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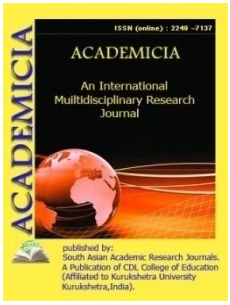

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A BRIEF STUDY ON AIDS/HIV

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ABSTRACT

HIV/AIDS has long been one of the world's most widespread illnesses. HIV infection and AIDS are caused by the human immunodeficiency virus (HIV), which is a lent virus. AIDS is a human disease in which the immune system gradually fails, allowing life-threatening infections and malignancies to flourish. HIV infection is spread via the transmission of blood, sperm, vaginal fluid, and breast milk. HIV is found in various body fluids as free virus particles as well as virus inside infected immune cells. HIV infects important immune cells such as helper CD4 T cells and macrophages. Through a variety of processes, including pyroptosis of infected T cells, HIV infection causes low numbers of T cells. The symptoms of AIDS are mainly caused by diseases that do not occur in people who have a sound immune system. The majority of these infections are caused by bacteria, viruses, fungi, and parasites that are usually regulated by immune system components that HIV destroys. When a couple with one infected partner uses condoms on a regular basis, the risk of HIV infection is less than 1% per year. Female condoms may offer an equal degree of protection, according to some research.

KEYWORDS: *AIDS, HIV, Symptoms, Transmission.*

INTRODUCTION

AIDS is caused by the HIV virus. Our bodies normally have an immune system that fights viruses and germs. White blood cells in the immune system defend us against infections. CD4+ cells, commonly known as helper cells or T cells, are found in white blood cells. A person who has been infected has the ability to grow. The immune system of the body is exploited by these illnesses. These infections cause a variety of health issues and may even result in death. HIV is unable to defend against illness, and the number of CD4 cells in the body declines as a result. Although there is no cure for AIDS, there are medications that may help to delay the progression of the illness and keep you healthy for longer. Diseases can't be cured with medication[1], [2].

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HIV:

H-It infects only human beings and also transmitted between humans not from animals. It is not transmitted from bites of mosquitoes, bats or any other species.

I-Our bodies have an immune system that protects us from germs, infections, and other diseases. A person with HIV, on the other hand, is unable to fight illnesses. However, the immune system deteriorates.

V-Virus is a tiny, basic organism that is dormant outside of the human body and becomes active once inside.

AIDS:

A-It is not inherited, which means it cannot be passed down from generation to generation. It is spread from an infected person to a healthy one.

I-It causes the immune system to deteriorate.

D--Induces a CD4+ cell deficit in the immunological system.

S-It is a group of illnesses.

Structure of HIV:

Figure 1 shows the structure of HIV and its parts are stated below:

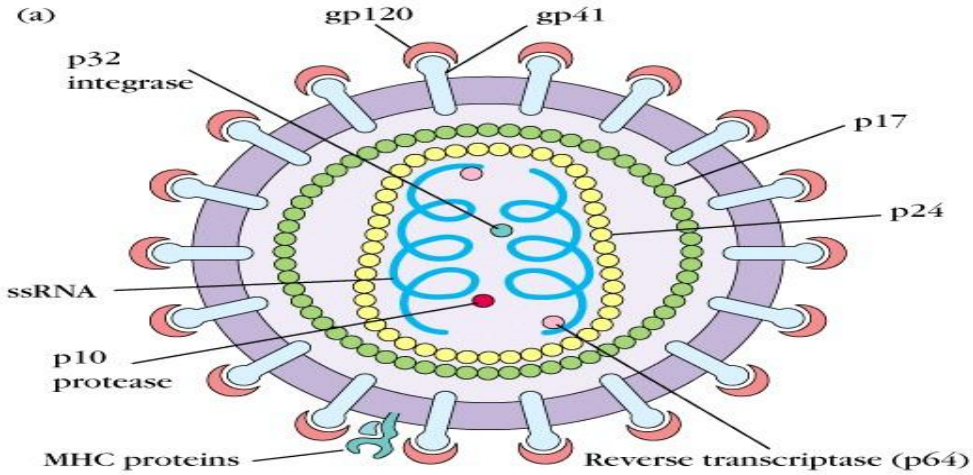

Figure 1: Illustrates the structure of HIV[4]

- *Gp120:*Gp120 gets its name from its molecular weight of 120. It is required for viral entrance into cells because it aids in the attachment of viruses to particular cell surface receptors.
- *GP41:*GP41 is a component of retroviruses' envelope protein complex, which includes the human immunodeficiency virus. It's a group of enveloped viruses that utilize reverse transcriptase to reproduce in their host cells. It goes after a host cell. Envelope of the viral it is the envelope that the virus adheres to.
- *P17:*Protein makes up the viral core. It's in the form of a bullet. Reverse transcription, integrase, and protease are three enzymes needed for HIV replication.
- *P24:*P24 is a part of the HIV capsid.
- *Protease:*Protease is a retroviral aspartyl protease that is required for HIV, the retrovirus that causes AIDS, to complete its life cycle. This enzyme cleaves freshly produced polyproteins at the proper sites to produce the natural protein components of the HIV virus.
- *Integrase:*Retrovirus-produced enzyme that allows the retrovirus' genetic material to be incorporated into the DNA of infected cells. RNA Long strands of DNA are used by all species, including most viruses, to store their genetic material. Retroviruses are unique in that their genes are made out of RNA.

Causes:

It is brought by through sexual intercourse between two people. HIV is a kind of virus. When a person contracts HIV, the virus weakens and destroys their body's defense mechanism (the immune system), rendering it incapable of fighting diseases. It is brought on by:

i. Sharing drug needles or syringes.

ii. Sexual encounter with someone who is HIV positive, whether it is vaginal, or oral.

iii. Other sexually transmitted illnesses including syphilis, herpes, and gonorrhea seem to enhance the risk of HIV infection during unprotected sexual contact with an HIV-positive partner.

iv. During pregnancy, delivery, and breastfeeding, an HIV-positive mother may infect her baby.

Transmission:

HIV is spread mostly via sexual contact, blood transfusions, blood products, and infected needles, and transmission from mother to child. Despite the fact that gay interaction is still a significant source of HIV in the United States, "heterosexual sexual transmission is the most important method of HIV transmission globally today." In industrialized nations, treatment of blood products and donor screening has virtually reduced the danger of HIV transmission via tainted blood products, but the virus continues to spread among intravenous drug users who share needles. Infected blood and contaminated needles continue to be major sources of infection in poor nations. Thirteen to thirty-five percent of HIV-positive pregnant women will pass the virus on to their kids; transmission happens both before and after delivery. Infected moms' breast milk has also been shown to have significant amounts of the virus[5], [6].

The fecal-oral route, aerosols, insects, or casual touch, such as sharing household goods or hugging, do not transmit HIV. Direct inoculation by needle sticks is the main source of danger for health care personnel. Although tiny amounts of the virus may be found in saliva, the virus cannot be transmitted via kissing. HIV may be transmitted from one infected individual to another in the following ways:

- Blood (including menstrual blood)
- Semen
- Vaginal secretions
- Breast milk.

Symptoms:

Many individuals living with HIV show no visible signs or symptoms at all. According to recent research, 70 percent to 90 percent of individuals infected with HIV have flu-like symptoms within a few weeks after infection. Fever, rash, and a severe sore throat are the most frequent symptoms, which all appear at the same time. These symptoms in a person who is otherwise healthy may suggest that they have just been infected with HIV. Patients with HIV may have yeast infections (oral or vaginal) that may not go away or recur often. Herpes infections, which may cause oral, vaginal, or anal sores, are also prevalent[7]–[10].

Infected individuals are more likely to get herpes zoster (shingles). Other pulmonary infections (pneumonia) or atypical mycobacterial infections may be life-threatening for your loved one. Pelvic inflammatory illness, which does not respond to therapy, may affect women. The virus may affect the neurological system (nerves, spinal cord, or brain) and cause a wide range of symptoms, including tingling in the feet and difficulty walking, as well as memory problems.

Diagnosis:

HIV is most frequently diagnosed by looking for antibodies to the virus in your blood or saliva. Unfortunately, your body needs time to produce these antibodies, which may take up to 12 weeks. A novel kind of test that looks for HIV antigen, a protein generated by the virus shortly

after infection, may help confirm a diagnosis fast. The tests for HIV AIDS diagnosis are as follows:

- *Test at home:*

A home test that has been authorized by the Food and Drug Administration. You swab fluid from your upper and lower gums to perform the test. If the test results are positive, you should visit your doctor to have the diagnosis confirmed. If the test is negative, the findings must be repeated three months later to be confirmed.

- *Treatment Tailoring Tests:*

If you are diagnosed with HIV/AIDS, you may undergo a variety of testing.

These tests include the following:

- *CD4 count:*CD4 cells are a kind of white blood cell that HIV targets and destroys.
- *Viral load:*This test determines how much virus is present in your blood. According to studies, individuals with greater viral loads had a worse prognosis than those with lower viral loads.
- *Drug resistance:*This blood test reveals if your HIV strain is resistant to particular anti-HIV medicines.

Treatment:

HIV is treated with antiretroviral medications. These are antiretroviral medicines that work against the human immunodeficiency virus (HIV). They can help you live longer and have a better quality of life. The following are the antiretroviral medication classifications:

- Zidovudine (AZT), Didanosine, Lamivudine, and Tenofovir are examples of nucleoside reverse transcriptase inhibitors (NRTIs).
- Nevirapine, Delavirdine, and Efavirenz are nonnucleoside reverse transcriptase inhibitors.
- Indinavir, Nelfinavir, Amprenavir, Lopinavir, and Atazanavir are all protease inhibitors.

*HAART:*It is an antiretroviral treatment with a high level of activity. HAART may also be used to treat HIV. It's a three-drug combo.

DISCUSSION

The human immunodeficiency virus (HIV) is a virus that affects the immune system of the body. AIDS may develop if HIV is not treated (acquired immunodeficiency syndrome). Knowing the fundamentals of HIV may help you stay healthy and prevent the spread of the virus. The human immunodeficiency virus causes HIV infection. HIV is acquired via contact with HIV-infected blood, sperm, or vaginal secretions. The majority of individuals acquire HIV by having unprotected intercourse with an HIV-positive person. Sharing drug needles with someone who is HIV-positive is another frequent method to acquire it. HIV cannot be eradicated by the human body, and there is no effective HIV treatment. As a result, if you have HIV, you will have it for the rest of your life. People with HIV, on the other hand, may live long and healthy lives while

preventing HIV transmission to their sexual partners by taking HIV medication (also known as antiretroviral therapy or ART).

CONCLUSION

Historically, HIV prevention efforts have mainly focused on creating risk reduction strategies for those who are at high risk of contracting the virus. Only 18 (32.7 percent) of 55 state and municipal submissions to the CDC for funding for HIV prevention programs identified HIV-infected people as a target group for HIV prevention initiatives, according to a 1999 study. Despite the fact that millions of individuals in the United States are at "behavioral risk" for HIV infection, the virus can only be transmitted between infected persons. As the number of people living with HIV continues to rise as a result of antiretroviral therapy (ART), so does the need for lifetime preventive measures tailored to them.

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