Acquired Immunodeficiency Syndrome (AIDS)

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Outline

- Definition.
- Historical perspectives.
- Mode of transmission.
- Natural history and classification of HIV infection.
- Prevention and control.
- References

Definition:

Human **I**mmunodeficiency **V**irus

H = Infects only **H**uman beings

I = **I**mmunodeficiency virus weakens the immune system and increases the risk of infection

V = **V**irus that attacks the body

Historical Perspective

- Since late 1979, cases of a rare neoplasm Kaposi's Sarcoma and Pneumocystis carinii (jirovecii) pneumonia (an unusual opportunistic infection) were reported in the USA among previously healthy population groups, namely homosexual men; hence the first suggested name was GRID (Gay-Related Immunodeficiency).

Historical perspective (Cont.)

- It was soon realized that this was not the case and that this was the beginning of an epidemic eventually termed the acquired immune-deficiency syndrome (AIDS) as a clinical entity in late1981 as the disease was reported from some other countries in Europe and the Americas.

Mode of Transmission

Infection with HIV essentially requires exchange of semen, vaginal or other body secretions, milk, blood, or blood products infected by the virus.

The mode of transmission are:

1. Sexual (anal, vaginal and oral)
2. Mother to child transmission (vertical)
3. Parenteral (blood or blood products recipients, injection, drug-users, occupational exposure)

Mode of transmission (Cont.)

- The transmission risk after exposure is over 90% for blood or blood products, 15-40% for the vertical route, 0.5-1.0% for injection drug use, 0.2-0.5% for genital mucous membrane spread and under 0.1% for non-genital mucous membrane spread.

- Major route of transmission (more than 80%) is heterosexual.

Mode of transmission (Cont.)

- No laboratory or epidemiological evidence suggests that biting insects have transmitted HIV infection.

- There is no evidence that infection is spread through casual social contact, by food or by airborne routes.

Natural history and classification of HIV infection

Primary infection:

- Primary infection is symptomatic in 70-80% of cases and usually occurs 2-6 weeks after exposure; with the development of acute self-limited mononucleosis-like illness.

Natural history and classification of HIV infection (Cont.)

- This coincides with a surge in plasma HIV-RNA level to >1 million copies / ml (peak between 4 and 8 weeks), and a fall in the CD4 count to 300-400 cell/mm3.but occasionally to<200 when opportunistic infections (e.g. oropharyngeal candidiasis, Pneumocystis carinii pneumonia) may rarely occur.
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Natural history and classification of HIV infection (Cont.)

- Symptomatic recovery occurs after 1-2 weeks but occasionally may take up to 10 weeks, and parallels the return of the CD4 count and fall in the viral load. However, the CD4count rarely recovers to its previous value.
- The level of the viral load post-seroconversion strongly correlates with subsequent progression of disease.

Natural history and classification of HIV infection (Cont.)

Asymptomatic infection:

Asymptomatic infection lasts for a variable period, during which the infected individuals remains well with no evidence of disease except for possible presence of persistent generalized lymphadenopathy (PGL)

Natural history and classification of HIV infection (Cont.)

Mildly symptomatic disease (AIDS-related complex “ARC”)

Mildly symptomatic disease develops in the majority of the patients, indicating some impairment of the cellular immune response. AIDS-related complex conditions are not AIDS-defining.

Natural history and classification of HIV infection (Cont.)

- The median interval from infection to the development of symptoms is around 7-10 years, although some patients exhibit lower or higher intervals (a range of less than one year to 15 years or longer have been observed).

Acquired immunodeficiency syndrome (AIDS)

- AIDS is defined by the development of specified opportunistic infections, tumors and other conditions.

Prevention and Control:

HIV/AIDS prevention programs can be effective only with full community and political commitment to change and/or reduce high-risk behavior. Prevention program include:

- Public health education
- Safe sexual intercourse
- HIV testing and counseling

Prevention and Control (Cont.)

- Pregnant women found to be HIV-positive may be given a course of anti-retroviral treatment.
- HIV antibody testing of all donated blood units and only donations testing negative can be used.
- Only clotting factor products that have been screened and treated to inactive HIV must be used.

Prevention and control(Cont.)

- People who engaged in high-risk behaviors should not donate blood, organs for transplantation, tissue, semen , etc

- Precautions to minimize the risk of HIV transmission in health care settings must be implemented .

Prevention and Control (Cont.)

- Prophylaxis against infections in HIV/AIDS.
- Post-exposure prophylaxis (PEP) .
- Prevention of mother to child transmission (MTCT).
- Isolation of HIV positive persons is unnecessary and ineffective and unjustified
- Concurrent disinfection of equipment contaminated with blood or body fluids by using disinfectants

Prevention and Control (Cont.)

- Infected individual should ensure notification of sexual and needle-sharing partners
- Live attenuated vaccines should be avoided (BCG and oral polio).
- All patients should be screened for immunity to hepatitis A and B and vaccinated if unprotected.

Prevention and Control (Cont.)

- Pneumococcal vaccine (every 5 years) and influenza vaccine (every year) should be given to all patients.

- Response to all immunization is lower when the CD4 count is <200 cell/mm3.

References

- Park, K. Textbook of Preventive & Social Medicine.
- Lucas AO, Gilles HM. Short Text Book of Public Health Medicine for the Tropics.