Epidemiology of Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome in Lebanon from 1984 through 1998

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ABSTRACT

Objective: To identify the epidemiologic characteristics of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) in Lebanon during the period between January 1, 1984, and December 31, 1998.

Materials and Methods: This report presents a descriptive analysis of HIV and AIDS surveillance data. The subjects of this study were all notified HIV and AIDS cases in Lebanon reported to the Epidemiological Surveillance Unit of the Department of Preventive Medicine at the Ministry of Public Health in Lebanon.

Results: The HIV epidemic started in Lebanon in 1984 with the first diagnosed AIDS cases. The number of cases slowly but steadily increased, to reach, by 1998, 529 cases, of which 147 were AIDS cases. The average age of infected persons was 31 years, with a ratio of men to women close to 3.6:1. The most frequent mode of transmission is sexual (71.9% of all cases; heterosexual, 53.9% of all cases), which consequently increases the perinatal transmission of the disease (4.3% of all declared cases). Data on high-risk groups (intravenous drug users, homosexuals, prostitutes, and prisoners) are incomplete, although the problem does exist. The safety of blood products is relatively well controlled in the country. No new cases of HIV infections through blood transfused in Lebanon have been reported since 1993 (8.5% of all cases).

Conclusion: The continuously increasing number of HIV and AIDS cases shows an urgent need for targeted interventions in the general population to stop any further spread of HIV infections in the years to come.

Key Words: AIDS, epidemiology, HIV, Lebanon, surveillance systems


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MATERIALS AND METHODS

Study Design

This study is based on the data collected in the National Surveillance System covering the entire Lebanese territory. It states the obligation of physicians to report all the cases of a communicable disease to the Epidemiological Surveillance Unit (ESU) of the Department of Preventive Medicine (DPM) at the Ministry of Public Health.

Data Collection

All definite cases are periodically reported to the ESU of the DPM at the Ministry of Public Health in Lebanon. The ESU reports HIV and AIDS cases to the National AIDS Surveillance Program (NAP). The NAP, which is the institution responsible for the quality of the data provided, prepares national statistics on all AIDS cases reported since the beginning of the epidemic. The information included in this study is extracted from NAP data sets. Statistical significance was estimated using chi-squared test ($\chi^2$).

Case Definition

The Surveillance Program in Lebanon uses a uniform AIDS case definition originally published in 1982 and subsequently revised in 1985, 1987, and 1992. For children under 15 years of age, the case definition is essentially the same as that used in the United States, but for adults and adolescents 15 years of age and older, the Surveillance Program case definition in Lebanon differs in that it does not include CD4 lymphocyte counts.

Reporting Delays and Underreporting

The data in this study are provisional, because of reporting delays (time between diagnosis of the AIDS case and its report to the national level) and because previously reported data are subject to modification, owing to continuous updates (detection and deletion of duplicate cases, inclusion of new information about previously reported cases). Overall, approximately 90% of cases are reported by the end of the year during which they were diagnosed, and approximately 10% are reported more than 1 year after diagnosis.

In this study, the data are presented by year of diagnosis with adjustments for reporting delays. No adjustment can be made for underreporting.

Exposure Groups

For surveillance purposes, cases were counted in a hierarchy of exposure groups, as follows:

1. Heterosexual contact with a person known to be infected with HIV or at high risk of HIV infection.
2. Male homosexual or bisexual contact.
3. Recipient of blood products for clotting disorders or of blood transfusions.
4. Intravenous drug user (IVDU).
5. Infant born to a mother known to be HIV-infected (perinatal transmission).
6. Multiple factors: individuals with more than one reported mode of exposure to HIV.
7. Undetermined: individuals with HIV infections who were not known to belong to a specific exposure group within the hierarchy.

RESULTS

As of 1998, 529 cases of HIV or AIDS had been reported, 414 (78.3%) in men and 115 (21.7%) in women. Reporting trends have been increasing since 1990 in a linear fashion, with the exception of 1993 and 1995. In these years, the number of reported cases double when compared to the previous year (Figure 1). There were 203 cases reported in the 5 years before 1994 (1989–1993) and 283 cases after 1994 (1994–1998). The difference in the number of reported cases between the two periods was statistically significant.

The number of infected women with HIV or AIDS is increasing. In 1990, the ratio of men to women was 6:1; by the year 1998, it has changed to 3.6:1. Among notified HIV or AIDS cases, 4.3% were reported in children, 75.4% in adolescents and adults younger than 55 years, and 20.3% in patients 55 years of age or older. The age distribution among both sexes reached a peak in the 1940s and was prolonged into the 1950s (Figure 2). A significant difference in age group distribution of the reported HIV and AIDS cases was found in both male and female groups ($\chi^2 = 19.82; P = 0.003$).

Of all reported HIV and AIDS cases, 27.8% were already symptomatic at the time of their reporting. The AIDS indicator diseases most frequently encountered were Pneumocystis carinii pneumonia and Kaposi's sarcoma.
HIV and AIDS in Lebanon / Kalaajieh

Figure 2. Cumulative number of reported HIV and AIDS cases in Lebanon, from 1984 through 1998, according to age and gender.

Heterosexual intercourse was the HIV and AIDS risk factor reported for 53.9% of the cumulative total of cases between 1984 and 1998 (Table 1 and Figure 3). The second highest risk factor for men was homosexuality (14.2%), followed by IVDU (10.4%). Of all cases in men, 8% had more than one risk factor, mainly IVDU and homosexuality. In contrast, the second highest risk factor for women was blood transfusion (7.8%), followed by IVDU (5.2%). Of 23 HIV and AIDS cases reported among children 15 years of age and younger, 22 were attributed to perinatal transmission, and only one was caused by an infected blood transfusion. Of all the reported cases, 47% had a history of frequent travelling outside Lebanon. This variable was more frequent among women (57.4%) than among men (44.2%). A significant difference in risk factors was found between male and female HIV and AIDS cases reported during the study period ($\chi^2 = 39.03; P < 0.0001$).

DISCUSSION

By December 31, 1998, 529 HIV and AIDS case reports had been received by the NAP. The first case of AIDS in Lebanon was reported in 1984. It occurred in a heterosexual male who had lived in San Francisco and whose female sexual partner was an intravenous drug abuser. Up to December 1986, the medical community in Lebanon was aware of only 18 cases of AIDS, all of them acquired outside Lebanon or through transfusion of foreign blood products: seven hemophiliac patients were being treated by lyophilized factor III concentrate produced in the United States, one was a female prostitute and intravenous drug addict, and ten seropositive persons were homosexual males who lived and engaged in sexual activity in Lebanon, Venezuela, and the United States.10-12

The number of reported HIV and AIDS cases has been increasing since 1990. This increasing trend partly may be attributed to the improvements in the political climate of the country and the increase in the numbers of Lebanese returning from aboard, mostly from West Africa and North America, some of them arguably bringing the virus back with them. These repatriates unknowingly infect their sexual partner or partners, most commonly a wife from a younger age-group. A large proportion of HIV-infected Lebanese become aware of their serostatus only when they or their sexual partners develop an AIDS indicator illness. Age was found to be an important risk factor, indicating the importance of the number of years of sexual activity.

Furthermore, the increase in the number of affected women is remarkable. In fact, the number of HIV-infected women has almost doubled over the past few years. The ratio of male to female decreased from 6:1 in 1990 to 3.6:1 in 1998, which affirms the finding that heterosexual relations (accounting for 53.9% of all types of transmission) are the most common mode of transmission of the virus. It also is notable that the majority of women infected are married (81.7%) and most likely have acquired the disease from an HIV-positive husband who was infected either before marriage or through extra marital relationships. Thus, it is not surprising that the number of children infected with HIV has increased from 6 in 1990 to 20 in 1998. This type of heterosexual transmission (husband-wife) and subsequently vertical trans-

![Figure 3. Mode of transmission of reported AIDS cases in Lebanon from 1984 through 1998.](image)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual</td>
<td>202 (48.8)</td>
<td>83 (72.2)</td>
<td>285 (53.9)</td>
</tr>
<tr>
<td>Homosexual</td>
<td>60 (14.2)</td>
<td>0 (0)</td>
<td>59 (11.2)</td>
</tr>
<tr>
<td>Intravenous drug use</td>
<td>43 (10.4)</td>
<td>6 (5.2)</td>
<td>49 (9.3)</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>36 (8.7)</td>
<td>9 (7.8)</td>
<td>45 (8.5)</td>
</tr>
<tr>
<td>Perinatal</td>
<td>11 (2.6)</td>
<td>12 (10.5)</td>
<td>23 (4.3)</td>
</tr>
<tr>
<td>Multiple factors</td>
<td>33 (8.0)</td>
<td>3 (2.6)</td>
<td>36 (6.8)</td>
</tr>
<tr>
<td>Undetermined</td>
<td>30 (7.3)</td>
<td>2 (1.7)</td>
<td>32 (6.0)</td>
</tr>
<tr>
<td>Total</td>
<td>414 (100)</td>
<td>115 (100)</td>
<td>529 (100)</td>
</tr>
<tr>
<td>Frequent travel</td>
<td>183 (44.2)</td>
<td>66 (57.4)</td>
<td>249 (47.0)</td>
</tr>
</tbody>
</table>
mission (mother-child) is evidence that sociocultural and economic characteristics are putting families, not only individuals at risk of HIV infection.

Travel abroad may increase the chance of acquiring the virus, since almost half of the infected population reported recent history of travel or emigration to countries with high HIV prevalence rates. Nevertheless, data on travel rates within the general population need to be available before travel can be cited as a definite risk factor.

The safety of blood transfusions is relatively well controlled in Lebanon. Currently only 8.5% of the reported seropositives have acquired the disease through blood or blood products. The rate of newly detected hepatitis C virus antibodies in the blood donor population is 0.11%.

Furthermore, HIV testing equipment is now available in all blood centers throughout the country, and all donated blood is tested for HIV antibodies. Since 1993, no cases of infection through contaminated blood have been reported in Lebanon. However, efforts should continue to maintain this control on blood safety in the country.

Heterosexual relations and contaminated blood products are not the only means of transmission of HIV. The other modes of infection occur in high-risk groups poorly characterized, although known to exist. In fact, data available at the NAP shows that among all HIV-positive cases reported, only 9.3% have given a history of drug abuse (IVDU in particular). Some studies have been conducted by local nongovernmental organizations (NGOs) to assess the extent of this problem, but these studies remain limited and incomplete.

The problem of prostitution is poorly identified since prostitution, although known to exist, is illegal in the country. It is believed from various local NGOs that clandestine prostitution is more frequently practiced, perhaps enhanced by the deteriorating economic situation in the country. This makes this group difficult to reach.

Like prostitution, the issue of homosexuality is not well delineated, since it is not accepted socially or legally. A high rate of bisexuality in Lebanon is suspected since most families of homosexual men are eager to marry them off as early as possible. Once married, most of these men continue a secret homosexual life style, parallel to their married life, which obviously places their wives and children at increased risk of contracting HIV.

Another group at risk that recently has been considered is the prisoners. Twelve prisoners were reported to the NAP between 1995 and 1998. Whether the infection was acquired in prison or elsewhere could not be confirmed, despite the fact that prisoners were screened initially for HIV. Several of these prisoners had other risk behaviors (heterosexual activities, IVDU) which complicated categorization of these individuals. In fact, the prison context itself increases the spread of HIV among this group.

Finally, the new policy of premarital screening for HIV that was instituted in 1994 will improve both the detection of the disease and long-term survival of patients. It did make an impact in the number of cases reported, since the difference between the 5 years preceding the law and the 5 years following 1994 was statistically significant (P < 0.001). Currently, 27.8% of patients have AIDS at the time of diagnosis. With large-scale screening, this percentage will decrease, allowing less morbidity and hopefully decreased transmission rates, both to sexual partners (by abstaining or use of protection) and to infants (through use of antiviral therapy during pregnancy).

CONCLUSION

The HIV and AIDS epidemic has reached the Lebanese arena through sexual activity outside Lebanon and transfusion of blood or blood products originating from outside the country. Heterosexual contact has emerged as the most prominent pattern of HIV transmission in Lebanon. Since 1990, the number of infected females has doubled, leading to an increasing number of pediatric patients. The cumulative total (including males) reached 529 cases in 1998, including 147 AIDS cases.

Taking into consideration the various constraints in data collection, the dynamic of the disease itself, and the modes of transmission, the NAP estimated that by the year 2000, the number of HIV cases in Lebanon would reach 5000 and the number of deaths attributable to AIDS would exceed 750. The reported number and the estimated number differ because of under diagnosing (the cause of death is not routinely or always thoroughly investigated) as well as delays in reporting.

Further data from NAP and special epidemiologic studies are needed to help clarify the scope and nature of the epidemic in Lebanon. The information obtained from these studies will be used to further target and evaluate AIDS prevention activities.

REFERENCES

5. Centers for Disease Control. Revision of the case definition of acquired immune deficiency syndrome for national


