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ABSTRACT

AIDS-Acquired Immuno Deficiency Syndrome is a viral disease that is caused by HIV. Aids was first discovered in 1981 and HIV as a causative agent was discovered in 1983. HIV is a zoonotic disease that was transferred from non-human primates to humans, due to the trade of primates for meat, and keeping them as pets causes cross-species transmission of the Simian Immunodeficiency virus (SIV) in central and west Africa. Multiple transmission of the SIV virus has resulted in the human lineage of HIV. The high mutation rate in HIV viruses has created a global pandemic. In the present review, the origin of HIV and its transmission among several species is discussed.

Keywords HIV lineage, SIVczp, SIV, Tethering, West of Africa

INTRODUCTION

Due to technological changes in the world during the last 100, the rise of the population has caused unprecedented contact and global movement. Under these conditions, the transmission of an animal virus to a human host enables the rapid spread of a virus. Beyond the geographical range of its animal host, zoonotic transmission enables the rapid spread of infection to human hosts.

Zoonosis in SIV/HIV

During the capture, trade, hunting, and slaughtering of primates, cross-transmission occurred among them. Many species of primates have the Simian Immunodeficiency virus -SIV virus and there are almost an estimated 40 different species of primates that carry SIV infection and each species carry a specific virus for its species¹⁻⁴. Lineage in HIV

is caused by its independent zoonotic transmission

from non-humans to humans². Several types of HIV are differentiated into several groups. The major groups which are responsible for the spread of global in humans as HIV type 1 (HIV 1) groups M, N, O, and p and HIV type 2 (HIV 2) groups A and H. Almost 33 million people have been infected with HIV 1 group M and thousands, even lakhs of the individual have been infected by 2 group O in the African continent, the republic of Cameroon has originated multiple individuals who are infected by group N and group P.

It is plausible that further HIV lineages in humans will be discovered in the future, as not all HIV lineages may not have been discovered, and maybe new cross-species transmission will take place. The diversity of HIV started begun when SIVs were transmitted from nonhuman primates to humans. HIV is imperious to clarify how

transmission occurred and to find ways to prevent zoonotic transmission in the future.

HIV origination from *Pan troglodytes*' *troglodytes*

In Chimpanzees *Pan troglodytes*' *troglodytes* in the west of Africa SIVcpz originated HIV 1 groups M and N. SIVcpz virus in chimpanzee was made by recombination of SIVrcm virus in red-capped mangabeys and greater spotted nosed monkeys SIVgsn within chimpanzee³. Isolated wild-living *P. troglodytes* chimpanzee communities. In the southeastern and south-central area of the republic of Camron from natural reservoir gave rise to HIV groups M and N.

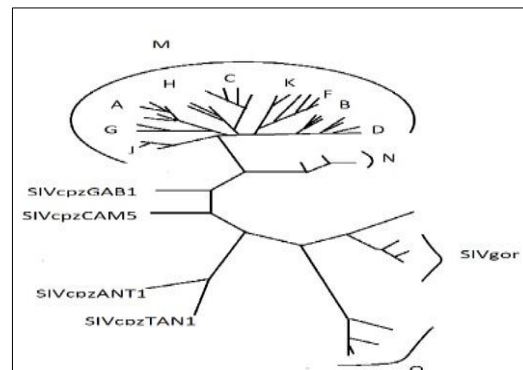


Fig.1 HIV lineage

Timing of transmission

One of the most recent ancestors of HIV is tMRCA. HIV was present in 1959 and 1960 and was referred to as the serum sample and a biopsy of lymph node specimens stored in Kinshasa in DRC⁵.

HIV-1 group M appears to be the oldest HIV in the human lineage, in the first few decades of the 1900s tMRCA was spread⁶. The tMRCA shared between group M and SIVcpz is estimated, cross-species transmission should have taken place between 1853 to 1900s. group O was estimated to originate between 1890 to 1940, and the radiation of group M was the same circa 1930.

Cross-species transmission of HIV-1 group N probably took place later in the 20th century as the tMRCA is estimated to be as recent as 1963⁵. The groups M and N were both derived from SIVcpzPtt in chimpanzees in Cameroon⁷.

Tethering, a cellular membrane protein, inhibits the release of HIV particles by tethering mature viral particles to the cell surface^{8,9}. Group M and N are derived from SIVcpzptt but differentiate from each other by reacting to the stimulus of tetherin¹⁰. Even though Nef proteins confer resistance to tethering in chimpanzees and gorillas, Nef is unable to do so in humans due to deletion in the cytoplasmic region of human tethering.

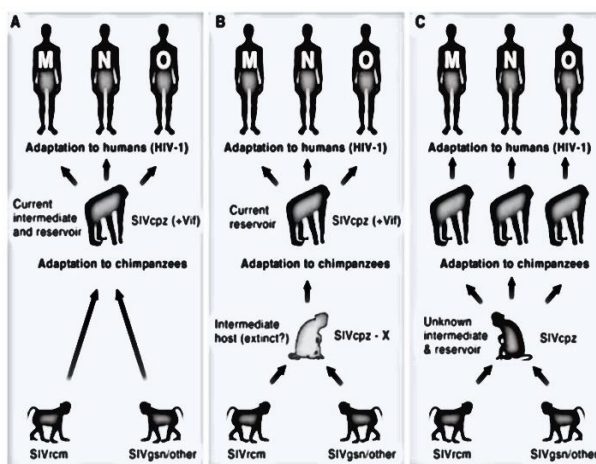


Fig. 2 Possible cross-species transmission

Evolution of HIV transmission

The mode of transmission differs from species to species in SIV¹¹. For example, in non-human primates' bites and wounds are the main pathway of transmission. In humans' sexual intercourse is the major current mode of transmission. Parental mode of transmission also played an important role in

the African pandemic. Also, the use of non-sterile needles developed the risk of transferring¹².

Genetic properties of the virus also determine the fast outspread of HIV-1. However, it is not clear although relative to another subtype. Subtype C is present amply in the vagina of infected women¹³. A certain subtype is more terminal than others in progression to AIDS, but it is not clear¹⁴. SIVs do not appear to cause AIDS in their African host but various species of Asian macaques develop AIDS when infected with a common non-pathogenic virus lentivirus of African sooty mangabeys^{15,16,17, 18}.

Conclusion

Hypothetically, HIV was spread at the start of 1900. But AIDS was not widespread until the year 1930. AIDS was frequent in the 1970s. the epidemic of HIV 1 group M exploded due to the end of colonial rule in Africa, the growth of large cities of Africa and their sexual

revolution, increase travel, and their vaccination program which causes deliberate reuse of needles. In roughly a period of 10 years, AIDS was reached in USA and Europe.

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