EVALUATION OF EPIDEMIOLOGICAL AND CLINICAL FEATURES OF 202 HIV/AIDS CASES DIAGNOSED IN MERSIN

Müzeyyen Aksu[1], Caferi Tayyar Şaşmaz[2], Altan Togay[3] Tuğba İlayda Aksu[4]

1- Mersin City Health Directorate, Laboratory Of Public Health, Mersin, Turkey.
2- Mersin University Faculty of Medicine, Department of Public Health, Mersin, Turkey.
3- Mersin City Health Directorate Public Health Directorate, Mersin, Turkey.
4- Near East University, Faculty Of Dentistry, Lefkoşa, Cyprus

Abstract
The number of cases has steadily increased over the years since 1985 in Turkey. The aim of this study was to evaluate the epidemiological and clinical characteristics of HIV/AIDS cases in our province. Data on 202 HIV/AIDS cases diagnosed between January 1993 and December 2015 in Mersin were obtained from patient files. A total of 202 HIV/AIDS cases, 158 (78.2%) males, were included in the study. 136 (67.3%) of the cases were in the 24-44 age range. 198 (98.0%) of the cases were Turkish citizens and 115 cases (40.1%) had social security 66 cases (32.6%) are the most common workers. The highest risk factor was riskysexual intercourse with 16 (7.9%) cases. While the incidence of HIV/AIDS was 2.0 per hundred thousand in 2000, it was found that this rate increased to 10.9 per hundred thousand in 2015. Opportunistic infections were detected during the AIDS phase.When the patients applied for the first time, the mean number of CD4+ T lymphocyte cells was greater than> 500 in 39 (19.3%). Viral load rates are in the range of <10000 in 49 (24.3%). 59 (29.2%) cases received anti-retroviral therapy. During the study 11 (5.4%) of the cases died. In our region, the incidence of HIV/AIDS has been increasing over the years. Risk factors of cases have not been reached to a large extent. Risk factors are determined in the shortest time and education and health services should be planned to combat this disease.
Key words: HIV, AIDS, epidemiology, clinical follow.

MERSİN İLİNDE 202 HIV/AIDS OLGUSUNUN EPİDEMİYOLOJİK VE KLİNİK ÖZELLİKLERİNİN DEĞERLENDİRİLMESİ

Türkiye'de ilk HIV/AIDS olgusu 1985 yılında bildirilmiş ve bu tarihten itibaren olgu sayısı yıllar içinde giderek artmıştır. Bu çalışma ile ilimizdeki HIV/AIDS olgularının epidemiyolojik ve klinik özelliklerinin değerlendirilmesi amaçlanmıştır. Mersin ilinde Ocak 1993-Aralık 2015 tarihleri arasında tanı konan 202 HIV/AIDS olgusuna ait veriler hasta dosyalarından elde edilmiştir. Çalışmaya 158'i (%78.2) erkek olmak üzere toplam 202 HIV/AIDS olgusu alınmıştır. Olguların 136 (%67.3)'sı 24-44 yaş aralığındadır. Olguların 198'i (%98.0) Türk vatandaşı olup 115 (%40.1)'i sosyal güvenceye sahiptir. Mesleklerine göre değerlendirildiğinde en yüksek grup 66 olgu (%32.6) ile işçilerde görülmektedir. En yüksek risk faktörünü 16 (%7.9) olgu ile cinsel ilşki oluşturmaktadır. HIV/AIDS insidansı 2000 yılından yüz binde 2.0 iken, 2015 yılında bu oranın yüz binde 10.9'a çıktığı tespit edilmiştir. Olgular ilk başvurduklarında ortalama CD4+T lenfosit hücre sayısı 39'unda (%19.3) >500'den büyük olduğu saptanmıştır. AIDS aşamasında fırsatçı enfeksiyonların eşlik etmektedir.Viral yük oranları 49'unda (%24.3) <10000 küçüktür. 59 (%29.2) olgu anti-retroviral tedavi almaktadır. Çalışma süresince olguların 11'i (%5.4) hayatını kaybetmiştir.Bölgemizde HIV/AIDS insidansı yıllar itibariye artmaktadır. Çalışmamızda, olgulara ait risk faktörlerine çok büyük oranda ulaşılamamıştır. Tespit edilen olguların risk faktörlerinin belirlenmesi, bu hastalıkla mücadele için planlanacak sağlık hizmetlerine yön verecektir.
Anahtar kelimeler: HIV, AIDS, epidemiyoloji, klinik takip.

Sorumlu Yazar / Corresponding Author: *Müzeyyen Aksu*
Mersin City Health Directorate, Laboratory Of Public Health, Mersin, Turkey
e-mail: *muzeyyen.aksu@yandex.com* ***ORCID:*** *0000-0002-4138-4827*
Diğer Yazarlar: Caferi Tayyar Şaşmaz: *0000-0002-3923-570X* ***Altan Togay:*** *0000-0002-3698-5695*
Tuğba İlayda Aksu: *0000-0002-0288-4749*
Geliş tarihi / Received: *21.06.2020,* ***Kabul Tarihi / Accepted:*** *15.09.2020*

Nasıl Atıf Yaparım / How to Cite: *Aksu A, Şaşmaz CT, Togay A, Aksu Tİ. Evaluation of Epidemiological and Clinical Features of 202 HIV/AIDS Cases Diagnosed in Mersin. ESTUDAM Public Health Journal. 2021;6(1):34-45.*

Introduction

The human immunodeficiency virus (HIV) affects immune cells, disrupting the human defense system, leading to opportunistic infections and the development of acquired immunodeficiency syndrome (AIDS) over time (1). It was first described clinically in 1981 in the United States. The number of cases diagnosed from the first years to the present has increased gradually every year (2,3).

According to World Health Organization (WHO) data, a total of 36.9 million people, 18.2 million women, 16.8 million men and 1.8 million children, are infected with HIV/AIDS in the world. 1.8 million of them are new cases and 940 thousand people die every year from HIV/AIDS related diseases. According to WHO data, the African region is the most affected area with 25.7 million people. Two-thirds of new HIV/AIDS infections occur in this region and are one of the leading causes of death. In some countries in Kenya, Zambia and the Caribbean, the number of HIV/AIDS cases has been reduced with the development of new drugs and prevention methods. However, the number of cases continues to increase in Eastern Europe, Central and East Asia and Sub-Saharan Africa (3-5).

In 1985, for the first time in Turkey, according to official data of HIV/AIDS number of cases have been reported 3 times. This number increased over time and reached 6795 between 2012-2015. Unfortunately, there are not enough studies investigating the epidemiological and clinical features of these cases in our country. The aim of this study was to evaluate the epidemiological and clinical data of HIV/AIDS cases for 24 years in our province.

Materials and Methods

The study was conducted in 2016 in Mersin. In our study, 202 HIV/AIDS patients who were notified to the Department of Infectious Diseases by Public Health Directorate between 1993 and 2015 by the institutions in the health system (State Hospitals, University Hospital, Community Health Centers, Public Health Laboratory, Private Hospitals and Kızılay Blood Center). data were evaluated. Demographic characteristics of the patients (age, gender, nationality, residential area, health insurance, reporting health institution and occupational distribution, sexual intercourse, partner information, risk factors) and clinical (opportunistic infection, number of CD4+T lymphocyte cells studied at first admission, viral load, concomitant opportunistic infections, treatment status, prognosis) data were obtained retrospectively from patient files. The diagnosis of HIV/AIDS was confirmed by Western Blot (WB) test in blood samples positive for Enzyme Immunoassay (ELISA) test to eliminate and confirm false positivity. Cases are classified according to the definition of Centersfor Disease Control and Prevention (6).

For the study, the approval of the official institution was obtained by the Clinical Research Ethics Committee of the Rectorate of Mersin University with the number 2016/78 dated 24/03/2016 and with the letter no. Our study was planned as a retrospective recording study, and the descriptive identification information of the patients were not used,

therefore, informed consent was not obtained.

The data were evaluated by entering the computer. Descriptive statistics such as percentage, ratio, average, median etc. were used in the evaluation of the data.

Results

A total of 202 HIV/AIDS cases, 158 (78.2%) males, were included in the study. It was found that 71 (35.1%) of the cases were between 24-34 years and 65 (32.2%) were between 35-44 years. 198 (98.0%) of the cases were Turkish citizens and 110 (%54.5) were living in the central districts. In this study 7 (23. 3%) of the cases have Social Insurance Institution, 34 (16.8%) have Social Security Institution and 22 (10.9%) have Green Card health insurance. 94 (46.5%) of the cases were diagnosed in the State Hospital and 79 (39.1%) were diagnosed in the University Hospital. While 66 (32.6%) of the cases were workers, 88 (43.5%) of them could not be identified (Table 1).

Table 1: Demografic characteristics of HIV/AIDS cases.

Age	**n**	**%**
<24	27	13.4
24-34	71	35.1
35-44	65	32.2
45-54	19	9.4
55-64	15	7.4
>64	5	2.5
Gender		
Male	158	78.2
Female	44	21.8
Nationality		
Turkısh	198	98.0
Foreigner	4	2.0
Distribution by settlement		
Mersin city center	110	54.5
Mersin districts	59	29.5
From other provinces	12	5.9
Abroad	6	3.0
Unspecified	15	7.1
Distribution according to health insurance		
Social insurance Institution	47	23.3
Social Security Institution	34	16.8
Green Card	22	10.9
Unsecured	8	4.0
BAGKUR	6	3.0
Paid	6	3.0
Other	5	2.5
Unspecified	74	36.6
Distribution according to the institutions		
State Hospitals	94	46.5

University Hospitals	79	39.1
Private Hospitals	15	7.4
Kızılay Blood Center	10	5.0
Public Health Laboratory	4	2.0
Distribution by occupation		
Worker	66	32.6
Housewife	13	6.4
Transportation sector	10	5.0
Student	7	3.5
Teacher	6	3.0
Health sector	5	2.5
Retired	4	2.0
Unemployed	3	1.5
Unspecified	88	43.5

When the cases were evaluated according to sexual intercourse, it was found that 187 (92.6%) were heterosexual and 15 (7.4%) were homosexual. 111 (55.0%) of the cases had permanent and 39 (19.3%) had temporary spouses. When the risk factors related to transmission were evaluated, 16 (7.9%) of the cases had sexual intercourse, 9 (4.5%) had substance addiction and 3 (1.5%) had maternal HIV transmission from birth, but 170 (84.1%) had transmission a risk factor was not identified (Table 2).

Table 2: Sexual intercourse and possible transmission of HIV/AIDS cases.

Sexual intercourse type	**n**	**%**
Heterosexual relationship	187	92.6
Homosexual relationship	15	7.4
Partner information		
Permanent spouse	111	55.0
Temporary spouse	39	19.3
Prostitute	15	7.4
Abroad	1	0.5
Unknown	36	17.8
Risk factors		
Risky sexual intercourse	16	7.9
Substance abuse	9	4.5
HIV transmission from birth to mother	3	1.5
Blood donation	2	1.0
Percutaneous injury	1	0.5
Nosocomial transition	1	0.5
Unspecified	170	84.1

According to the distribution of cases according to the years they were diagnosed, 2 HIV and 5 AIDS were diagnosed between 1993-1995; These figures were found to be 15 and 6 between 2001 and 2005, 38 and 5 between 2006 and 2010, and 115 and 6 between 2010 and 2015 (Figure 1).

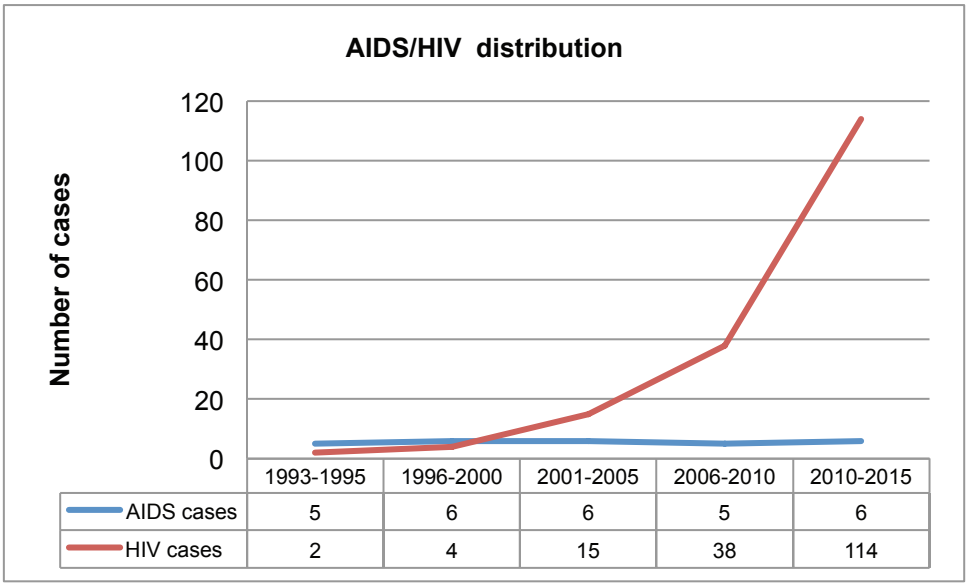

Figure 1: Distribution of HIV/AIDS cases in Mersin between 1993 and 2015.

The incidence of HIV/AIDS between 2000 and 2015 is given in figure 2. There is a growing trend in the incidence of HIV/AIDS from 2000 to 2015 respectively (Figure 2).

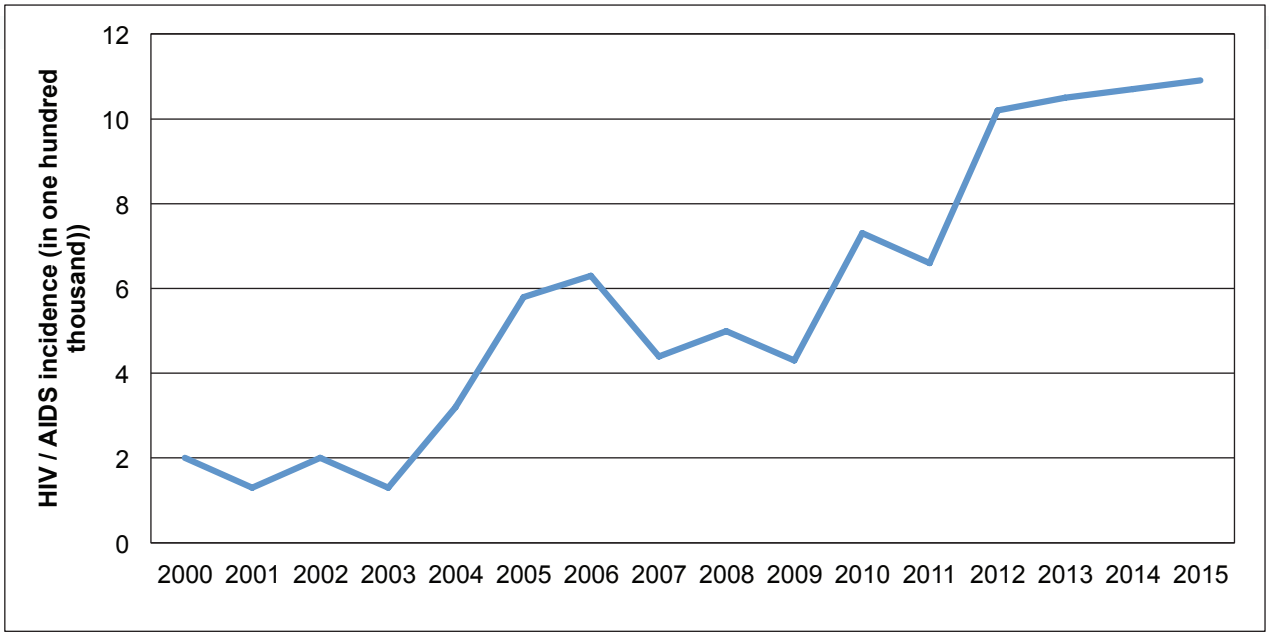

Figure 2: Incidence of HIV/AIDS in Mersin between 2000 and 2015.

While all of the cases between 1993 and 1995 were under 34 years of age, HIV/AIDS was diagnosed in olders ages in later years. While the ratio of cases over 35 years of age was 57.1% between 2001 and 2005, this rate was %50.0 between 2011 and 2015 (Table 3).

Table 3: Age distribution of male and female cases by years.

Years	Gender	Age						
		<24	24-34	35-44	45-54	55-64	>64	Total
1993 - 1995	Female (n)	2	3	0	0	0	0	**5**
	Male (n)	1	2	0	0	0	0	**3**
1996 - 2000	Female (n)	0	1	0	0	0	0	**1**
	Male (n)	1	1	3	2	0	0	**7**
2001 - 2005	Female (n)	2	3	8	0	0	0	**13**
	Male (n)	3	1	1	3	0	0	**8**
2006 - 2010	Female (n)	2	6	3	0	2	1	**14**
	Male (n)	1	9	12	6	1	2	**31**
2011 - 2015	Female (n)	1	5	7	1	4	0	**18**
	Male (n)	14	40	31	7	8	2	**102**
Total		**19**	**40**	**63**	**45**	**26**	**9**	**202**

One hundred ninety (94.1%) of HIV test results were confirmed in Ankara Public Health Microbiology Reference Laboratory. The mean number of CD4+T lymphocyte cells was> 500 in 39 (19.3%) cases, 200-499 in 13 (6.4%) cases and <200 in 10 (5%) cases. Viral load rates were found to be <10000 in 49 (24.3%) cases, in the range of 10000-50000 in 4 (2.0%) and> 50000 in 8 (4%) cases (Table 4).

Opportunistic infection was reported in 18 (8.9%) cases. The first two of the reported opportunistic infections were HIV burnout syndrome in 7 (25.9%) cases and oral candidiasis in 3 (11.1%) cases. All opportunistic infections are reported to be detected at the AIDS stage (Table 4). Fifty-nine (29.2%) patients received antiviral therapy and 4 (2.0%) did not. 139 (68.8%) cases could not be obtained whether the antiviral treatment. It was found that 11 (5.4%) of the cases reported to date have died (Table 4). Two patients (18.1%) were accompanied by brain toxoplasmosis and pulmoner tuberculosis. One patient died in nine years, one patient in five years, two patients in three years, seven patients died within one or two years. Five of the deaths (45.5%) were detected between 2011 and 2015.

Table 4: CD4+T lymphocyte cell count, viral load ratio and opportunistic infections.

CD4 + T Lymphocyte count (mm³)	**n**	**%**
<200	10	5.0
200-499	13	6.4
> 500	39	19.3
Unspecified	140	69.3
Viral load rates at the time of admission (copies / ml)		
<10000	49	24.3
10000-50000	4	2.0
> 50000	8	4.0
Negative	1	0.5
Unspecified	140	69.3
Concomitant opportunistic infections		
HIV burnout syndrome	7	25.9
Oral candidiasis	3	11.1
Pulmonary Tuberculosis	2	7.4
Pneumocystiscarini	2	7.4
Brain toxoplasmosis	2	7.4
HIV encephalopathy	2	7.4
Recurrent pneumonia	2	7.4
Cytomegalovirus	1	3.7
Other non-tuberculosis microbial diseases	1	3.7
Isosporiasis	1	3.7
Kaposi's sarcoma	1	3.7
Lymphoma	1	3.7
Cryptosporidiosis	1	3.7
Recurrent salmonella	1	3.7
Eksitus	11	3.7

Discussion

Although the demographic characteristics of HIV/AIDS vary from country to country, they can be seen in women, men and children of all ages. While the number of men/women is almost equal in the United States, it is higher in men in Europe, in women in Africa, North-South Asia and the West Pacific countries. Worldwide, the female/male ratio is equalized (3-5). Increasing HIV/AIDS rates in women is also important, as the HIV-infected children pass through the HIV virus as a result of blood, genital secretion and breastfeeding from HIV-infected mother to child (7-9).

In our country, according to official data, it is reported that 82.6% of the cases are male and 17.4% are female (10-13). In our study, although there was a difference in the number of male and female cases in the first years, the number of male cases has been reported more since 2006. Finally, in our study, it was found that 78.2% of the cases were male. In our region and in our country, the

proportion of male cases proportionally differs from other countries. This may be due to the social roles of men and women. In countries like ours, men experience more free sexual intercourse than women, leading to an increase in the number of HIV/AIDS cases in men.

While the cases are concentrated among the young population of 15-24 years in many regions of the world, it is determined that the cases are concentrated in the 34-44 age group although our country is a country with a high young population (5,11,13). In our province, the cases are concentrated between the ages of 24-44 as in our country and the number of cases above 35 years of age has increased proportionally. The reason that cases reported in both our region and in our country are seen at a later age may be related to the onset of active sexual life in our country at a later age compared to European countries.

According to the official data in our country, 98% of the cases are Turkish and 2% are foreign nationals (11). In our study, 98% of the subjects had Turkish nationality, indicating that the infection was not mainly from abroad. Cases of foreign origin are citizens of Moldavia, Ethiopia and Poland where we have intense economic relations and the number of HIV/AIDS cases is high in these countries (1).This shows that HIV/AIDS infection in our province is not originated from abroad.

When HIV/AIDS cases are evaluated professionally, it is stated that they are concentrated in occupations such as automotive, food, construction, tourism and barber (14), and the highest number of workers (32.6%) is observed in our study. In our study, only 43.1% were found to have health insurance. This situation shows that those who are not workers and social security are more exposed to HIV/AIDS.

The most important transmission way in the spread of HIV/AIDS infections in the world and in our country is sexual contact (5,10,13). HIV infections are known to be the disease of homosexual people when they first appeared, and today it is known that the most common transmission route is unprotected heterosexual sexual contact (11,15,16). In our country, the most common transmission route in HIV (+) cases is reported to be heterosexual sexual contact (35.9%) (5,11). In other studies conducted in our country, it has been reported that the transmission varies between 63.5-91% with heterosexual relationship (17-20).This result shows that HIV/AIDS reversed the view of the disease of homosexual people during the first years of HIV/AIDS and predominantly HIV/AIDS is now involved in heterosexual relationships.

Studies have reported that having sex with more than one person during the same period increases the risk of disease transmission, while in countries where monogamy is encouraged it causes a decline in the number of HIV/AIDS (21,22). In our study, 92.6% of the cases were infected with heterosexual sexual intercourse, followed by homosexual intercourse with 7.4%. In addition, in the present study, 55% of the cases were monogamous, 19.3% were temporary spouses and 7.4% were sex workers. Due to the socio-cultural structure of our country, the prevalence of monogamy may cause the HIV/AIDS ratio to be lower than other countries.

Around the world, 13 million people inject drugs, and 1.7 million of them are infected with HIV (12). In our country,

according to official data, the path of transmission by sexual intercourse, intravenous drug use (1.1%) is followed (5).This rate is 4.5% in our province. In our country, transmission by blood transfusion was 1.9%, while in our province this rate was 1%, HIV-infected mother-to-baby transmission was 1% and in our province it was 1.5%. While the unidentified risk factor was 47.7% in our country, the risk factor was not identified in 84.1% of the cases in our study. This result is a remarkable finding of our study and shows that the risk factors of HIV/AIDS cases in our region are largely undetectable. Failure to identify risk factors is a major problem in taking measures to prevent the spread of HIV/AIDS in society.

It is reported that the number of HIV/AIDS cases in our country has increased to 2270 in 2015 (10,11). In our study, the incidence of HIV/AIDS ranged from 2.0 to 6.7 per 100000 between 2000 and 2010, and this rate increased to 10.9 in 2015. These data show that the incidence of HIV/AIDS has increased rapidly in our region in recent years. Similar increase rates are reported to be in other provinces (16,23-25). This increase in the incidence of HIV/AIDS in both other provinces and in our region may be associated with many socio-economic factors. One of these factors may be the arrival of more immigrants from abroad and an increase in unemployment in recent years.

When the cases are evaluated according to their health assurance, only 43.1% of the cases have health assurance. Today, there is no definitive treatment and vaccination that can completely remove HIV infection from the body.With the treatment regimens that put a significant burden on the economy, it has become a chronic disease that requires lifelong drug use and has ceased to be a fatal disease.According to data from the World Health Organization,only 53% of people infected with HIV have access to antiretroviral treatment (5,26). Only 29.2% of our cases received drug treatment. The low rate is thought to be caused by glitches in the registration system.

The HIV virus causes humoral and cellular disorders from immune cells to CD4+T lymphocyte cells, leading to the development of AIDS and opportunistic infections. The risk of AIDS and opportunistic infection increased when the number of CD4+T lymphocyte cells decreased to ≤200ml in the patient and the clinical picture became heavier. However, the type and incidence of opportunistic infections vary from region to region (27,29). Yardimci et al. found that 212 opportunistic infections were the highest in patients with the lowest CD4+T lymphocyte cell count (73.0%) and the lowest (27.0%) in the highest cell count (27). In these cases, as the amount of viral load increases, the incidence of opportunistic infections has increased.In total, the most common opportunistic infections reported were Pneumocystis jirovecii pneumonia, HIV burnout syndrome and Candida esophagitis, respectively (27). In the Punar study, CD4+T lymphocyte cell count was reported below <200ml in 55% of the cases and close to half of the cases were in the AIDS stage and opportunistic infections needed treatment (23).

In a study by Taşdelen et al, 44% had CD4+T lymphocyte cell count <200ml and were delayed on admission to the physician, and 56% of the cases had opportunistic infection and the most

common form of milder tuberculosis (40%) (16). In our study, CD4+T lymphocyte cell count was less than <200 ml in 10 (5%) cases in the first stage, 13 (6.4%) in the range of 200-499 ml and II (39%) in the range of 200-499 ml. 19.3 III. phase. The data show that the diagnosis was made at the beginning of the disease. The most common opportunistic infection was HIV burnout syndrome in 7 cases (3.5%) followed by oral candidiasis in three cases (1.5%).

The amount of viral load of the HIV virus is directly proportional to the development of AIDS and the increase in viral load is used as an indicator of the progression of AIDS and the possibility of complications (26). When the viral load was evaluated, 8 cases (4.0%) were found to be> 50 000, 4 cases (2%) were between 10000-50000 and 49 cases (24.3%) were found to be <10000 and they were found to be compatible with CD4+T lymphocyte cell count.

When our cases were evaluated according to their prognosis, it was found that 11 (5.4%) cases died. When the duration of diagnosis and death is considered, it is thought that the cases applied to health institutions during the AIDS stage (63.6%) and accompanied by more than one opportunistic infection (45.5%). Early detection of the disease and initiation of antiretroviral therapy may prevent the spread of the disease and also affect the prognosis of the disease (28-30).

As a result, in our study, the incidence of HIV/AIDS in our region increased from 2.0 per hundred thousand in 2000 to 10.9 in 2015, 78.2% of the cases were male and 98.0% were Turkish citizens, 32.6% were workers, 92.6% were heterosexual relationships. It was found that the risk factor could not be determined in 84.1% and that 54% had died. It is recommended that the descriptive information of the cases identified as a result of the study be recorded in full, planning the preventive and preventive health services for the society and the risk factors to be determined from this study, and training programs for the workers are recommended.

Acknowledgment

We would like to thank all the Public Health Directorate and Infectious Diseases Control Programs Branch employees who contributed to the collection of data in our study.

Conflict of interest

There is no difference of opinion between the authors. Financial support; no financial support was received in the conduct of the study

References

1. *Tümer A, Ünal S. HIV/AIDS epidemiology and protection.Aile ve Toplum Dergisi 2001;4:1.*
2. *Dökmetaş İ, Hamidi AA. HIV-Epidemiology. Turkiye Klinikleri Infectious Diseases 2016;9(1):6-11.*
3. *WHO. [Cited 2019 June 19] Avaliable from: http://. www.who.int/hiv/progressreports/update2014/en/.*
4. *WHO. HIV/AIDS surveillace in Europe 2017. [Cited 2019 June 19] WHO ISBN 978-92-8905-284-9.*
5. *WHO. Bulaşıcı Olmayan Hastalıkların Önlenmesine ve Kontrolüne İlişkin Küresel Eylem Planı 2013-2020 [cited 2018 Semptember 1] Available from: ile:///C:/Users/hsl/Desktop/ Bulaşıcı%20 Hastalıklar%20Daire%20Başkanlığı%20Istatiksel%20Verileri.html.*
6. *Centers for Disease Control and Prevention. 1993 revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and aduls. MMMR 1992; 41(17):1174-203.*
7. *Babayiğit MA, Bakır B. HIV infection and AIDS: Epidemiology and prevention. TSK Koruyucu Hekimlik Bülteni 2004;(3):11.*
8. *Taşcı E, Saruhan A. Effects of gender on HIV/AIDS.Uluslararası İnsan Bilimleri Dergisi 2007;(4):1.*
9. *Shetty A, Maldonado YA. Epidemiology and prevention of HIV infection in children and adolescents. In: Long SS, Pickering LK, Prober CG, eds. Principles and Practice of Pediatric Infectious Diseases, 3rd ed. Philadelphia: Churchill Livingstone. 2008: 641-52. Available from: https://doi.org/10.1016/B978-0-7020-3468-8.50115-2*
10. *TC Ministry of Health HIV / AIDS Data Sheets 01 October1985-30 June 2013 [cited 2014 July 15] Ankara, Turkey Public Health Agency of Infectious Diseases Department of Venereal Diseases Unit Available from: http://hatam.hacettepe.edu.tr./data_june_2013.pdf.*
11. *T. C. Ministry of Health HIV / AIDS Data Sheets 01 October1985-30 June 2013 [cited 2018 April 13] Ankara, Turkey Public Health Agency of Department of Infectious Diseases. Available from: http://www.thsk.gov.tr/. data 31 _December2016.pdf.*
12. *WHO. World Health Statistics 2018 Monitoring Healt For The SDGs Sustaınable Development Goalds. ISBN 978-92-4-156558-5. Available from: http://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf?ua=1. Accessed on: 10.07.2018.*
13. *Akdeniz M, Yaman H. Defining HIV/AIDS in primary care . ISSN 1016-5134. Sendrom May-June2008.67.*
14. *Çelikbaş A, Ergönül Ö, Baykaram N, Eren Ş, Esener H, Eroğlu M, et al. Epidemiologic and clinical characteristics of HIV/AIDS patients in Turkey, wheretheprevalence is thelowest in theregion. Journal of the International Association of Physicians in AIDS Care 2008;7(1):42-5.*
15. *Kim JM, Cho GJ, Hong SK, Chang KH, Chung JS, Choi YW, et al. Epidemiology and clinical features of HIV infection/AIDS in Korea, Yonsei. Medical Journal 2003;3:363-70.*
16. *Taşdelen-Fışkın N, Tanyel E, Sarıkaya-Genç H, Tülek N. Evaluation of HIV/AIDS cases. Klimik Dergisi 2009;22(1):18-20.*
17. *Alp E, Bozkurt İ, Doğanay M. Epidemiological and clinical characteristics of HIV/AIDS patients followed in the Cappadocia region: 18 years of experience. Mikrobiyoloji Bulteni 2011;45(1):125-36.*
18. *Kaya S, Yılmaz G, Erensoy Ş, Arslan M, Köksal İ. Retrospective analysis of 36 HIV/AIDS cases .Klimik Dergisi 2011;24(1):11-6.*
19. *Akın H, Bölük G, Akalın H, Oğuz-Ayarcı A, Kazak E, Aslan E, et al. HIV/AIDS: 78 retrospective analysis .Klimik Dergisi 2012;25(3):111-6.*

20. Karaosmanoğlu HK, Aydın ÖA, Nazlıcan Ö. Profile of HIV/AIDS Patients in a Tertiary Hospital in Istanbul, Turkey. HIV Clinical Trials 2015;12:104-8. Available from:https://doi.org/10.1310/hct 1202-104
21. Kıyılıoğlu L, Dönmez A. Sexual behaviors that increase the risk of HIV/AIDS. Current Approaches in Psychiatry 2017;9(2):147-62.
22. Güneş N, Elbir TZ, Yazıcı S, Üçışık AC, Doğru A, Ergen P, et al. The epidemiological and clinical characteristics of HIV/AIDS patients admitted to our center. Flora Dergisi 2012;17(2):57-61.
23. Punar M, Uzel S, Cemil EH, Çağatay AA, Özsüt H, Eraksoy H, Dilmener M. HIV infection: analysis of 44 cases. Klimik Dergisi 2000;13(3):94-7.
24. Yaşar KK, Kehriba AH, Kaşıkçı H, Cebeci N, Pehlivanoğlu F, Şengöz G, Karaosmanoğlu HK. Analysis of HIV RNA results of HIV/AIDS patients. DOI:10.4274/Haseki.1251
25. Bayazıt Y. Infectious diseases notification system in Turkey. Turkish Bulletin of Hygiene and Experimental Biology 2005;62(1):73-6.
26. Taylor A, Little K, Zhang X. Estimated perinatal antiretroviral exposures, cases prevented, and infected infants in the era of antiretroviral prophylaxis in the US. Conference on Retrovirusesand Opportunisticnfections (CROI) 2012. Boston, MA.
27. Yardımcı AC, Fincancı M. The relationship between opportunistic diseases and viral load and CD+4 T cell numbers in HIV-infected patients. Klimik Dergisi 2015;28(1):28-34.
28. Girardi E, Sabin CA, Monforte AA. Latediagnosis of HIV ınfection: epidemiological features, consequences and strategies to encourage earlier testing. Journal of Acquired Immune Deficiency Syndromes 2007;46(1):3-8.
29. Gülümser Ç, Erbaydar T. HIV/AIDS epidemic in Turkey and use of anti retroviral drugsfortreatingpregnantwomenandpreventing HIV infection in infants. Turkish Journal of Obstetrics and Gynecology 2015;12:192-8.
30. Özgüneş N, Elbir TZ, Yazıcı S, Üçışık AC, Doğru A, Ergen P, et al. The epidemiological and clinical characteristics of HIV/AIDS patients admitted to our center. Flora Dergisi 2012;17(2):57-61.