

Psychiatric Aspects of HIV/AIDS

An essay submitted for Partial Fulfillment of the Master
Degree in Neuropsychiatry

By

Osama Mahmoud Abd-ElMoez Ali

M.B., B.CH. (2004)

Supervised by

Professor / Hisham Ahmed Ramy

Professor of Neuropsychiatry
Faculty of Medicine - Ain Shams University

Doctor / Mohamed Fekry Abd-El Aziz

Assistant Professor of Neuropsychiatry
Faculty of Medicine - Ain Shams University

Doctor / Marwa Abd-El Meguid Hamed

Assistant Professor of Neuropsychiatry
Faculty of Medicine – Ain Shams University

Ain Shams University

Faculty of Medicine

2011

الجوانب النفسية لفيروس نقص المناعة البشرية / الإيدز

رسالة توطئه للحصول على درجة الماجستير فى الأمراض النفسية والعصبية

مقدمه من
الطبيب / أسامة محمود عبدالمعز على

تحت اشراف
الأستاذ الدكتور / هشام أحمد رامى
أستاذ الأمراض النفسية والعصبية
كلية الطب - جامعة عين شمس

الدكتور / محمد فكرى عبدالعزيز
أستاذ مساعد الأمراض النفسية والعصبية
كلية الطب - جامعة عين شمس

الدكتورة / مروى عبدالمجيد حامد
أستاذ مساعد الأمراض النفسية والعصبية
كلية الطب - جامعة عين شمس

جامعة عين شمس

كلية الطب

٢٠١١

Summary

HIV/AIDS is a global health problem. In the last 3 decades it has claimed nearly 30 million lives. About 60 million people are now living with HIV/AIDS.

Human Immunodeficiency Virus (HIV) depends on the CD4 cell for its replication and survival.

Patient with HIV means: infected with HIV but with intact immunity which measured by the number of cells known as Cluster of Differentiation 4 (CD4), normally 1000-1500 cells/mm³. When the CD4 cell count eventually decreases below 200 cells/mm³, a landmark value. At this point, AIDS is defined on a laboratory basis, regardless of whether there has been any evidence of clinical disease progression.

Transmission of HIV-1 infection may be accomplished by high-risk sexual behaviors, injection substance use, giving birth (vertical transmission), breast feeding, and other means of blood or mucocutaneous tissue exposure to HIV-1-infected body fluids.

Assessment of cognitive functioning in individuals with HIV disease is an important aspect of the diagnostic and treatment process. It may assist the clinician in choosing appropriate psychotherapeutic interventions, as well as providing systematic assessment of change over time.

Mood disorders are the most frequent psychiatric condition associated with HIV disease and AIDS. Mood disorders, including depression and mania, may be secondary to both HIV disease and AIDS complications and the treatment of such illnesses.

Acknowledgement

First and foremost, I feel always indebted to **Allah**, the most gracious and the most merciful, to whom I owe my self, existence and life.

I am deeply grateful for the support and constructive guidance of many people whose assistance made this study possible.

Words are not enough to express my deepest thanks and gratitude to **Professor Dr. Hisham Ahmed Ramy**, professor of psychiatry, Faculty of Medicine, Ain Shams University, who helped me a lot by continuous guidance and encouragement. He had the idea of this work and I owe him choosing me to do it, and also for his support and guidance for me.

I am greatly indebted to **Dr. Mohamed Fekry Abd-El Aziz**, Assistant Professor of psychiatry, Faculty of Medicine, Ain Shams University, who gave me valuable directions throughout the work. I was honored that he accepted the supervision of this work.

I would like to thank ***Dr. Marwa Abd-El Meguid Hamed***, Assistant Professor of psychiatry, Faculty of Medicine, Ain Shams University, for her meticulous supervision and support.

I would like to express my sincere gratitude to ***Dr. Mohamed Nasr Alden***, Assistant professor of psychiatry, Faculty of medicine, Cairo University, for accepting to discuss this review.

Also, I will never forget to express my deep thanks to ***Dr. Menan Abd-El maksod***, Assistant professor of psychiatry, Faculty of medicine, Ain Shams University for her acceptance to discuss this review.

I would like to thank all my colleagues for their real support and help.

Finally, I would like to extend my thanks to my great family my parents, brother, sister my wife & kid for their great love and support.

Osama Mahmoud Abd-ElMoez

Contents

• List of Figures	I
• List of Tables	II
• List of Abbreviations.....	III
• Introduction	1
• Aim of The Work	3
• Review of Literature:	
I - Background:	
Chapter 1: Virology, Immunology	4
Transmission and Disease Stage	11
Epidemiology	18
II - Psychiatric Comorbidity	
Chapter 2: Cognitive Disorders in HIV/AIDS	24
Chapter 3: Substance Abuse Comorbidity in HIV/AIDS	60
Chapter 4: Mood disorders in HIV/AIDS	74
Chapter 5: Psychotic Disorders in HIV/AIDS	93
• Discussion	100
• Summary & Conclusion	111
• Recommendations	116
• Appendixes (1)	117
• (2)	121
• References	125
• الملخص العربي	

List of Figures

Figure NO.	Title	Page
1.1	HIV virus	5
1.2	HIV time course	7
1.3	The most common methods of transmission of HIV	11
1.4	Typical course of HIV Infection	14
3.1	Proposed decision-tree for diagnosing HIV-associated Neurocognitive Disorders	29
	فيروس الإيدز	الملخص العربي

List of Tables

Table NO.	Title	Page
(2-1)	Criteria for Clinical Diagnosis of Mild Neurocognitive Disorder (MND)	32
(2-2)	Criteria for Clinical Diagnosis of HIV-Associated Dementia (HAD)	34
(2-3)	NIMH Neuropsychological Battery	59
(3-1)	Most frequently abused substances and their relationship with HIV infection	63
(3-2)	Stages of Change	72
(4-1)	Crisis points For HIV-infected persons	77
(4-2)	Differential diagnosis of depression in HIV infection	79
(4-3)	Differential diagnosis of mania in HIV infection	88

List of Abbreviations

AAN	American Academy of Neurology
ADLs	activities of daily living
ADC	AIDS dementia complex
AIDS	Acquired Immuno-Deficiency Syndrom
ANI	Asymptomatic Neurocognitive Impairment
cART	Combination Anti-Retroviral Therapy
CD4	Cluster of Differentiation 4
CIT	Cognitive Intervention Trial
CMV	Cytomegalovirus
CPE	CNS penetration effectiveness
CTL	Cytotoxic T Lymphocyte
DNA	DeoxyriboNucleic Acid
ELISA	Enzyme-Linked Immunosorbent Assay
FSW	Female Sex Worker
GDS	Global Deficit Score
gp	Glycoprotein
HAART	Highly Active Antiretroviral Therapy

List of Abbreviations

HAD	HIV Associated Dementia
HIV	Human ImmunoDeficiency Virus
IADL	Instrumental Activities of Daily Living
IDUs	Injection Drug Users
IL	InterLeukin
kD	KiloDaltons
MAC	Mycobacterium Avium Complex
MARPs	Most-at-Risk Populations
MCMD	Minor Cognitive Motor Disorder
MCP	Monocyte Chemoattractant Protein
MIP	Macrophage Inflammatory Protein
MMPs	Matrix MetalloProteinases
MSM	Men who have Sex with Men
MS-Reg-CS	mean scaled score regression-based change score
NP	neuropsychological
PCP	Pneumocystis Carinii Pneumonia
PI	Protease Inhibitors
RNA	RiboNucleic Acid
RT	Reverse Transcriptase

Introduction

HIV/AIDS is a global health problem. In the last 3 decades it has claimed nearly 30 million lives. About 60 million people are now living with HIV/AIDS. A significant number of HIV infected people develop mental health problems, which not only impinge on their quality of life but also often adversely impact on their HIV/AIDS treatment, especially compliance with treatment regimens (*Akena et al., 2010*).

Although, Advances in the treatment of the human immunodeficiency virus (HIV) since the introduction in 1996 of combination antiretroviral therapies (cART), have dramatically improved survival rates over the past 10 years, but HIV-associated neurocognitive disorders (HAND) remain highly prevalent and continue to represent a significant public health problem (*Grant et al., 2005*).

Major depressive disorder (MDD) is more prevalent among HIV-infected individuals than in the general population, with estimated prevalence rates varying widely from 2% to 30%, or even up to 50% of the HIV-positive patients (*Judd et al., 2005*).

Patients with HIV are 2-7 times more likely to meet diagnostic criteria for current MDD than individuals in the general population (*Hinkin et al., 2001*).

Also, mania is seen in heightened rates among individuals with HIV/AIDS, especially with the progression of HIV infection. Mania in a patient with HIV/AIDS may occur as part of a coexisting bipolar disorder, or it may be secondary to the effects of HIV infection on the CNS, treatments for HIV infection, or HIV-related secondary infections of the brain (*Nakimuli-Mpungu et al., 2006*).

Even though, it has been shown that the HIV infection per se may be associated with psychotic symptoms. Studies have showed that new-onset psychosis in HIV positive patients occurred in 0.2% to 15% of the patients, with the highest incidence reported among patients in later stages of HIV disease and with HIV-associated dementia (HAD) suggesting that psychosis may be a direct effect of HIV infection on the CNS (*de Ronchi et al., 2001*).

Cognition is badly affected by HIV infection. But initiation of combination of antiretroviral therapies lead to cognitive improvement and decreased incidence of HIV-associated neurocognitive disorders (*Brodt et al., 1997; Sacktor et al., 2001; Morgan et al., 2009*).

There is a high prevalence of substance abuse among HIV infected individuals (*Hinkin et al., 2001; Chander et al., 2006*).

Researchers evaluating the relationship between substance abuse and HIV outcomes have primarily focused on injection drug users, but also alcohol, marijuana, amphetamines, cocaine and hallucinogens are frequently associated with HIV (*Chander et al., 2006; Nath et al., 2008*).

On the other hand psychiatric disturbance may be a factor in the occurrence of HIV infection as hypomanic or manic behaviour, including increased sexual activity and drug use, is an additional risk factor for contracting and transmitting HIV (*Hinkin et al., 2001*).

Also, patients with schizophrenia are at increased risk for comorbid HIV infection because of an elevated likelihood of poor impulse control, impaired judgment, substance abuse and high-risk sexual behavior (*Dolder et al., 2004*).

Aim of the Work

To review:

- 1) Prevalence of psychiatric disorders in HIV patients and the Prevalence of HIV infection in psychiatric patients.
- 2) Clinical features of psychiatric symptoms and disorders in patients with HIV infection.
- 3) Psychopharmacological treatment of psychiatric disorders in HIV patients.

Virology, Immunology

Patient with HIV versus patient with AIDS:

Patient with HIV means: infected with Human Immunodeficiency Virus (HIV) but with intact immunity which measured by the number of cells known as Cluster of Differentiation 4 (CD4), normally 1000-1500 cells/mm³.

Patient with AIDS means: the CD4 cell count eventually decreases below 200 cells/mm³, a landmark value. At this point, AIDS is defined on a laboratory basis, regardless of whether there has been any evidence of clinical disease progression (*Center for Disease Control and Prevention, 1993*).

The Virus

Human immunodeficiency virus (HIV) is a retrovirus having a ribonucleic acid (RNA) core. The term retrovirus refers to the fact that these viruses reverse transcribe their RNA to deoxyribonucleic acid (DNA) during the replication process by using the enzyme reverse transcriptase (RT). This enzyme is a major target for anti-HIV (or antiretroviral) therapy. The predominant type of HIV worldwide is type 1 (HIV-1). Human immunodeficiency virus type 2 (HIV-2) has also been identified and likewise causes AIDS, though HIV-2 is not endemic in the United States. Originally, retroviruses were not thought to cause human disease. The HIV/AIDS epidemic has permanently changed that perception (*Mims et al., 2008*).

The glycoprotein coat of HIV-1, referred to as gp160 (molecular weight 160 kilodaltons [kD]) comprises two major proteins, the globular portion gp120 and the transmembrane portion gp41. gp120 is of great importance because it interacts with the primary target of HIV-1, the CD4⁺ T⁺-helper-