

**Case Report****Case Series of Neuroimaging findings In Immunocompromised Patients With HIV/AIDS**

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ARTICLE INFO**Keywords:***Gamma Glutamyl Transferase, viral hepatitis, Chronic alcoholics***ABSTRACT**

Aims & Objectives: To review the clinical presentation and neuroimaging findings in immunocompromised patients positive for HIV/AIDS. • **Materials & Methods:** A total of 7 patients who were positive for HIV/ AIDS underwent MRI and CT brain and MRI spine during a study period of 6 months, presented with different neuroimaging findings which include Toxoplasmosis, TB Arteritis, Cryptococcosis, Progressive Multifocal Leukoencephalopathy, HIV Encephalopathy, Spinal Arachnoiditis and Cerebral & Cerebellar Atrophy with dementia. • **Result:** 4 patients underwent MRI brain plain and revealed features suggestive of Atrophy, HIV Encephalopathy, PML and Arteritis. 2 patients underwent MRI brain (plain & contrast) & CT brain and showed features suggestive of Cryptococcosis and Toxoplasmosis. 1 underwent MRI spine and showed features in favour of Arachnoiditis.

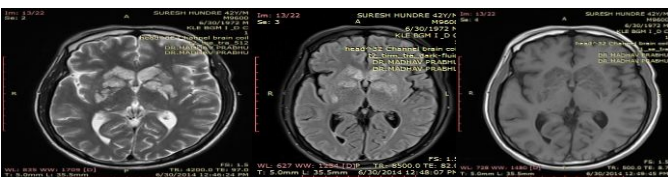
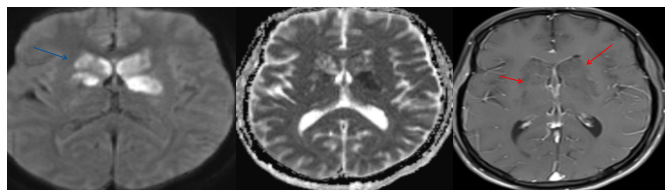
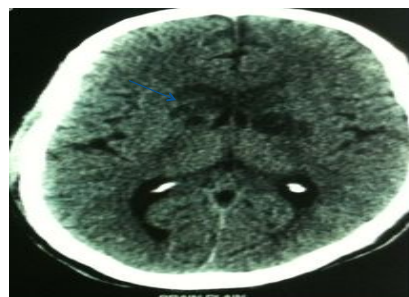
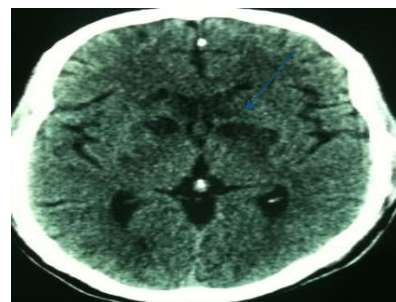
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Case:

Case 1: A 42 year male, known case of HIV came with complaints of headache & aphasia,

CD4 count is 4.0

MRI brain plain & contrast was done.

Fig1) T2, FLAIR and T1 axial images show pseudocysts (arrows) in the region of basal ganglia**Fig.2) DWI,ADC, Contrast T1 axial images show few areas of restriction (blue arrows) and lack of enhancement of the cystic areas on contrast study in the region of basal ganglia(red arrows)****Fig.3) CT axial cuts reveal hypodense cystic areas in the region of basal ganglia on both sides(arrows)****DIAGNOSIS: CRYPTOCOCCOSIS*** Corresponding Author : **Dr. Nihaal Reddy,**

Case 2: A 35 years old male patient came with complaints of the headache, mental confusion, seizures. MRI (Plain & contrast) was done. Patient is a known case of immunocompromised state since past 3 years with irregular ART therapy

Fig.1) FLAIR,T1 and T2 axial images reveal bilateral basal ganglia lesions(arrows)

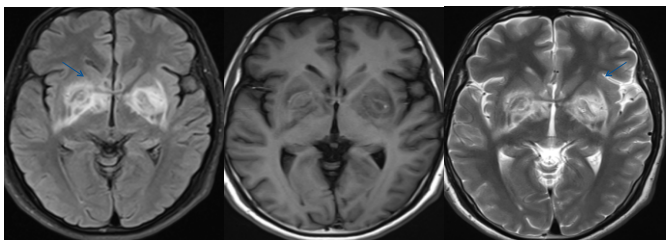
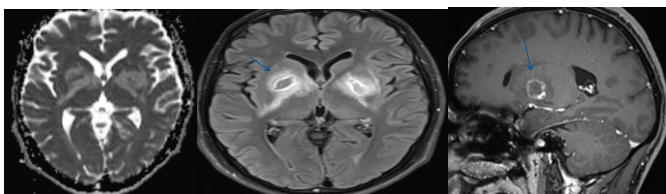


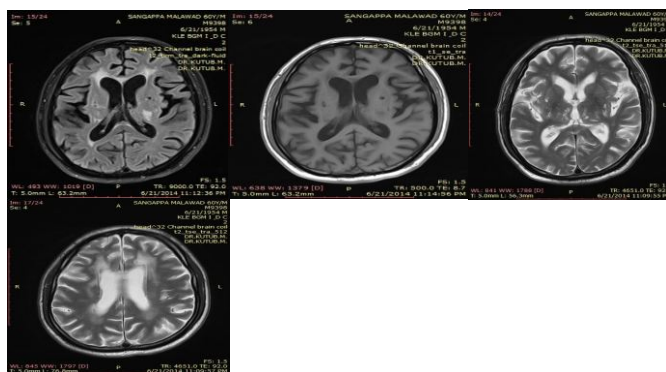
Fig.2) ADC and T1 post contrast axial and sagittal images revealing ring enhancing lesions(arrows)



Case 3: A 60 years HIV male patient came with complaints of severe imbalance while walking, memory disturbance since 2 years. He had history of urinary incontinence and behavioral changes since last one month.

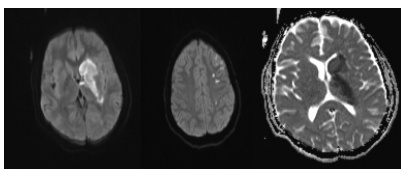
He is known case of immunocompromised state since last 5 years on ART therapy. He had history of pulmonary Koch's 15 years back and received treatment for the same. He is known case of hypertension and diabetes on irregular treatment.

DIAGNOSIS: HYPERTENSIVE ISCHEMIC CHANGES AND GENERALIZED ATROPHY



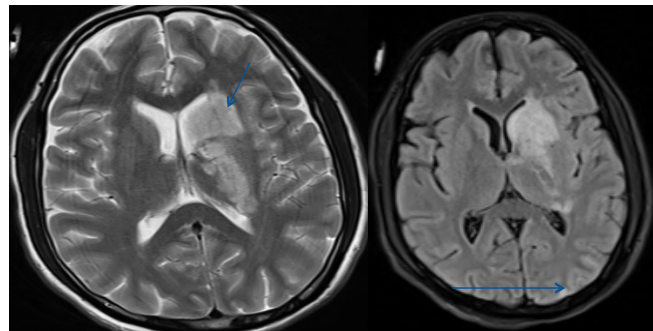
Case 4: A 27 yr. old male patient presented with slurred speech, right sided weakness since 2 days. He is known case of retroviral disease since 3 years, started on ART- 2 months back and stopped now. He was diagnosed to have pulmonary Koch's 20 days back and was started on ATT.

Fig.1) DWI and ADC axial images show subacute infarcts in the basal ganglia and frontal regions

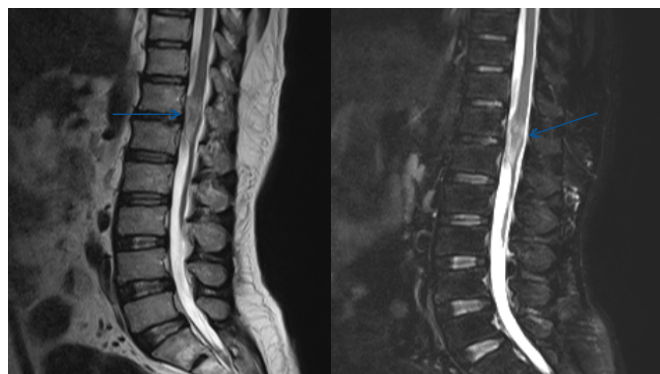


DIAGNOSIS: TB ARTERITIS WITH MENINGITIS

Fig.2) T2 and FLAIR axial images shows Hyperintense areas in right basal ganglia and Along the temporo-parietal subarachnoid spaces (arrows)

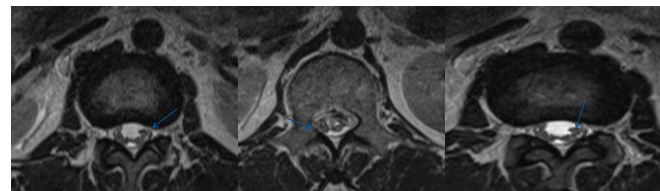


Case 5: 60 yr old male HIV positive patient presented with complaints of severe shooting pain in the right upper and a lower limbs legs. He is known case of neurogenic bladder and retroviral disease. MRI spine was done



DIAGNOSIS-SPINAL ARACHNOIDITIS

T2 & STIR sagittal images demonstrate abnormal signal intensities at L1-L2 level (arrows) T2 axial images shows clumping of nerve roots with adherence of nerve roots (arrows) to the dural sac, resulting in an empty thecal sac.



Case 6: A 50 yrs male HIV patient came with complaints of the altered sensorium, headache and lethargy since 8 days. MRI plain & contrast was done.

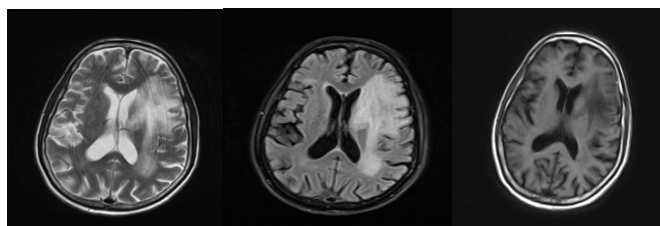
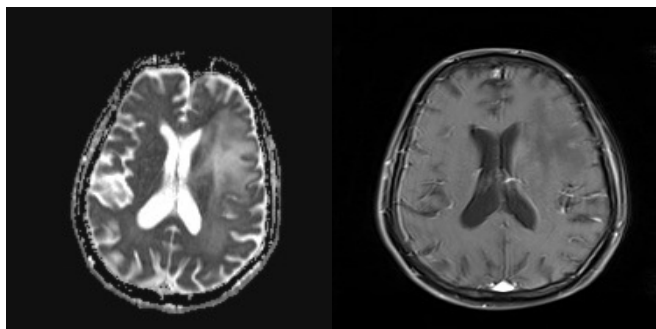


Fig.1) T2 , FLAIR and T1 axial images show edema in the right basal ganglia and fronto-parietal white matter extending up to the subcortical regions

Fig.2) ADC and T1 contrast axial images shows hyperintense areas and lack of enhancement of contrast images



DIAGNOSIS: PROGRESSIVE MULTIFOCAL LEUKOENCEPHALOPATHY

Case 7: A 47 year old male patient with severe imbalance while walking with memory Disturbance since last 2 years. He is known case of immunocompromised state , on ART therapy since past 5 years.

DIAGNOSIS- HIV ENCEPHALOPATHY

Fig.1) T2 and FLAIR axial images shows symmetrical supratentorial hyperintensities

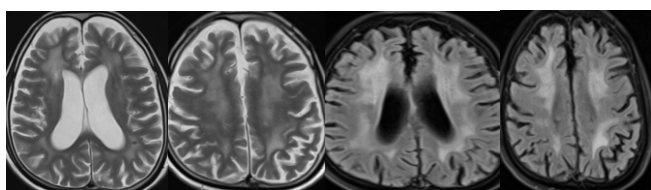
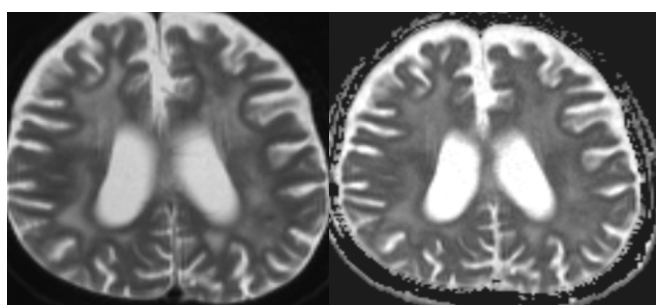


Fig.2) DWI and ADC shows diffuse symmetrical hyperintense areas in the fronto-parietal white matter.



Discussion:

It has been more than 30 years since a new syndrome associated with profound suppression of cell mediated immunity was first identified. The causative agent a retrovirus was given the appropriate name of human immunodeficiency virus and the syndrome it caused was named acquired immunodeficiency syndrome.

An increasing number of patients are presenting with neuroimaging manifestations of this syndrome. New imaging techniques have helped in diagnosis complications affecting the central nervous system.

Based on the CD4 cell counts they present as various diseases which have characteristic imaging findings. Few of the common found presentations are HIV encephalitis, vasculopathies,

lymphoepithelial lesions, opportunistic infections such as toxoplasmosis, cryptococcosis, PML, TB, Immune reconstitution inflammatory syndromes, lymphomas and Kaposi sarcomas among others.

HIV is a neurovirulent infection that has both direct and indirect effects on the CNS.

Neurologic complications can arise from the HIV infection itself, from opportunistic infections or neoplasms, and from treatment-related metabolic derangements.

We explore the many varied faces of HIV/AIDS as it affects the central nervous system, including direct manifestations of the virus and various opportunistic infections associated with the disease.

References

- 1 Becker JT et al: Factors affecting brain structure in men with HIV disease in the post- HAART era. *Neuroradiology*. 54(2):113-21, 2012
- 2 Valcour V et al: Central nervous system viral invasion and inflammation during acute HIV infection. *J Infect Dis*. 206(2):275-282, 2012
- 3 Gutierrez J et al: HIV/AIDS patients with HIV vasculopathy and VZV vasculitis: a case series. *Clin Neuroradiol*. 21(3):145-51, 2011
- 4 Robert-Gangneux F et al: Epidemiology of and diagnostic strategies for toxoplasmosis. *Clin Microbiol Rev*. 25(2):264-96, 2012
- 5 Piza F et al: JC virus-associated central nervous system diseases in HIV-infected patients in Brazil: clinical presentations, associated factors with mortality and outcome. *Braz J Infect Dis*. 16(2):153-6, 2012
- 6 Bag AK et al: JC virus infection of the brain. *AJNR Am J Neuroradiol*. 31(9):1564-76, 2010
- 7 Ferenczy MW et al: Molecular biology, epidemiology, and pathogenesis of progressive multifocal leukoencephalopathy, the JC virus-induced demyelinating disease of the human brain. *Clin Microbiol Rev*. 25(3):471-506, 2012
- 8 Tan IL et al: HIV-associated opportunistic infections of the CNS. *Lancet Neurol*. 11(7):605-17, 2012
- 9 Connor MD et al: Cerebral infarction in adult AIDS patients: observations from the Edinburgh HIV Autopsy Cohort. *Stroke*. 31(9):2117-26, 2000

19. Nyblom H, Berggren U, Balldin J, Olsson R (2004). High AST/ALT ratio may indicate advanced alcoholic liver disease rather than heavy drinking. *Alcohol Alcohol*. 39 (4): 336-9.
20. Nyblom H, Björnsson E, Simrén M, Aldenborg F, Almer S, Olsson R (September 2006). The AST/ALT ratio as an indicator of cirrhosis in patients with PBC. *Liver Int*. 26 (7): 840-5.
21. Gopal DV, Rosen HR (February 2000). Abnormal findings on liver function tests. Interpreting results to narrow the diagnosis and establish a prognosis. *Postgrad Med* 107 (2): 100-2, 105-9, 113-4.
22. Moussavian SN, Becker RC, Pipemeyer JL, Mezey E, Bozian RC. Serum gamma-glutamyl transpeptidase and chronic alcoholism. Influence of alcohol ingestion and liver disease. *Dig Dis Sci* 30 (3): 211-4. Mar 1985.
23. Robert L. S., *Clinical Reference Laboratory*, 1999
24. Han N, Htoo H K , Aung H , *Int. Jr. Diabetes Res*. 2012, 1(3): 36-41
25. Daniel P K. Isselbacher K J In *Harrison's Principles of Internal Medicine*, New York: McGraw-Hill, 1998, pp. 1704-1710.
26. Pratt D s, Kaplan M , *Harrison's Principle of internal medicine*, 16th Edition, New York, NY: McGraw Hill Medical 2005:p 1813
27. DE Ritis F, Giusti G, Piccinino F, Cacciatore L , , *Bulletin WHO* ,1965, 32,59-72
28. Nyblom H, Bjornson E, Simrén M, Aldenborg F, Almer S, Olsson R, , *Liver International*, 2006,26, 7, 840-845
29. Paul L W, *Indian J. Clinical Biochemistry*, (1999), 14 (1), 59-90
30. Nyblom. H, Berggren U, Balldin J, Olsson R, *alcohol & alcoholism vol.*,2004,39,(4), pp.336-339