

Challenges for HIV/AIDS Therapy

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Abstract

AIDS (acquired immune deficient syndrome) is a human infectious disease. AIDS patients, if not be treated, commonly suffer a gradual loss of human immune-defensive functions and finally die of infectious complications within 2 years after AIDS symptoms occur in patients. AIDS patients can be treated with a series of anti-viral drugs to decrease the virus-load and slow the pace of dearest symptoms of AIDS and prolong life-spans of patients by high active anti-retroviral therapy (HAART). Even though HAART is very effective, HIV/AIDS patients can not be cured by HAART. And there are a lot of drawbacks in this therapy. Many new ways have been designed for HIV/AIDS therapy. In this editorial, we will address these challenges and treatment options to possible cure all HIV/AIDS patients.

Keywords: HIV; AIDS; HAART; Antiviral therapy; Human genome; Drug toxicity; Vaccine; Traditional chinese medicine

Introduction

AIDS (acquired immune deficient syndrome) is a deadly disease that will kill patients if not be treated. However, AIDS patients can be treated with a series of anti-viral drugs-high active antiretroviral therapy (HAART) to decrease the virus-load and slow the pace of occurrence AIDS and ameliorate the symptoms of immune deficient and prolong the life-spans of patients [1,2]. Now, a large number of AIDS patients or HIV infectious can live much longer life (approximately 10 year after first AIDS symptoms occur in patients) if they are properly treated by HAART, even achieve normal life-spans. Now HAART become the standard of care for HIV infection [1-3].

Drawback of HAART

However, HAART has serious side effects, including medication-induced diarrhea, getting thin in parts of their bodies, lipodystrophy, mitochondrial toxicity, peripheral neuropathy, osteoporosis. Patients need unwieldy pill burdens, complex dosing schedules and high costs. The greatest drawback of present HAART lies that these therapies are inhibitory rather than eradicated to the disease. Though the effective rate of HAART to AIDS patients is high (>90%). But the patients still carry HIV in their bodies. But there is no cure patient no matter how long you treat with HAART. So the patients need to adherence HAART lifelong. Thus it is very inconvenient to patients [1-5].

New Perspectives

The paramount task of future HAART should focus on eradicating HIV virus from infected patients. This might be a long way, or it might be so near to us. It all depends on our new perspectives and efforts to this matter. The present answers can be following:

By manipulating and strengthening human immune systems

To let human immune systems to complete clear up the virus. Therapeutic vaccines are aimed to reach this ultimate goal [5-7]. But it has not been succeeded at present. We have contributed this phenomenon to the following reasons. It is the penetration of virus to host cells or even to host cell genome that make the antibodies or activated lymphocytes can not bind and clear up these viruses [8]. If this is true, it faces a great challenge for therapeutic vaccines and needs new ideas and more effective antigens. Or we can combine use of HAART

and therapeutic vaccines. Let these two therapeutic options assist one another or any other ideas [2].

Activate or manipulate host cell defensive systems and other biotherapy

More recently, it has been discovered that host (human) cells have their own defensive systems that are differed from antigen-antibody system [9-11]. If we extensively study these systems, may we learn the underlying mechanisms of host cell defensive actions against viruses and well manipulate then into therapeutic purposes.

Combination of chemical agents with biological means of therapy

We have succeeded in combination of chemical agents of different mechanisms in treatment of HIV/AIDS and extended survival of AIDS patients from less than 2 years into 7-10 years, may we further suggest that combination of chemical agents with biological means of therapy. This strategy may reach our ultimate goal of eradication of virus from patients' bodies. However this hypothesis must base on thorough understanding of HIV in AIDS patients—what is the main cause of AIDS patients' death. [3,5].

Genetic Study of HIV/AIDS Pathology

Until now, we still can not be sure whether HAART should be given early or later. It is because our understanding of the genetic pathogenesis of HIV in patients is lacking. We do not know why patients are killed by HIV. Our previous hypotheses suggested that penetration of HIV virus into human genome is the cause of human death and we designed experimental processes to solve them [12,13]. This needs further experimental work to support. If we can understand the cause of AIDS

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Methods	Mechanism of action
Antibodies	Virus binding and clear up
siRNA or other	Host cell defensive systems
Therapeutic vaccines	Human immune systems

Table 1: Potential biological therapeutic options for HIV/AIDS.

patient, we can decide whether HAART should be given early or later (Table 1).

Traditional Chinese medicine (TCM)

Like treatment of avian or seasonal flu [14,15], TCM is also a potential therapeutic option for cure HIV/AIDS patients [15-18] because TCM help patients defensive system to fight against viruses. TCM aims to strengthen the damaged part of human organs and balance the Yin and Yang of different organs of human bodies.

Conclusion

The most important things of future HIV/AIDS studies might be the understanding of pathogenesis of HIV/AIDS. We must know the differences between HIV infection humans and AIDS patients. Also, we must understand the cause of retention of HIV in human bodies in spite of treatment with HAART. More we understand the pathogenesis of HIV/AIDS in every details, more we might find solutions of cure HIV/AIDS patients.

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