stroke at older ages and with lower viral load over time suggests a potential change in the pathogenesis of stroke from viral-driven processes to more aging-related risk factors.

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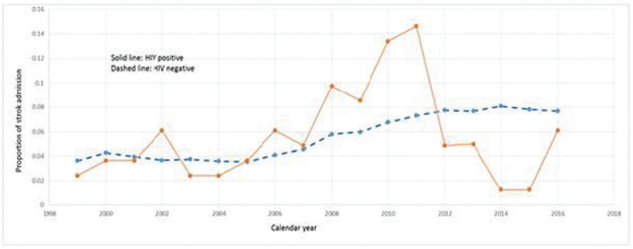
Table. Characteristics of patients hospitalized for a first episode of stroke, 1999-2016

Characteristics	HIV-infected patients		HIV-uninfected patients		p
	N	Cases/N (%)	N	Cases/N (%)	
Demographics					
Age, years	81	49 (1.33)[1]	20,187	65 (0.11)[1]	0.010
Male	81	55 (66)	20,187	9,712 (48)	0.010
Black	81	53 (66)	19,055	7,450 (39)	< 0.001
Smoking	81	46 (57)	20,187	5,943 (29)	< 0.001
Alcohol use	81	14 (17)	20,187	1,370 (7)	< 0.001
Illicit drug use	81	25 (30)	20,187	1,015 (5)	< 0.001
Stroke Outcomes					
NIH Stroke Severity	78		18,293		0.700
Mild		40 (52)		9,037 (49)	
Moderate		28 (36)		6,108 (34)	
Moderate-Severe		5 (6)		1,234 (7)	
Severe		5 (6)		1,914 (10)	
Length of hospital stay, days	81	9 (1.30)[1]	20,187	8 (0.11)[1]	0.430
Inpatient death	78	8 (10)	16,266	1,711 (11)	0.940
Receipt of t-PA	81	6 (7)	18,979	1,545 (8)	0.780
> 1 stroke admission	81	13 (16)	20,187	2,011 (10)	0.090
Pulmonary embolism	67	0 (0)	12,869	30 (0.2)	0.690
Deep venous thrombosis	67	0 (0)	12,870	114 (0.9)	0.440
Myocardial infarction	81	6 (7)	20,187	1,529 (8)	0.930
Aspiration pneumonia	67	0 (0)	12,870	170 (1.3)	0.340
Urinary tract infection	67	1(2)	12,869	346 (3)	0.540

[1]Mean (SE)
SE, standard error; NIH, National Institute of Health; t-PA, tissue plasminogen activator

Figure. Proportion of stroke admissions among HIV-infected and uninfected patients, 1999-2016



* The proportion of stroke admissions for both HIV-infected and uninfected patients is expressed as the number of stroke admissions at calendar year divided by the total number of stroke admissions for each group

549. MoCA Utility as a Quick Testing Tool for Neurocognitive Disorders in HIV Patients: Analysis of a Prospective Cohort

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Background. Since the introduction of highly active antiretroviral therapy, asymptomatic and mild neurocognitive impairment are the main clinical manifiestations of HIV associated neurocognitive disorders (HAND), compromising adherence to treatment, daily performance, quality of life, and even increasing the risk of mortality. We do not have validated screening tools for early detection of HAND applicable to the routine medical visit. The Montreal Cognitive Assessment test (MoCA) is a simple questionnaire used in Alzheimer's disease, but its utility as a screening tool for HAND remains controversial.

Methods. We designed a prospective study to establish MoCA´s usefulness as a rapid and sensitive tool for the detection of HAND, compared with a gold-standard test (GST) that includes Mini-mental State Examination (MMSE) and a battery of assays that evaluate several neurological domains. Adult patients with HIV infection attending our institution were included. The MoCA test was performed by infectious diseases specialists, and the GST by neurologists. History of recent stroke, neurological disease, opportunistic central nervous system infection, major depression, schizophrenia, bipolar disorder, substance abuse or dependence on alcohol, were exclusion criteria. We analized demographic and clinical variables.

Results. Fifty HIV-infected patients were enrolled, 94% males, with a mean age of 45.6 years (range 20–75), and an average of 14.8 years of education (range 3–26). The mean CD4 cell count was 596 cells/ml (range 65–1130), and 70% of the patients had undetectable viral load (≤20 copies/mL) at the time of the evaluation. Compared with GST, MoCA had a sensibility (S) of 94.12% (CI 71.3–99.8), specificity (E) 78.79% (CI 61.09–91.02), positive predictive value (PPV) 69.57% (CI 47–86.79) and negative predictive value (NPV) 96.3 (CI 81–99.9). In contrast, the MMSE presented S 11.76% (CI 1.46–36.44), E 100% (CI 89.4–100), PPV 100% (CI 15.8–100) and NPV 68.75% (CI 53.7–81.3). Cohen's kappa coefficient between MoCA and GST was 0.67 (95% CI 0.46–0.87), reflecting an adequate agreement.

Conclusion. MoCA's performance as a screening test was adequate compared with GST and far superior to MMSE for early detection of HAND. Although specifity could be optimized, MoCA test remains a valuable screening tool in the routine medical visit in our HIV population.

Disclosures. **All authors:** No reported disclosures.

550. Neurocognitive Decline in People Living with HIV in India and Correlation with 3T Magnetic Resonance Spectroscopy

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Background. Neurocognitive decline in asymptomatic HIV patients and its correlation with metabolic changes in brain has not been studied in developing countries like India. In the present study we aim to examine the correlation between cognitive decline and changes in brain metabolites using MRS.

Methods. ART naïve HIV-positive patients, in the age group 2050 years attending ART center of the hospital from July to December 2016 were included in the study. All patients underwent evaluation using MRS of left frontal white matter (FWM) and left basal ganglia (BG). Levels of Nacetyl aspartate (tNAA), choline (tCho), creatine (tCr), lipids and macromolecules at 0.9ppm (Lip09+MM09) were measured. Cognition was tested using a battery validated for Indian population. Locally normalized zscores were used to calculate brain dysfunction score. Spearman correlation coefficient was used to assess the correlation between two continuous variables. There were 28 (29% female and 71% male) cases and 30 (37% female and 63% male) controls.

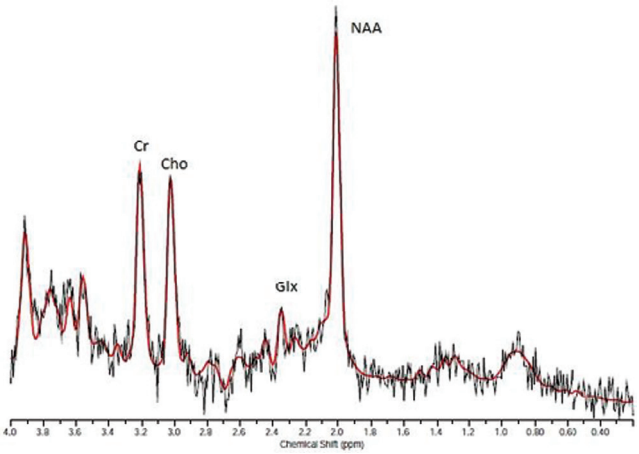
Results. The mean age was comparable in the 2 groups (33 and 34 years). There was a significant difference ($P < 0.05$) in the concentration (mmol/kg) of tNAA (9.29 ± 311 vs. 7.45 ± 0.64), tCho (2.08 ± 0.70 vs. 1.74 ± 0.25), tCr (6.95 ± 2.56 vs. 5.43 ± 0.61), in the FWM and Lip09 + MM09 (5.87 ± 1.05 vs. 4.80 ± 0.35) in BG, with higher levels in controls. There was no significant correlation between CD4 count and metabolites or overall dysfunction score and metabolites except Cr in FWM with more dysfunction associated with lower concentration (see Table 1)

Table 1: MR spectrum acquired from FWM of a patient.

	control n=30		case n=28		p value
	Mean (mmol/kg)	SD	Mean (mmol/kg)	SD	
BG tNAA	7.31	0.47	7.37	0.71	0.94
F tNAA	9.29	3.11	7.45	0.64	0.003
BG tCho	1.62	0.17	1.57	0.21	0.32
F tCho	2.08	0.70	1.74	0.25	0.015
BG tCr	6.95	1.51	6.60	0.91	0.29
F tCr	6.95	2.56	5.43	0.61	0.003
BG Glx	13.99	2.89	13.31	2.79	0.39
F Glx	15	6.06	9.93	2.11	0.0004

[Table 1]

Graph 1: MR spectrum acquired from FWM of a patient.



Conclusion. The results show that HIV-associated changes are present in asymptomatic people which may be contributing to the early neurocognitive decline. Knowledge of metabolic changes within studied brain regions can help understand the pathology and design interventions to cater to this unmet need in people living with HIV.

Disclosures. **All authors:** No reported disclosures.

551. Aberrant Autophagy in Macrophages and Astrocytes after HIV Nef or Antiretroviral Treatment: Contribution to the Pathogenesis of HIV-associated Neurocognitive Disorders

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Background. Despite antiretroviral therapy (ART), HIV-associated neurocognitive disorders (HAND) still affect 40–70% of HIV-infected people. The pathogenesis of HAND is multi-factorial and poorly understood. Macroautophagy is a cellular self-digestion process with essential roles in defense against infection, aging, and neurodegeneration. While there are a few studies showing a link between aberrant macroautophagy and cognitive defects in HIV infection, little is known of how HIV or antiretrovirals impact macroautophagy in cells of the CNS. We studied autophagy in macrophages and astrocytes—two major CNS cell types involved in HAND pathogenesis—after treatment with HIV Nef or common ART components to characterize further the pathogenesis of HAND.

Methods. PBMC were cultured to generate monocyte-derived macrophages (MDM). MDM were treated 24 or 48 hours with 5 ng/mL Tenofovir and/or 109 ng/mL Emtricitabine and lysates collected. Primary human astrocytes were treated 24 hours with 10 ng HIV Nef or 5 ng/mL Tenofovir + 109 ng/mL emtricitabine + 14 ng/mL raltegravir (ART) and lysates collected. Lysates were analyzed by western blot for LC3-II and p62 (autophagy markers) using Image Studio.

Results. LC3-II levels increased 1.5-, 1.6-, and 1.7-fold in MDM treated 24 hours with Tenofovir, Emtricitabine or Truvada, respectively, and p62 level decreased 25% after 24h Truvada, relative to untreated MDM. After 48 hours Truvada, LC3-II and p62 levels decreased 30% relative to control MDM. This indicates an initial upregulation followed by rapid downregulation of autophagy in antiretroviral-treated MDM. In astrocytes treated with Nef, LC3-II, and p62 flux (degradation) increased 3-fold and 1.7-fold, respectively, indicating abnormal enhancement of autophagy. Interestingly, while ART treatment increased LC3-II flux 3-fold, p62 degradation decreased 50% relative to controls, signifying a change in autophagy that impacts LC3-II and p62 differently.

Conclusion. Our initial study demonstrates that HIV and commonly prescribed antiretrovirals induce aberrant autophagy dynamics in macrophages and astrocytes. To our knowledge, this is the first time a change in autophagy due to ART has been described in these cells. HIV and ART may disrupt the homeostasis provided by autophagy, contributing to accelerated aging and HAND in HIV-infected people.

Disclosures. **All authors:** No reported disclosures.

552. Appropriate Time to Start Antiretroviral Therapy in HIV-infected Patients with *Penicilliosis marneffei*

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Background. *Penicilliosis marneffei* (PM) is endemic disease in many areas in Southeast Asia, South China, Hong Kong, Taiwan, and India. This disease is also the fourth most common opportunistic infection in human immunodeficiency virus (HIV)-infected patients in northern Thailand, after tuberculosis, pneumocystis carinii pneumonia and cryptococcal meningitis. However, the optimal time to start antiretroviral therapy (ART) in HIV-infected patients with PM is still not clear.

Methods. This Retrospective cohort study was done by reviewing the medical records of HIV-infected patients with PM at Chiang Mai University Hospital from January 1, 2001 to October 31, 2015. Patients were allocated to early ART (<30 days of starting PM treatment) or delayed ART (>30 days of starting PM treatment) and followed until 48 weeks after starting ART. Demographic and clinical data were recorded. The primary endpoints were mortality or hospitalization rate at 24 weeks after starting ART. Prevalence of new AIDS-defining illness, relapse of PM, immune reconstitution inflammatory syndrome (IRIS) or virological failure at 24 and 48 weeks after starting ART were recorded.

Results. A total of 81 patients were enrolled to the study (20 patients in the early ART group and 61 patients in the delayed ART group). The median of absolute CD4 cell count at enrollment in the early vs. delayed ART group were 17.00 and 25.50 cells/mm^3, respectively ($P = 0.07$). There were no reports of deaths in both groups. The hospitalization rates were not statistically different between the early and delayed ART groups at 24 (10.00% vs. 8.20%; $P = 0.56$). The prevalence of opportunistic infections (such as CMV infection) differed between the early and delayed ART groups at 24 weeks after ART, but it was not statistically significant (0.00% vs. 13.11%; $P = 0.09$). There were no statistical difference of the prevalence of other opportunistic infections, relapse of PM, IRIS and virological failure at 24 and 48 weeks after ART between both groups.

Conclusion. There were no differences in mortality, hospitalization rate, relapse of PM, IRIS, and virological failure between early and delayed ART groups. Although there was a trend for higher rate of other opportunistic infections in the delayed ART group; this was not statistically significant. Further prospective study is needed.

Disclosures. **All authors:** No reported disclosures.

553. Survival in HIV-infected Asymptomatic Cryptococcal Antigenemia without CSF Positivity Treated with Fluconazole Did Not Differ from Cryptococcal Antigen (CrAg) Negative with CD4 <150.

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Background. Cryptococcal meningitis causes 15% of HIV/AIDS-related deaths; however, meningitis can be prevented by early screening and giving preemptive treatment to a high-risk population.

Methods. We screened HIV-infected patients whose CD4+ count ≤150/μL for cryptococcal antigen (CrAg) from the left over plasma after CD4 count testing at Adama and Asella hospitals in Ethiopia. We conducted a prospective case–control study comparing the 6-month survival outcomes of 51 plasma CrAg+ patients with 100 randomly selected CrAg-negative patients from CrAg screening registration book within the same CD4 count ranges. CrAg+ patients were treated with appropriate antifungal drugs and both groups initiated HIV therapy according to national treatment guideline. All CrAg+ patients were offered lumbar puncture (LP) to exclude cerebrospinal fluid (CSF) CrAg-positivity. CrAg+ patients without central nerve system (CNS) disease were treated with fluconazole 800 mg/day until starting HIV therapy and 400 mg/day thereafter for 8 weeks. CSF CrAg+ patients were treated with fluconazole 1,200 mg/day.

Results. CrAg was detected in 6.2% ($n = 51$)of remaining plasma among 817 HIV-infected persons with CD4 ≤ 150/μL screened from August 2014 to March 2016. The mean CD4 count was 47 cells/μL among CrAg+ and 73 cells/μL in randomly selected CrAg-negative participants respectively. After 6-months, 49% (25/51) of CrAg+ and 19% of (19/100) CrAg-negative patients were dead or lost to follow-up ($P < 0.001$). Among asymptomatic cryptococcal antigenemia (plasma CrAg+ but CSF CrAg-negative), the 24% (4/17) mortality rate did not differ from 19% mortality in plasma CrAg-negative (odds ratio 1.31, 95% CI: 0.38–4.5; $P = 0.66$).

Conclusion. Mortality rate is higher among plasma CrAg+ than CrAg-negative HIV-infected with CD4 counts <150 cells/μL. However, survival did not differ between asymptomatic cryptococcal antigenemia (CSF CrAg negative) persons treated with oral fluconazole and CrAg-negative HIV-infected persons.

Disclosures. **All authors:** No reported disclosures.

554. High Prevalence of *Cryptococcal* Antigenaemia and Disseminated *Cryptococcal* Disease Amongst Patients with Advanced HIV Disease in Pune, India

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Background. The World Health Organization (WHO) recommends routine *cryptococcal* antigen (CrAg) screening in patients with advanced HIV disease initiating antiretroviral treatment (ART). India has yet to adopt this strategy as the burden of cryptococcal disease is unknown.

Methods. This was a prospective cohort study conducted between March 1, 2010 and March 1, 2017 at three private hospitals in Pune, India. All HIV-positive patients (symptomatic and asymptomatic) with CD4 counts ≤ 200 cells/μL were screened for serum *cryptococcal* antigen. Serum CrAg was measured using latex agglutination (LA) test. Both, ART naïve and ART experienced patients were included in the study. All HIV infected patients who were CrAg-positive were offered lumbar puncture (LP) and worked up for disseminated *cryptococcal* disease.

Results. A total of 785 HIV-positive patients (24.2% females) were included. Median age of cohort was 42 years (IQR, 35–49) and median CD4 count was 79 cells/mm^3 (IQR, 37–82). 182/785(23.2%) patients were ART experienced. A total of 6.75% (53/785) of patients were CrAg positive in serum. Thirty-nine of 53 (73.6%) patients with positive serum *cryptococcal* antigen test had CD4 count ≤100 cells/mm^3 while 14/53 (26.4%) had CD4 between 100 and 200 cells/mm^3. Cerebrospinal fluid (CSF) CrAg was positive in 44/53(83%) patients. Two of 53(3.78%) had non-CNS, diffuse pulmonary *cryptococcal* disease and 7/53(13.2%) patients had isolated *cryptococcal* antigenemia. Patients with *cryptococcal* meningitis and *crptococcal* pulmonary disease were treated with Amphotericin-B plus oral Fluconazole. Patients with isolated *cryptococcal* antigenemia were treated with oral Fluconazole. Mortality at 6 months for patients with positive CrAg test was 22.6% (12/53).

Conclusion. We found 6.75% prevalence of cryptococcaemia amongst HIV patients with CD4 <200 cells/mm^3. Given the high fatality rates observed, routine CrAg screening should be considered for all Indians with advanced HIV disease.

Disclosures. **All authors:** No reported disclosures.