

Trend of AIDS in Iran: Descriptive Epidemiology

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Abstract

Background: This study was conducted to describe the trend of the number of AIDS cases died in Iran, during 1987-2000 and to determine some important epidemiological factors related to the syndrome.

Methods: Using a questionnaire form of interview, epidemiological information was collected. Cases were recorded in the Center of Disease Control of Iran (CDCI). All records included: year of diagnosis, death year, route of infection, marriage status and sex.

Results: In the first year 22 hemophiliac deaths diagnosed to have HIV and AIDS. Number of death was increased to 44 in 1999. Most new cases were found among injected drug users and people who had heterosexual intercourse. Maximum reported deaths that had sexual contact (14 patients) were belonging to 1993. Vertical transmission was observed only in one patient. The most risk for the female patients was sex intercourse (64%), while in males was hemophilia disease (37.2%). Most of the Married group, most (46.8 %) were infected by unsafe sex intercourse.

Conclusion: Since the trend of AIDS in Iran is increasing, screening programs in high-risk groups; injection drug users and peoples who have unsafe sex act, are recommended. Prevention programs should be implemented in high-risk groups, especially injected drug users.

Keywords: *AIDS, epidemiology, HIV, Iran*

Introduction

Since 1993, numerous studies have documented the trends of HIV and AIDS based on HIV/AIDS surveillance data in some countries (1, 2, 3). The trends have been used to improve epidemiological information and prevention programs in these countries (4). Enormous amount of epidemiological information are obtained by carefully interviewing and studying individual patients with AIDS (5). In a country-by-country review of (HIV/AIDS), the prevalence of the disease was estimated and it was determined that the disease is pandemic (6). Also, several investigators accurately indicated that the epidemic of HIV/AIDS was continuously evolved in many countries during past decade, and patterns of transmission in the populations have been changed (7).

Descriptions from surveillance data of the patterns of HIV/AIDS transmission can be used to characterize population at risk, target

prevention and control programs (8). This paper describes findings from medical records of AIDS, as a part of regular surveillance by the Center of Disease Control of Iran (CDCI). In Iran, CDCI established a surveillance system to keep track of AIDS incidence within risk groups defined by mode of exposure. In this paper, all records of AIDS deaths, which were survived by CDCI from 1987 to 2000, are described.

Materials and Methods

This study was conducted with 242 reported AIDS deaths. Since AIDS is an irreversible condition leading to death within few years, death data is expected to be approximately as informative as AIDS data (9). Data was available related to some epidemiological characters. Cases were recorded in the CDCI. All recorded cases from 1987 to 2000 have been used as source of information, including: year of diagnosis, death year, and route of infection, marriage status and sex. The obtained

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information by CDCI was based on a questionnaire prior to an interview. Death was chosen as the endpoint of HIV/AIDS event, because survival time of the disease changes over time.

Results

Annual trend of the number of AIDS deaths, by route of infection, marriage status and sex are shown in table 1. The number of death has fluctuatedly increased during 1987- 2000. Table 2 shows the annual trend of cases according to the year of diagnosis. During the early years (1987-1994), hemophiliac patients were in higher risk than the others. Twenty-two hemophiliac patients were diagnosed to have AIDS that was the only risk for AIDS incidence, in 1987. Among those, one patient was died in the same year. In the following years (1995-2000), injection drug users were

the most of the cases. Among the study group, 75 patients have had heterosexual contact with an HIV-infected partner. Maximum reported deaths in cases that had sexual contact (14 patients) were in 1993. Then the number of death decreases fluctuatedly in the following years. Vertical transmission was observed only in one patient. As can be observed in table 3, route of infection was different by sex. AIDS in males were much more prevalent than the females (247 vs 25). The most risk for the female patients was sex intercourse (64%), while in males was hemophilia disease (37.2%). According to table 4, route of infection was different by marriage status. Most of the patients were married. In this group, most (46.8 %) were infected by unsafe sex intercourse.

Table 1: Annual trends of the number of deaths, reported with AIDS, based on route of infection, marital status and sex, 1987-2000

Factors	Calendar year of death														Total
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
Rout of infection															
Blood	0	0	0	0	1	2	1	1	0	1	2	1	1	0	10
Hemophilia	1	3	7	4	4	9	17	16	9	13	1	7	4	0	95
Injection drug user	0	0	0	0	1	2	2	0	1	10	13	13	17	13	72
Sexual intercourse	0	0	2	4	6	1	7	8	6	12	5	4	13	7	75
Vertical transmission	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Unknown	0	0	0	0	0	0	0	1	0	1	1	4	8	4	19
Total	1	3	9	8	12	14	27	26	16	37	22	29	44	24	272
Marital status															
married	0	0	2	5	3	3	10	12	7	15	10	11	20	11	109
single	0	1	0	1	1	4	10	2	3	7	4	7	12	7	59
Widow	0	0	0	0	0	0	0	0	0	0	1	1	3	1	6
Unknown	1	2	7	2	8	7	7	12	6	15	7	10	9	5	98
Total	1	3	9	8	12	14	27	26	16	37	22	29	44	24	272
Sex															
Male	1	3	9	7	11	12	26	21	14	34	22	26	38	23	247
Female	0	0	0	1	1	2	1	5	2	3	0	3	6	1	25
Total	1	3	9	8	12	14	27	26	16	37	22	29	44	24	272

Table 2: Annual trends of the number of diagnosed HIV/AIDS led to death based on route of infection, marital status and sex, 1987-2000

Factors	Calendar year of death														Total
	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	

Rout of infection															
Blood	0	0	0	0	0	4	2	0	0	0	3	0	1	0	10
Hemophilia	22	19	28	9	6	2	4	1	0	0	0	2	2	0	95
Injection drug user	0	0	0	0	1	5	1	0	0	20	12	10	12	11	72
Sexual intercourse	0	2	5	3	4	9	14	4	4	8	6	2	9	5	75
Vertical transmission	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Unknown	0	0	0	0	0	0	0	1	0	1	2	2	9	4	19
Total	22	21	33	12	11	20	21	6	4	29	23	16	34	20	272
Marital status															
married	4	4	7	4	6	12	12	4	2	16	11	5	15	7	109
single	4	3	10	3	2	3	3	1	2	4	5	6	6	7	59
Widow	0	0	0	0	0	0	0	0	0	0	1	1	3	1	6
Unknown	14	14	16	5	3	5	6	1	0	9	6	4	10	5	98
Total	22	21	33	12	11	20	21	6	4	29	23	16	34	20	272
Sex															
Male	21	21	32	8	10	19	17	4	3	27	22	14	30	19	247
Female	1	0	1	4	1	1	4	2	1	2	1	2	4	1	25
Total	22	21	33	12	11	20	21	6	4	29	23	16	34	20	272

Table 3: Number and percentage of AIDS based on route of disease and sex, during 1987-2000

Routs of Infection	Sex		
	Female Number (%)	Male Number (%)	Total Number (%)
Blood	4 (16)	6 (2.4)	6 (3.7)
Hemophilia	3 (12)	92 (37.2)	92 (34.9)
Injected drug user.	0	72 (29.1)	72 (26.9)
Sexual intercourse	16 (64)	59 (23.9)	75 (27.6)
Vertical transmission	0	1 (0.4)	1 (0.4)
Unknown	2 (8)	17 (6.9)	19 (7)
Total	25 (100)	247 (100)	272 (100)

Table 4: Number and percentage of AIDS based on rout of disease and marital status, during 1987-2000

Rout of Infection	Marital Status				
	Married Number (%)	Single Number (%)	Widow Number (%)	Unknown Number (%)	Total Number (%)
Blood	4 (3.7)	1 (1.7)	1 (16.7)	4 (4.1)	10 (3.7)
Hemophilia	20 (18.3)	25 (42.4)	0	50 (51)	95 (34.9)
Injected drug user.	26 (23.9)	19 (32.2)	1 (16.7)	26 (26.5)	72 (26.5)
Sex	51 (46.8)	10 (16.9)	3 (50)	11 (11.2)	75 (27.6)
Vertical transmission	0	1 (1.7)	0	0	1 (0.4)
Unknown	8 (7.3)	3 (5.1)	1 (16.7)	7 (7.1)	19 (7)
Total	109 (100)	59 (100)	6 (100)	98 (100)	272 (100)

Discussion

In Iran, during past 15 years the epidemic of AIDS has continuously evolved. Pattern of transmission in the population has been

changed. During this period, annual number of reported AIDS deaths has increased fluctuatedly. At first, in 1987, one patient was died from AIDS. In 1999, the number increased

to 44. As mentioned, AIDS is an irreversible condition leading to death within few years and the mortality data can be expected to be approximately as informative as AIDS data in the trend. So discussion and conclusion are made only according to findings in table 1. Pattern of transmission has also changed during these years. In the early years, hemophilia patients and blood or blood products receivers were reported as the high-risk groups, but in the later years, injected drug users and people with unsafe sex behavior, have taken this position. This finding mainly supported by several studies in other countries (9, 10, 11). In a cross sectional study of women who were partner of HIV infected men; about 28% of the women were seropositive (12). Fifty five percent of the members of a cohort study of 1219 hemophiliac from treatment centers throughout the United States were found to be infected in 1988 (10). In 1989, Peterman and Allen, found that patients with hemophilia are at much higher risk because clotting factor concentrates were made from pools of plasma derived from donors (11) HIV may be transmitted when infected blood or blood products are introduced into the blood of another person (14). Several investigators have tracked the recipients of blood transfusions that were later found to have come from infected donors (13). Although, patterns of transmission of infection were found mainly similar to that in the other countries (5), but the only difference was belong to the cases with unsafe sex behavior. The most important way that the virus is passed on is during penetrative sexual intercourse with an infected person. Transmission can undoubtedly occur as a result of peno-vaginal intercourse from male to female and female to male. Transmission also occurs as a result of peno-anal intercourse (15). While in Japan, about 40% percent of transmission by sex was homosexual and were happened among men who had sex contact with men (4). But in Iran, heterosexual contact was only as sex transmission in the cases. Direct evidence for the timing of the vertical

transmission of HIV is difficult to obtain, but it appears that HIV may be transmitted from an infected woman to her infant during gestation, during delivery (interpartum), or postpartum through breast feeding (16). The probability of transmission of HIV from an infected mother to her infant has been estimated in some studies (17, 18). In this study, only one case diagnosed as transmission vertically. Since the trend of AIDS in Iran is increasing, screening programs in high-risk groups; injection drug users and peoples, who have unsafe sex act, are recommended. In the absence of medical defense against HIV/AIDS, public health education is the main weapon to fight the spread of infection. Health education should be planed for those who need to change their behavior, to protect themselves and others from HIV infection. Preventive activities should be aimed first for people at greatest risk of HIV infection; intravenous drug users and people who have sex with this group, adolescents, migrant workers, tourists and professional groups.

References

1. Ajdacic-Gross V, Zellweger U, Wang J, Fleerackers Y, Somaini B. How complete is AIDS surveillance in Europe? An eagle eye comparison with mortality data. *J Epidemiol Community Health*. 2001; **55**: 52-56
2. Centers for disease control and prevention. Update: Trend in AIDS incidence, and prevention--United States, 1996. *MMWR*, 1997; **46**: 165-73.
3. Hashimoto S, Fukutomi K, Morio S et al. Trends in the number of HIV-infected persons and AIDS cases based on the HIV/AIDS surveillance data in Japan. (in Japanese with English abstract) *Nippon Koshu Eisei Zasshi. Jpn J Public Health*. 1993; **40**: 1184-95
4. Matsuyama Y, Hashimoto S, Ichikawa S, et al. Trends in HIV and AIDS based on HIV/AIDS surveillance data in Japan. *Int J Epidemiol* 1999; **28**: 1149-1155.

5. Brookmeyer R, Gail MH. *AIDS Epidemiology, A Quantitative Approach*. New York: Oxford University Press. 1994: 20-21.
6. Burton AH, Mertens TE. Provisional Country Estimation of Prevalent Adult Human Immunodeficiency Virus Infections as of end 1994: a Description of the Methods. *Int J Epidemiol*. 1998; **27** (1): 101-7
7. Monina Klevens R, Patricia LF, Joyce JN, et al. Is there really a heterosexual AIDS epidemic in the United States? Findings from a Multisite Validation Study, 1992-1994. *Am J of Epidemiol*. 1999; **194** (1): 75-84.
8. Ward JW, Bush TJ, Perkins HA, et al. The Natural History of Transfusion-associated Infection with Human Immunodeficiency Virus. *N Engl J Med*. 1989; **321**: 947-52.
9. Neal JJ, Fleming PL, Green TA, et al. Trends in heterosexually acquired AIDS in the United States, 1988-1995. *J Acquire Immune Defic Syndr Hum Retroviral*. 1997; **14**: 465-74.
10. Goedert JJ, Kessler CM, Aledort LM, et al. A prospective study of human immunodeficiency virus type 1 infection and the development of AIDS in subjects with hemophilia. *New England Journal of Medicine*. 1989; **321**: 1141-48.
11. Peterman T and Allen J. Recipients of blood and blood products. In Kaslow RA, and Francis DP. Eds, *the Epidemiology of AIDS*. New York: Oxford University Press. 1989: 179-93.
12. Lazzarin A, Saracco A, Musicco A, et al. Man-to-woman sexual transmission of the human immunodeficiency virus. Risk factors related to sexual behavior, man's infectiousness, and woman's susceptibility. *Archives of Internal Medicine*. 1991; **151**: 2411-16.
13. Word JW, Deppe DA, and Samson. Risk of human immunodeficiency virus infection from blood donors who later developed the acquired immunodeficiency syndrome. *Annals of Internal Medicine*. 1987; **106**: 61-62.
14. World Health Organization. AIDS; Prevention and control. London: Pergamon press oxford. 1988. 14-19.
15. Vincent T, Devita JR, Samuel Hellman, Steven A Rosenberg. *AIDS; Etiology, Diagnosis, Treatment and prevention*. New York: Lippincott-Raven, 1997: 167-173.
16. Maritto AB, Verdecchia A. Using AIDS mortality data to reconstruct HIV/AIDS epidemic. *Stat Med*. 2000; **19**(2): 161-74.
17. Banche S, Rouziou G, Moscato ML, et al. A prospective study of infants born to women seropositive for human immunodeficiency virus type 1. *N Engl J Med*. 1989; **320**: 1643-48.
18. Ryder RW, Nsa W, Hassig SE, et al. Perinatal transmission of the human immunodeficiency virus type 1, to infants of seropositive women in Zaire. *N Engl J Med*. 1989; **320**: 1637-42.