

Comparison of the HIV-Prevention Policy in Different Countries

Leyi Duan

Xi'an Tiewi High School, Xi'an City, Shaanxi Province, 710054, China
Corresponding author's e-mail: Vivian.wang@cas-harbour.org

ABSTRACT

Through a large number of literature review, summarized the current trend of AIDS and future research direction. AIDS is one of the most serious epidemics in the world. In this paper, the origin of AIDS and the pathogenesis of HIV, such as HIV-1 and HIV-2, are discussed in detail. The Enlightenment of Brazil's excellent AIDS prevention and control work for global control of HIV transmission is discussed in detail. Brazil's excellent and effective prevention policy can enlighten the global government, the government's attention and investment in AIDS, as well as the improvement of people's awareness are crucial to AIDS control.

Keywords: *HIV-prevention, mechanism of HIV Infection; comparative analysis, public prevention policy, comparison of Brazil, China and USA, cultural differences*

1. INTRODUCTION

AIDS is a very complex immune system epidemic in the world. AIDS patients are distributed in all ages and regions. Now the transmission speed of AIDS is still very high. In China alone, from 2011 to 2017, the growth rate of AIDS patients has reached as high as 178%. The global HIV infection rate is increasing, and even in some countries in southern Africa, the adult HIV infection rate has exceeded 15% [1]. At a time when more than 2.6 million people worldwide are infected with HIV each year, lakes and prevention of new infections are critical to growing the AIDS epidemic. Antiretroviral drugs do say that HIV has become a "chronic disease", but there is no complete treatment program, and even lead to the aging trend of HIV infected people. Such a serious infectious disease has attracted the attention of reporter [2].

Through this analysis, the transmission route and mechanism of HIV and related preventive measures will be explained in detail, and the future prevention and control measures will be proposed. Finally, through the case analysis of AIDS prevention and treatment in China, the United States and Brazil, the paper puts forward some Suggestions to control the spread of AIDS in the future.

2. HIV-1 AND HIV-2 ORIGIN AND MECHANISM

Acquired Immune Deficiency Syndrome (AIDS) was first discovered in 1981 [4]. HIV is a retrovirus that attacks the immune system of an infected person. Since the discovery of HIV-1 in early 2018, more than 79.1 million people have been infected, resulting in more than 25 million

deaths, particularly in southern African countries, where the adult infection rate is more than 15 percent. AIDS has become one of the most widespread and devastating infectious diseases.

Then, in 1986, researchers discovered a new virus with a very similar form but different antigenicity (HIV-2). In fact, the two similar viruses (HIV-1 and HIV-2) are not very closely related [4]. But it is closely related to immunodeficiency viruses in other primates. Later studies have shown that AIDS is a complex result of human and primate infections.

The pathogenicity of HIV-2 is lower than that of HIV-1, which is the biggest difference between the two HIV viruses in the pathogenesis of natural infection. However, in the long run, HIV-2 will eventually lead to HIV-1 like immunodeficiency syndrome [6].

After a large number of studies, researchers found that some patients can maintain stable CD4 + T cells for many years. This phenomenon is related to the pathology of immune activation in CD4 + T cells infected with HIV-1 and HIV-2. In the early stage of chronic infection, one of the main driving forces of immune activation is the destruction of gastrointestinal wall, which makes LPS enter the blood [6]. In HIV-1 infection, Nef can down regulate the expression of cd3-tcr complex on the surface of infected T cells. In contrast, in HIV-2 infection, Nef causes the down-regulation of T cells receptor complex in CD4 + T cells. Compared with HIV-1 infection group, the immune activation level of HIV-2 infection group was lower, so the number of T lymphocyte death in HIV-2 experimental group was less than that in HIV-1 infection group.

3. TRANSMISSION AND PREVENTION

The main transmission routes of HIV are heterosexual transmission, homosexual transmission, injection drug injection, mother to child transmission, previous blood transfusion and blood products transmission, and previous blood collection transmission.

3.1. Mother-to-child transmission and prevention

Now, some progress has been made in the prevention of mother to child transmission. For example, intervention measures for mothers and newborns can be increased. For example, several trials of combination therapy can be used to reduce transmission during less childbirth. It can also reduce the transmission of HIV-1, but it will increase the mortality rate of postpartum infection [7].

3.2. Sexual transmission and prevention

Controlling sexual transmission is the most important part of controlling the epidemic. Generally speaking, ABC is also the most effective and fundamental solution [7]. Specifically, ABC is abstinence, be faithful, and conform use. In addition, tests have shown that male circumcision is about 60% protective. Other medical interventions like this include prophylactic antiretroviral drugs (HSV-2), microbicides and vaccines [6].

Microbicides, as an external product, may prevent the transmission of HIV-1 in vagina and rectum. However, no direct evidence has been found for this situation, and the effect of microbicides has not been clearly expressed in many experiments at the end of last century. In the past twenty years, China has made significant contributions to it. Tenofovir gel has shown that it is promising in light side effects, ground absorbability and tolerance.

Vaccine is the safest, most cost-effective and effective treatment. Unfortunately, so far, the vaccine has been difficult to achieve. Due to the pathogenicity of the HIV virus, inactivated virus vaccines are banned. The researchers tried to use gene recombination, but the results were not satisfactory.

4. AIDS PREVENTION POLICY AND MEASURES IN DIFFERENT COUNTRIES

4.1. China

China began stepping up efforts to control the spread of AIDS in 2004. The policy of "Four Exemptions and one Care" was introduced. 1. Free antiviral drugs were provided to HIV/AIDS patients in rural areas and urban areas who did not participate in the BAI basic medical insurance and other security systems. 2. Provide free

counselling and preliminary screening tests to those who volunteer to undergo AIDS counselling and testing throughout the country; 3. To provide free mother-to-child blocking drugs and infant testing reagents for HIV-infected pregnant women; 4. Orphans of AIDS patients are exempted from school fees. "One care" means to bring AIDS patients in need into the scope of government assistance and provide them with necessary life relief in accordance with the relevant regulations of the state. [3] Support the productive AIDS patients. Since then, successive decrees have improved the prevention and control of HIV/AIDS, and the growth momentum is slightly lower than at the beginning of 2000. At present, China's economic development momentum is good, which leads to a significant increase of population flow in the national and even global scope, and the hidden danger of AIDS is also increasing. [2] Avoid discrimination against people infected with and affected by AIDS. Now the biggest problem is to improve the quality of the people and the improvement of the awareness of the young citizens.

4.2. The United State

The United States has invested a lot of money in the virtual spread of AIDS, and has promoted AIDS work by making and revising laws on AIDS prevention and control. In addition to legislation at the federal level, corresponding laws are passed at the state level, depending on the situation. [2] The combination of federal and state legislation ensures the implementation of AIDS prevention, treatment, research funding and activities. Another characteristic of THE AIDS response in the United States is the management of government funding through programs. [7] The state guarantees the implementation of AIDS control funds through legislation, and the government health department is the department that manages funds and organizes implementation activities. At the same time mobilize all sectors of society to carry out AIDS control work.

4.3. Brazil

Brazil is not a strong country economically and officially, and people's incomes are in the middle and low levels. In this case, Brazil is still doing a good job in AIDS prevention and control. Brazil is not a particularly strong country economically and officially, and people's incomes are in the middle and low levels. In this case, Brazil is still doing a good job in AIDS prevention and control. [5] The Brazilian government attaches great importance to this issue and has also adopted legislation to ensure the implementation of prevention and treatment. Brazil provides HIV free anti-HIV drugs to AIDS patients, and their HIV related drugs are home-made, ensuring effective treatment. They also attach great importance to the interruption of mother to child transmission. Finally, prevention, community care can be carried out in Brazil. [1]

5. DISCUSSION

Back to the beginning, AIDS is still a common infectious disease challenge for all mankind. From the discovery to the present, nearly 40 years, the world has invested a lot of money to study it, but there is still no effective or fundamental treatment method. The knowledge of antiretroviral drugs has turned it into a chronic disease and has led to the aging of patients.

HIV infection mainly depends on body fluid transmission. Therefore, to prevent in place is also very simple, but the citizens' awareness of defense is generally not high. Many people don't know the need to use condoms. Don't understand the important habit of mother and infant block. At the same time, the spread of AIDS is often accompanied by injecting drugs, regardless of legal restrictions, that is also the main reason for the spread of AIDS. According to the available data, sexual transmission is still the mainstream way of transmission. National laws must play a decisive role in this respect. However, due to the inadequate supervision, it is needed to start from the people and popularize AIDS related knowledge.

Brazil, as one of the best countries in the world in AIDS prevention, has indeed provided a lot of effective ideas. First of all, all the work depends on the government, which is the basis. Only if the government attaches more importance to it, will the situation in the whole region be improved. The government needs legislation to limit the spread of AIDS. The government also needs to work with various institutions to provide free antiretroviral drugs for the sake of people's livelihood. It is more convenient and feasible for this drug to be controlled by the state. In many countries, such as the United States, China has done a good job in this regard, and the government has paid more attention to it, but the control is not enough. It has not been fully implemented by the people. The situation in Africa, especially in South Africa, is very serious, the local health environment is very poor, and people have no awareness of prevention. Most of the lack of moral awareness, resulting in the speed of infection.

6. FUTURE DIRECTION AND SUGGESTIONS

People with HIV are maximally identified through voluntary testing for the human immunodeficiency virus (HIV) and are given antiretroviral therapy (ART). Therefore, it is necessary to continue to study the treatment of HIV infection drugs, in order to replace the lifetime ART treatment. The current global increase of HIV infections is 2.6 million each year and is under the grim situation. Hence, stopping or slowing down the increase of new infections is crucial to contain the AIDS epidemic. According to the analysis above, the government should invest a lot of money in the community to publicize the knowledge about AIDS. And the government should pay attention to health care environment. What is more, people's moral and hygienic

consciousness should be strengthened, so that the infection through sexual contact can be controlled.

7. CONCLUSION

Whether HIV-1 or HIV-2 is a great challenge to human immunity. Even though the toxicity of HIV-1 was initially stronger than that of HIV-2 infected group, there was no significant difference in some experimental groups. AIDS prevention and control is a global problem. Brazil, a country with a middle-income or low-income level, is worth learning to keep AIDS prevention and control down until the downward trend. From a global perspective, many countries from the government to citizens do not pay enough attention to the defense and control of AIDS. It is very necessary for the government to legislate and promulgate some policies to ensure that people can have a good environment for prevention, detection and treatment. Due to the early date of some literature in this research, the result can be different from the current status. Therefore, this topic should be further discussed in the future research for a more useful and accurate result.

ACKNOWLEDGMENT

I would like to thank my teacher, Kristy Wen, for giving me an explanation of the ideas of the paper. This is my first thesis writing, so there are many shortcomings.

REFERENCES

- [1] M. Duan.. Current situation and Enlightenment of AIDS prevention and control in Brazil and the United States. *China J AIDS*. Oct. 3, 2010.
- [2] X. Meng. Epidemic situation of AIDS in floating population and its prevention and control. Sep. 2009. <https://www.ixueshu.com/document/1ea00ff27973989bc3cdf2b4809c80f9318947a18e7f9386.html> [accessed in 2020.8.04]
- [3] G. Xia. Promotion and reform of social policy on AIDS in China. Nov. 2006. <https://www.ixueshu.com/document/ee3f5d1acb12b91a3f961f4489c18d4f318947a18e7f9386.html> [accessed in 2020.8.13]
- [4] M. Paul. Origins of HIV and the AIDS Pandemic. *S ep*. 1, 2011. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3234451/#>[accessed in 2020.8.13]
- [5] S. Adele. Antiretroviral treatment, government policy and economy of HIV/AIDS in Brazil: is it time for HIV cure in the country? Aug. 14, 2019.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6694665/> [accessed in 2020.3.12]

[6] E. Luke. Pathophysiology of CD4+ T-Cell Depletion in HIV-1 and HIV-2 Infections. May 23, 2017.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6694665/> [accessed in 2020.08.12]

[7] S. Viviana. HIV/AIDS epidemiology, pathogenesis, prevention, and treatment. Aug. 5, 2006.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6694665/> [accessed in 2020.08.13]