

SYMPTOMS, TRANSMISSION & TREATMENT OF AIDS: A REVIEW**Rajesh Kumar Sharma* and K.K. Jha**

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Corresponding Author*Rajesh Kumar Sharma**Teerthanker Mahaveer
College of Pharmacy, TMU,
Moradabad, U.P, India.**ABSTRACT**

Acquired immunodeficiency syndrome is caused by the human immunodeficiency virus also known as HIV. The infection caused by destruction of the cell mediated immune system. The HIV-virus enters in the body through the mucous membrane of vagina, rectum, urethra and possibly rare occasions from route of mouth and its damaged to the mucous membrane. Rarely all cases of sexually transmitted diseases have been caused by the vaginal or anal intercourse without a condom. The Antiretroviral treatment is more effective to increase the length and quality of life who infected from HIV virus and reduces the more chances to transmission of the virus.

KEYWORDS: AIDS, HIV, Antiretroviral treatment, CDC.**INTRODUCTION**

The human immunodeficiency syndrome is caused by the human immunodeficiency virus is the causative agent for the HIV- infections. It was identified in June 15th, 1981, when the center for disease control is known as CDC it reported five cases pneumocystis carinii pneumonia active in homosexual males, from three different Hospital in Los angeles, California in 1983. The HIV- virus isolated from the pasteur institute by the Luc Montagnier and his groups, and Dr. Robert Gallo of the united states published some work and confirm that the Acquired immunodeficiency syndrome is caused by the human immunodeficiency virus.^[1] and slowly its infection spread all part of the world. The infection reaching an epidemic level in some few years, in several countries, especially in sub- Saharan Africa. The first case of HIV- infection seen in Nigeria it was reported in 1986. The HIV- infection is identified in commercial workers in lagos and Enugu. Many cases of HIV-infection were occasionally found in maximum country in the world.^[2] Its growing steadily in Nigeria. Nigeria is the tenth largest country in the world. HIV- infection generalized in Nigeria with infection of HIV/ AIDS

primarily occurring through heterosexual transmission.^[3] Some part of the country are initially affected other country. But now still state or community is not totally free from HIV-infections. It affects the people from all ways of life. It infection affect both young and old. Over 42 million people suffering from HIV- infection. Maximum people are suffers from the HIV- infection in the world- wide.^[4] its increases cases due to the activity among single adolescents of both sexes. It decreases possibility infection through the poor contraceptive use.^[5] its generally affected youth between the ages of 20 to 29 are more affected. The rate of 5.77% this group of patients is a fair representation of the general population.^[6] It showed the prevalence rate of 8.2% pregnant woman attending antenatal clinic in the years 2005.^[7] but some people recorded high risk of HIV- infection among 210 patients attending specially encountered in different part of the world.^[8] In port Harcourt a study among intending couples reported rates of 20.8%.^[9] While infertile couples a prevalence rate is recorded 6.82% in 2002.^[10]

CAUSES OF AIDS

The Acquired immunodeficiency syndrome was first reported in United states of America.^[11] The maximum people are affected with HIV-infection called human immuno virus this virus causes AIDS its reported in 2006.^[12,13] These virus are highly active to disturb the immune system of the human beings. In this case the Anti-retroviral treatment is highly effective which can limit the progression of HIV- infections. Its allowing the HIV- infected persons remain healthy and greatly reducing the chances of death from AIDS. In the world- wide 95% cases of HIV-infections now occurs in 2007.^[14] According to study there 33.2 million people are affected with HIV/AIDS and estimated 2.1 million persons are died from HIV-infection.^[15] The Acquired immunodeficiency syndrome is a fatal disease which damaged the immune system that decrease the ability to fight for disease. and its cause other infection in the body like cancers. AIDS stand for Acquired immunodeficiency syndrome it's caused by the human immune virus also known as HIV. This virus infected all types of white blood cells and damage them. Mainly effect CD4 cells also called helper T-cells and monocytes and macrophages. The CD4 cells and macrophases are play a important function in the immune system. The HIV virus also affected and damaged another types of cells i.e. damaged lining of the intestine and sever weight loss, damaged nerve cells and cause neurological disorder.^[16,17]

According to the American Foundation for AIDS research a few of the argument and the scientific refutations are follow: Not every person infected with HIV- develops the symptoms of the AIDS.^[18]

ROUT OF TRANSMISSION

- Through the infected blood.
- Through semen.
- By injection of infected blood or blood products.
- Transmitted from infected mother to fetus. Etc.

The HIV- virus enters in the body through the mucous membrane of vagina, rectum, urethra and possibly rare occasions from rout of mouth and its damaged to the mucous membrane. Rarely all cases of sexually transmitted diseases have been caused by the vaginal or anal intercourse without a condom. The HIV- virus has been consistently isolated from concentration from blood vaginal and cervical secretion and from semen and also breast milk and it has been occasionally isolated from saliva and tears.^[19,20,21] Two studies have been proving that it isolated from pre- ejaculatory fluid. One research its implicates only transmission of HIV virus through the semen, vaginal, and breast milk or cervical secretions.^[22,23] The HIV- infection is spread through the contact with semen, blood or vaginal cervical secretions.^[24]

Injection of infected blood

The human immuno virus is mainly transmitted by the infected blood and also it transmitted by directly into the blood circulation through the intravenous, intramuscular and or subcutaneous route, blood to blood transmission occurs into the following ways:-

- Use contaminated needles and syringes.
- Transfusion of contaminated blood and blood products.
- Use unsterile syringes one to another.
- Transfusion of blood one to another recipients and donor.
- Extremely small risk of becoming infected with HIV from a single transfusion is less than one in two million.^[25]

HIV- infection not transmission by casual contacts

According to the National Academy of science the HIV infection does not transmitted by the casual contacts. The personal hygiene that currently prevails is more than adequate

preventing transmission of Human immuno virus. Transmission of HIV- virus will not occur when the relatively intercourse with one to another.^[26] The transmission of HIV- infection never been implicated by urine, tears.^[27] AIDS is a blood borne sexually transmission disease that does not spread by the casual contexts.^[28]

SIGNS AND SYMPTOMS

The symptoms of AIDS is caused by the deterioration or damaged of the immune system and the decline of CD4+ T-cells.^[29] which are the also act like key of infection fighter.^[30] When the HIV- virus enters the body its immediately destroy these cells.^[31] The people who infected with HIV/AIDS have weakened the immune system, and they are more chances to infected other disease called opportunistic infections.^[32] The opportunistic infection are caused by the organisms that typically do not caused any type of disease.^[33] But it affect people with damaged immune systems.^[34] These organisms attack another tissues and cells and damaged them and caused opportunistic infections. The deterioration of the immune system is caused by the decline in CD4 cells which are most function in the body to fight from any types of infections.^[35] These cells are very important for the human body to destroy the infection from the body.^[36]

Some common symptoms are

- Diarrhea that for more than a week.
- Dry cough.
- Memory loss, neurological disorder and depression.
- Pneumonia
- Rapid weight loss.
- Fever and night sweats.
- Red, brown, pink or purplish blotches under the skin or inside the mouth, nose and eyelids.
- White spots and unusual blemishes on the tongue in the mouth and throat.

Some other symptoms of opportunistic infections common with AIDS include

- Fever.
- Headache.
- Coma.
- Painful swallowing.

- Shortness of breath.
- Vision loss.
- Weight loss.
- Fatigue
- Night sweats.

The Pathophysiology of HIV- infection

The Acquired immunodeficiency syndrome is due to the infection by the human immunodeficiency virus.^[37] The infection caused by destruction of the cell mediated immune system. Primarily by the eliminating CD4 T- cells HIV virus also directly damaged other organs of the body like the brain white matter.

Overview Pathology

In HIV- infection the pathological spectrum is changing as the infection spreads into one community to another community with different potential opportunistic diseases, and it's possible with the medical science devices and drug against HIV replication.^[38]

There have been four clinic pathological phases of AIDS and now fifth phase is operating:-

- The patients who suffering from opportunistic disease such as pneumonia.
- From HIV- infection the wider population becomes infected
- The HIV- infected patients use prophylactic chemotherapy against opportunistic infections.
- Immunosuppression by new anti- retroviral therapies
- Its toxic effect when prolonged antiretroviral therapy is used.^[39]

Some opportunistic disease in AIDS

The main opportunistic disease associated in AIDS:

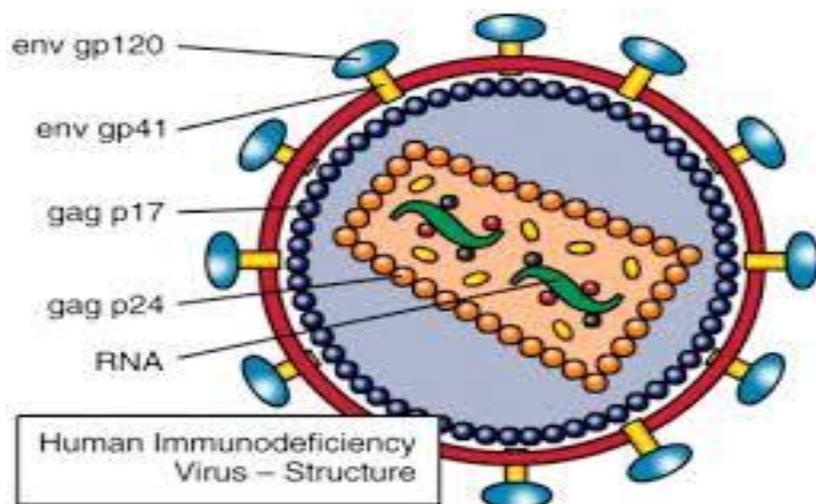
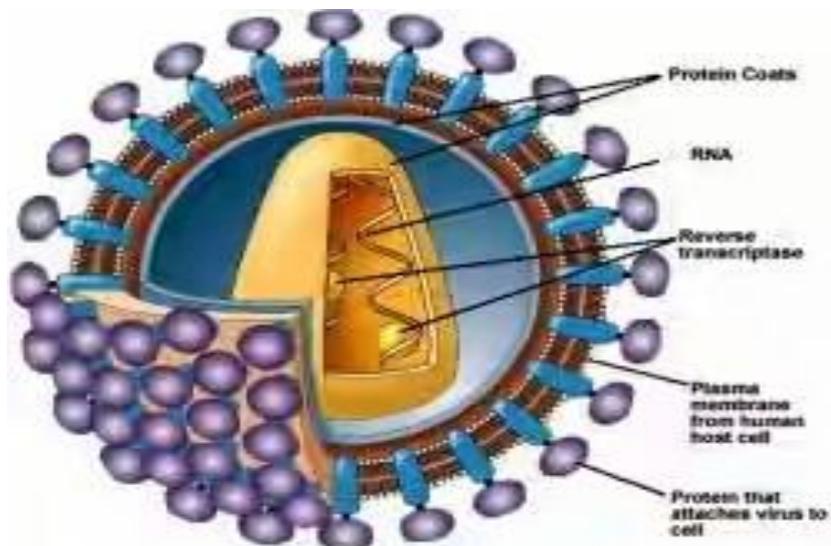
- **Cardiomyopathy**
Pulmonary hypertension
Vasculitis
HIV- associated neuropathy
Oral and esophageal ulcers.

- **Hodgkin's disease**

Lympho proliferative disease.

HIV wasting syndrome, fever, weight loss, diarrhea etc.

Structure of HIV- virus



Treatment of AIDS infection

AIDS is a chronic fatal disease but till now no exact cure of this sexual transmitted disease.

The patients who living with HIV- infection have followed medically for the rest of their life.^[40] In HIV infection the more effective and care of patients by the antiretroviral treatment is also known as ART. The Antiretroviral treatment is more effective to increase the length and quality of life who infected from HIV virus and reduces the more chances to transmission of the virus. From WHO its promotes the Antiretroviral therapy.^[41] which provide the rational

selection of antiretroviral therapy and different classes of drugs for HIV infected patients and simplified and standardized clinical management. And keeping record to preserve. The therapeutic option is better to minimize drug toxicity and side effects.^[42]

The goal of Antiretroviral therapy

- **Epidemiological:** Prevention of HIV- transmission.
- **Virological:** Possibility of maximum reduction of the viral infection and longest possible time.
- **Immunological:** in order to prevent qualitative and quantitative immunological reconstitution.
- **Clinical:** its main goal improvement of quality and prolongation of life.

Management of HIV- infected patients

The patients who living with HIV infection it should be important to proper management of the patients to lifelong process. The process focused on the patient's need. It should include:-

- HIV- testing and record the confirmation of the result.
- Proper counseling during the time of process the identifying the HIV- infection.
- Patient counseling.
- Time to time monitoring patient's health.
- Clinical evaluation.
- Treatment of other opportunistic infection.
- Psychological support.
- It's very necessary to continuity of patient care.

Patient's evaluation

- If possible to check the confirmation of HIV infection and with potential time of infection.
- Personal information and family medical history.
- Physical examination.
- Laboratory testing and other examination.
- Clinical and immunological status etc.

Personal and family medical history

The patient who infected from HIV- infection. Its very important before diagnosed and treatment to take complete history before physical examination.^[43]

Counseling and issuing related to HIV- infected patients

The patients counselling is very important or essential process of the patients management to cure the patient health. It should be start with assessment and discussion of the patient's social conditions. This is very helpful during the process of treatment of the patients. These include as follows:-

- Partnership status and quality.
- To knowing his employment status, condition and type of work.
- Discuss the patient health- related matters
- Family relationship.
- Safe storage of medication.
- Life style that interfere with treatment etc.^[44]

Drugs used in the treatment of HIV- infection**Antiretroviral treatment**

The treatment of HIV- infection. the best point to start antiretroviral therapy.^[45]

The main anti- retroviral drugs are

- Nucleosides reverse transcriptase.
- Protease transcriptase.
- Fusion inhibitors.
- CCR5 antagonists also called entry inhibitors.
- Integrate strand transfer inhibitors.

According to FDA the six drug classes include more than 25 HIV medicines that are approved treat the HIV-infections. Some HIV drugs are available in combination form.

Some drugs are approved by the FDA for treating the HIV- infection**Nucleoside reverse transcriptase inhibitors**

- Abacavir (ziagen).
- Didanosine(Videx dideoxyinosine).
- Emtricitabine(Emtriva).

- Lamivudine(Epivir).
- Stavudine(Zerit).
- Zalcitabine(Hivid).
- Zidovudine(Retrovir).

Protease inhibitors

- Amprenavir
- Atazanavir
- Fosamprenavir.
- Indinavir.
- Ritonavir.

Non- nucleoside reverse transcriptase inhibitors

- Delvaridine(Descriptor)
- Efavirenz(Sustiva)

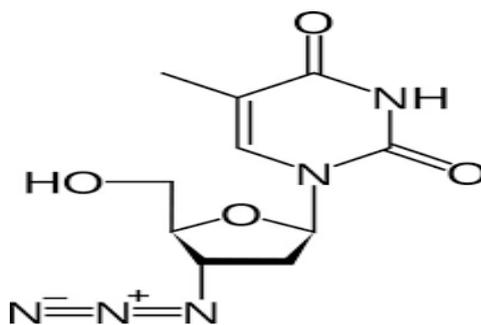
Machanism of action zidovudine drugs

Zidovudine is one the best antiretroviral agents used in the treatment of HIV- infection (HIV-1) infection. These drugs are generally well- tolerated agent has been stay for the prevention and treatment of HIV-1 transmission. This antiretroviral agents are more suitable for the both adults and pediatric HIV1 infected patients.^[46]

Structure and derivations

Zidovudine 3'- azido- 3'- deoxythymidine is a synthetic nucleosides analogue of the naturally occurring nucleoside, thymidine in which the 3'- hydroxy(-OH) group is replaced by an azido(-N).^[47]

STRUCTURE OF ZIDOVUDINE



Prevention from HIV/AIDS

There are no vaccine to prevent the HIV- infection and no any exact care cure of AIDS, But it is possible to protect yourself and other from infections, means educating yourself and others about HIV- infection and avoiding any types of HIV- infected fluids i.e.- blood, semen, vaginal secretion and breast milk into your body.^[48]

- **Avoid Needle sharing**

The high risk of HIV infection is possible when the one needles share one to another.

- **Cleaning needles**

The continue injected of drugs or fluids one to another its very important that do not share IV drug equipments. If new patient firstly sterile them properly then use.

- **Use of condom for every episode of intercourse**

It's very necessary to protect yourself from transmission of HIV infection. So that according to the WHO guidelines use condom for every intercourse.

- **Understanding sexual transmission disease**

The human immune virus can occur when the infected fluid comes in contact with mucous membrane through the Vagina, rectum, urethra, and mouth.^[49] So educating and understanding the S.T.D. to decreases to possibility spread of HIV- infections.^[50]

DIAGNOSIS

The HIV diagnosis is commonly made with serological assays to detect HIV specific antibodies or by nucleic acid Amplification test to detect the HIV nucleic acids.

Serological Test

- Enzyme linked immunosobent assays(ELISA).
- Western blots (is the common test to detecting HIV).
- Florescent assays and line immuno assays are also available.

The diagnosis of HIV through the several types of testing

- **Antibody test:** Blood, oral fluids or urine **westorn** blot test to confirm a positive result.
- **Antigen test:** Blood test(1-3 weeks after infection).
- **PCR Test:** Blood test.
- Control amount of virus in the body and protects the immune system.

CONCLUSION

Acquired immune deficiency syndrome (AIDS) is a serious disease, HIV is the main causative agents for AIDS. It is the worldwide problem. It is necessary to educate the human population all over the world so that it can be prevented. There is no complete cure for this disease, however we can prolong the life of HIV infected patients with the use of some antiretroviral agents. AIDS is not spread through topical contacts so awareness is necessary for this disease.

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