



REVIEW

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The epidemic of HIV/AIDS in developing countries; the current scenario in Pakistan

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Abstract

HIV (Human Immunodeficiency virus) causes (acquired immunodeficiency syndrome) AIDS, in which the immune system of body totally fails to develop any defense against the foreign invaders. Infection with HIV occurs by transfer of blood, semen, and breast milk. HIV/AIDS is a global problem and it results nearly 25 million deaths worldwide. Developing countries like Pakistan have issues regarding Public Health. Currently, epidemic of HIV/AIDS is established in Pakistan and there is a threat of an expanded HIV/AIDS outbreak in the country. The major reason is that population is engaging in high-risk practices, low awareness about HIV/AIDS, and treacherous blood transfusion practices. A supplementary threat to Pakistan is India because both sharing a border and India is facing a rapidly growing HIV/AIDS epidemic. Local NGOs, National and International organizations are warning that in near future Pakistan may experience bad situation regarding HIV/AIDS.

In the present article we focused current situation of surveillance of HIV/AIDS, its virology, genotype, diagnostics, high-risk groups, reasons of vulnerability in Pakistani population, and the role of different national and international organizations in this situation.

Background

HIV belongs to *Lentivirinae*, which are also known as "slow virus". The name indicates their mode of action as they enter into body and remain in it for longer period of time. They have unique property of being inserting the information into the DNA of host cell and also have the ability to replicate in non-dividing cells. Due to these characteristics they are considered to be the most efficient gene delivery vector [1]. HIV infects defense/immune system cells such as CD4+ T cells, macrophages and dendritic cells [2]. The CD4+ cells play a crucial role in the maintenance of immune system. After infection, HIV uses CD4+ cells as host to make copies and infect other cells. This leads to the reduction of CD4+ cells in body and immune system totally collapse [3]. The development from HIV to AIDS is checked by the rapid decline of CD4+ cells [3].

Types of HIV

Two types of HIV has been characterized; HIV-1 and HIV-2. HIV-1 is the most virulent and pathogenic strain.

Worldwide, the predominant virus is HIV-1, and generally when people refer to HIV without specifying the type of virus they will be referring to HIV-1. The relatively uncommon HIV-2 type is concentrated in West Africa and is rarely found elsewhere. The reason behind is that HIV-2 weakens the immune system slowly than HIV-1 [4]. The HIV-1 is further divided into 4-groups; a) major group M, b) Outlier group O, c) Group N, d) Group P. These groups have been identified in their envelope region. Group M is further divided into A, B, C, D, F, G, H, J and K. In Asian countries B and C are the predominant clades of HIV-1. But in Pakistan HIV-1 is dominant in Pakistan as compare to other clades, this was found more in IDUs in Karachi [5]. HIV-2 has also 8 clades from A to H, out of these clades only A and B are epidemic [6].

HIV Virology and Life Cycle

The identification of HIV led the concentrated activity in the field of molecular virology. HIV is different in structure from other retroviruses. This is roughly spherical with a diameter of about 120 nm [7,8]. It contains three (3) structural and six (6) genes which encode the at least fifteen (15) viral proteins and control the ability of HIV to infect the cell [9]. HIV is composed of two copies of

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