (2.3)	0
Normal Pressure Hydrocephalus	0	1 (2.3)
Chiari Malformation	0	1 (2.3)
Vascular	6 (9.5)	12 (27.9)
Chronic Small Vessel Ischemic Disease	5 (11.6)	10 (23.3)
Lacunar Lesion	1 (2.3)	1 (2.3)
Brainstem Lesion	0	1 (2.3)
Neoplastic	2 (4.6)	2 (4.6)
Meningioma	1 (2.3)	0
Colloid Cyst	1 (2.3)	0
Pituitary Adenoma	0	1 (2.3)
Interventricular Nodule	0	1 (2.3)
Non-Neurologic	8 (26.2)	10 (23.3)
Maxillary Sinus Disease	6 (14)	7 (16.3)
Ethmoid Sinus Disease	1 (2.3)	1 (2.3)
C3-4 Disc Protrusion with Mild Cord Compression	1 (2.3)	0
Expanded Spinal Cord Canal	0	1 (2.3)
Congenitally Short Pedicles in Upper Cervical Spine	0	1 (2.3)

Table 2: Distribution of Findings in HIV-infected Participants by Age, Sex, Race/Ethnicity, CD4+ Level, and HAND status

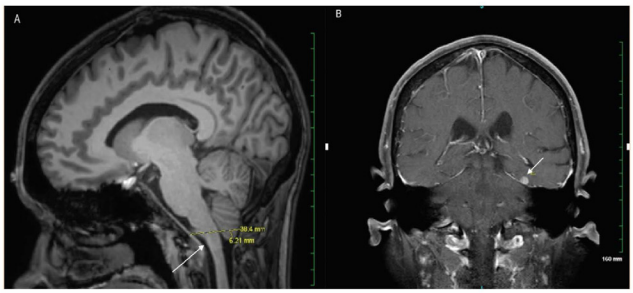
	No Incidental Findings Mean (SD) or n (%)	Incidental Findings Mean (SD) or n (%)	p-value
Age (in years)	45.1 (12.4)	51.3 (11.3)	0.013
Sex			
Male	43 (60)	20 (56)	0.679
Female	29 (40)	16 (44)	
Race and Ethnicity			
NH White Only	43 (60)	20 (56)	0.734
NH Black Only	19 (26)	12 (33)	
Other	10 (14)	4 (11)	
CD4+ (cells/μL)	784 (429)	714 (446)	0.435
Neurocognitive Disorder*			
Normal	48 (67)	20 (56)	0.429
ANI	12 (17)	11 (31)	
MND	7 (10)	3 (8)	
HAD	5 (7)	2 (6)	

*Asymptomatic neurocognitive impairment (ANI), Mild neurocognitive disorder (MND), HIV-associated dementia (HAD)

Table 3: Distribution of Findings in Control Participants by Age, Sex, and Race/Ethnicity

	No Incidental Findings Mean (SD) or n (%)	Incidental Findings Mean (SD) or n (%)	p-value
Age (in years)	42.0 (14.2)	49.1 (16.8)	0.022
Sex			
Male	48 (52)	21 (64)	0.256
Female	44 (48)	12 (36)	
Race and Ethnicity			
NH White Only	60 (65)	16 (48)	0.205
NH Black Only	23 (25)	11 (33)	
Other	9 (10)	6 (18)	

Figure 1: Representative Incidental Findings on Brain MRI



Arrows indicate the abnormalities in each image. Panel A shows a tonsillar herniation (type I Chiari malformation) more than 5 mm below the level of the foramen magnum on a T1-weighted sagittal image. A meningioma is shown on the T1-weighted coronal image in Panel B.

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369. Association Between Depression and HIV Treatment Outcomes in a US Military Population with HIV Infection

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Background. Depression is common among HIV-infected individuals and may contribute to suboptimal adherence to antiretroviral therapy (ART) and reduced rates of viral load (VL) suppression. We evaluated longitudinal HIV treatment outcomes in US Military HIV Natural History Study (NHS) participants with or without a diagnosis depression.

Methods. Male NHS participants with available ICD-9 data for mental health diagnoses and self-reported adherence (SRA) were included ($n = 549$). Groups were defined as having a history of depression ($n = 188$, 34.2%), classified as major depressive disorder and/or anxiety disorder, or no history of depression ($n = 361$, 65.8%). Delay in ART initiation was defined as the time from HIV diagnosis to ART start greater than the group mean (4.91 ± 4.69 years). SRA was defined as taking ≥95% of ART doses and continuous ART was defined as longitudinal ART use with gaps < 30 days. Continuous VL suppression was defined as maintaining VLs < 200 c/mL on ART. Logistic regression analysis was performed comparing variables for those with and without a coded diagnosis of depression.

Results. Participants had a mean age of 33 (±8.36) years at HIV diagnosis, and similar proportions were Caucasian (44.3%) or African American (40.8%). At ART initiation, the mean CD4 count was 370 (±154 cells/μL) and 362 (±163 cells/μL) for those with and without a history of depression, respectively. Overall, older participants at HIV diagnosis had greater odds of having high SRA (OR 1.07, 95% CI 1.03–1.11), and compared with Caucasians, African Americans had lower odds of having high SRA (OR 0.43, 95% CI 0.25–0.75; table). Participants with a history of depression had greater odds of experiencing delayed ART initiation (OR 2.12, 95% CI 1.11–4.05). However, they also had greater odds of remaining on continuous ART (OR 1.38, 95% CI 0.95–2.02) during follow-up compared with those without a history of depression.

Conclusion. Although HIV-infected individuals with depression were more likely to experience delays in ART initiation, there were no observed differences in SRA or VL suppression. Continued efforts to identify and aggressively manage mental health disorders are important to success along the HIV care continuum.

	Time from HIV Diagnosis to ART Initiation	Continuous ART (break <30 days)	Continuous Viral Load Suppression	Self-Reported Adherence (≥95%)
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
History of Depression	2.12 (1.11-4.05)	1.38 (0.95-2.02)	0.96 (0.66-1.40)	0.78 (0.46-1.31)
Race				
Caucasian (reference)				
African American	1.16 (0.60-2.241	1.06 (0.72-1.57)	0.91 (0.61-1.34)	0.43 (0.25-0.75)
Other	0.62 (0.23-1.67)	1.27 (0.74-2.18)	1.25 (0.72-2.16)	1.60 (0.62-4.14)
Age at HIV Diagnosis	0.93 (0.89-0.97)	0.99 (0.97-1.01)	1.01 (0.98-1.03)	1.07 (1.03-1.11)

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