

## DERMATOLOGICAL MANIFESTATIONS OF HIV-INFECTION/AIDS

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### ABSTRACT

**Introduction.** Nowadays, HIV/AIDS is one of the most urgent medical and social problems. That's why it is important to study the regional peculiarities of dermatological manifestations of HIV/AIDS for early diagnosis and timely treatment.

**The objective** was to study the peculiarities of clinical manifestations of dermatological diseases of HIV/AIDS patients in the inhabitants of Chernivtsi region, Ukraine.

**Material and methods.** The analysis of medical records of 356 HIV- infected patients and 94 AIDS-patients from Chernivtsi region. Diagnosis of HIV-infection/AIDS was based on clinical data and commonly accepted laboratory criteria.

**Results.** The following infectious skin diseases in HIV/AIDS-patients (92.9% of patients) were registered: dermatomycoses (70.2%), viral dermatoses (51.6%), pyodermas (16.4%), combined diseases – 38.2%;

### RÉSUMÉ

Traits dermatologiques de l'infection VIH/ SIDA

**Introduction.** Compte tenu du fait que les pathologies dermatologiques sont fréquemment développées chez les personnes atteintes du VIH/SIDA, il est important d'étudier les particularités régionales des manifestations cutanées de VIH/SIDA dans le but du diagnostic précoce et le traitement opportun de ces patients.

**Le but de cette étude** est d'étudier les particularités des manifestations cliniques des maladies dermatologiques chez les personnes infectées par le VIH et des patients atteints du SIDA – les habitants de la région de Chernivtsi, Ukraine.

**Méthodes:** On a analysé les dossiers médicaux de 356 personnes atteintes du VIH et de 94 malades du SIDA.

**Résultats:** Ont été enregistrées les infections les plus fréquentes de la peau (92,9%), y compris la teigne (70,2%), les dermatoses virales (51,6%) et les

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nonspecific dermatoses – in 26.2% of patients. Kaposi's sarcoma was detected in 5 (1.1%) HIV/AIDS patients and hairy leukoplakia of the tongue – in 3 (0.67%) patients. The peculiarities of the structure of dermatological manifestations of HIV-infection/AIDS in patients at different stages of the clinical course of the disease were established.

**Conclusions.** Among the HIV/AIDS patients of Chernivtsi region, the most frequent dermatological pathologies are infectious skin diseases (fungal, viral, pustular) and nonspecific skin diseases, which are characterized by severe clinical course. The frequency of their manifestations is variable, depending on the different clinical stages of the disease, and should be taken into account when examining the patients from this geographical area, as well as while teaching dermatovenerology to medical students.

**Key words:** HIV/AIDS, dermatological manifestations, regional peculiarities.

**Abbreviations:** HIV – Human Immunodeficiency Virus; AIDS – Acquired Immunodeficiency Syndrome.

## INTRODUCTION

Nowadays, HIV/AIDS is one of the most urgent medical and social problems<sup>1-3</sup>, since the infection is characterized by a high prevalence among people of different age groups and a steady tendency to increase in mortality rates due to this disease.

Drug addiction, homosexuality, alcoholism, prostitution, urbanization, population migration, acceleration, etc. contribute to the spread of HIV-infection<sup>4-6</sup>. Sexually transmitted diseases, in particular syphilis, are an important cofactor, contributing to the spread of HIV-infection with the further development of AIDS<sup>7,8</sup>.

Ukraine is a country with a high prevalence and a tendency to an increase in the incidence of HIV/AIDS. As on 01.04.2017, there were 135,000 of HIV-infected Ukrainian citizens (319.5 cases per 100,000 inhabitants) who accessed the healthcare services, more than 40,000 of whom being patients with the diagnosis of AIDS (94.8 cases per 100,000 of people). During 4 months of 2017, 6,050 of new cases of HIV-infection were registered in the country (the rate of growth in comparison with the corresponding period in 2016 was +15.4%); the diagnosis of AIDS was established in 3200 patients (the rate of growth +14.8%), and 1022 people died from AIDS (growth rate +5.5%). In total, since 1987, more than 42,700 people died from AIDS in Ukraine<sup>9</sup>.

pyodermies (16,4%) à évolution clinique compliquée et combinée d'un tiers des patients (38,2%). Chez 5 patients avec le VIH / SIDA (1,1%) on a diagnostiqué le sarcome de Kaposi, 3 (0,67%) patients – leucoplasie de la langue. Les particularités de la structure des manifestations cutanées des patients aux stades cliniques différents de la maladie ont été mises en place.

**Conclusions:** Parmi les personnes avec VIH/ SIDA – résidents de la région de Tchernivtsi – les troubles dermatologiques les plus courants sont les infections cutanées et les maladies non spécifiques, caractérisés d'une évolution clinique aggravée et la fréquence de leurs manifestations en divers stades cliniques de la maladie.

**Mots-clés:** VIH / SIDA, manifestations cutanées, particularités régionales.

**Abbréviations:** VIH – Virus de l'Immunodéficience Humaine; SIDA – Syndrome d'Immunodéficience Acquise.

In Chernivtsi region, since the detection of the first case of HIV-infection in 1994, to January 1st, 2017, 1625 cases of HIV-infection were officially registered, including 471 cases of AIDS, and 194 deaths from AIDS-related illnesses. As on 01.01.2017, 870 people (including 135 children born by HIV-infected women), among whom there were 359 people in the I<sup>st</sup> clinical stage, 91 in the II<sup>nd</sup> clinical stage, 163 in the III<sup>rd</sup> clinical stage and 257 in the IV<sup>th</sup> clinical stage of HIV infection, are under the supervision of physicians in the Regional communal establishment (RCE) „Chernivtsi Regional Center for the Prevention and Control of AIDS“<sup>10</sup>.

One of the methods for controlling the spread of the infection is the timely detection and treatment of people with HIV/AIDS, especially in early stages of the disease. In early stages, there are dermatological manifestations characteristics for this disease, in the form of infectious and non-infectious dermatoses and tumors, easily examined visually and diagnosed<sup>4,11</sup>. Therefore, information about regional peculiarities of the structure and dermatological manifestations of HIV/AIDS may be useful for physicians of any specialty, for an early diagnosis and timely treatment of such patients<sup>12</sup>.

The **objective was to study** the structure and clinical peculiarities of dermatological manifestations of HIV-infection/AIDS in patients of Chernivtsi region, Ukraine.

**MATERIAL AND METHODS**

The analysis of medical records of 450 HIV-infected and AIDS patients was made. The study included 287 men and 163 women, registered in RCE „Chernivtsi Regional Center for the Prevention and Control of AIDS“. The majority of the group of study was represented by HIV-infected patients (356 patients), 176 patients in the first clinical stage of HIV-infection, 57 with the second stage, 124 with the third clinical stage, and 94 patients with the fourth stage of the disease – the AIDS. Patients’ diagnosis was based on clinical data and the identification of a pro-viral DNA by a polymerase chain reaction (PCR) method and by the presence of antibodies to HIV by the immuno-enzymatic assay (ELISA). When diagnosing dermatological diseases, patients’ complaints, history data, clinical picture of dermatosis, and also the results of laboratory tests (mycological, bacteriological, serological, etc.) have been taken into account<sup>4</sup>.

**RESULTS**

According to the study and analysis of the structure of dermatological manifestations of HIV-infection/AIDS in inhabitants of Chernivtsi region (presented in Table 1), the majority of the patients (92.9%) had infectious diseases of the skin. Dermatomycoses were the most frequent (in 70.2% of the patients). 51.6% of the patients have been diagnosed with viral dermatoses, and in 16.4% of the patients pustular skin diseases (pyodermas) have been detected. Nonspecific dermatoses are diagnosed in every fourth patient (26.2%), and tumors of the skin – in 1.1% of infected persons.

**Table 1.** Structure of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region, Ukraine

Groups of dermatoses	HIV/AIDS patients, n=450	
	Cases of disease:	
	absolute numbers	relative numbers
Infectious dermatoses, including:		
- fungal (dermatomycoses)	418	92.9%
- viral	316	70.2%
- pustular (pyodermas)	232	51.6%
- mixed infectious dermatoses	74	16.4%
Nonspecific dermatoses	172	38.2%
Skin tumors	118	26.2%
	5	1.1%

Among the dermatoses of fungal etiology (dermatomycoses), that were diagnosed in 316 HIV-infected individuals and patients with AIDS, the largest proportion (60.2%) was made up by the candidiasis of the skin and mucous membranes, including angular candida cheilitis (33.9%), oral mucous candidiasis (18.7%) and candida balanoposthitis (7.6%); in the fifth part of the patients (21.8%) epidermophytia of the feet and onychomycosis were diagnosed, and in 18.0% Tinea versicolor was detected. Regarding the structure of viral dermatoses, which were diagnosed in 232 patients, herpesvirus infections represented the highest proportion (74.5%), in particular – labial herpes (42.2%), genital herpes (22.8%) and herpes zoster (9.5%). It is important to note that in one third (38.2%) of HIV-infected people and AIDS patients, mixed infectious dermatoses were diagnosed.

The distribution of dermatological manifestations of HIV-infection/AIDS in patients from Chernivtsi region is presented in Table 2.

**Table 2.** Distribution of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region by the frequency of their diagnosis

Nosological forms	HIV/AIDS patients, n=450	
	Cases of disease:	
	absolute numbers	relative numbers
Angular cheilitis	107	23.8%
Seborrheic dermatitis	105	23.3%
Labial herpes	98	21.8%
Pyodermas	74	16.4%
Candidiasis of mucous membranes of the oral cavity	59	13.1%
Tinea versicolor	57	12.7%
Genital herpes	57	12.7%
Viral warts	40	8.9%
Feet epidermophytia	38	8.4%
Onychomycosis	31	6.9%
Candida balanoposthitis	24	5.3%
Herpes zoster	22	4.9%
Molluscum contagiosum	16	3.6%
Psoriasis	10	2.2%
Kaposi’s sarcoma	5	1.1%
Eosinophilic folliculitis	3	07%
Hairy leukoplakia of the tongue	3	0.7%

The analysis of dermatological manifestations of HIV/AIDS among the inhabitants of Chernivtsi region based on the frequency of their detection

(Table 2) showed that angular cheilitis is the most frequent manifestation developed in HIV-infected individuals, both children and adults (in every fourth patient – 23.8%). It occurs in the form of hyperemia and cracks in the corners of the mouth, which have a long course, and are heavily subjected to treatment.

One of the most common symptoms of HIV-infection among the inhabitants of Chernivtsi region is seborrheic dermatitis of the face and trunk (in 23.3% of people), in the form of redness and peeling of the skin (on the skin of the face it has a butterfly shape), which is characterized by common skin lesions (Fig. 1, 2), frequent development of psoriatic peeling or festering elements on the surface.

Dermatosis is accompanied by different itching, and is difficult to treat.

A frequent dermatological manifestation of HIV/AIDS in inhabitants of Chernivtsi region is labial herpes (21.8%) and genital herpes (12.7%), which often has a recurrent course (more than 5-6 episodes per year), and is often complicated by secondary pyoderma (Fig. 3) and formation of ulcers.

Due to immune deficiency of patients with HIV/AIDS, they usually develop festering skin diseases – pyodermas (16.4%) – often caused by streptococci and staphylococci, characterized by prolonged clinical course with common skin lesions (Fig. 4), development of boils and carbuncles, chronic ulcerative



**Figure 1.** Seborrheic dermatitis in a patient with HIV (photoillustration given by Dr. Stepan N.A.)



**Figure 2.** Seborrheic dermatitis in a patient with HIV (photoillustration given by Dr. Majkan I.J.)



**Figure 3.** Herpes of the perianal region with secondary pyoderma in a patient with HIV (photoillustration given by Dr. Denysenko O.I.)



**Figure 4.** Chronic pyoderma in a patient with HIV (photoillustration given by Dr. Hulei L.O.)



**Figure 5.** Chronic ulcerative pyoderma in a patient with HIV (photoillustration given by Dr. Perepichka M.P.)

pyoderma (Fig. 5). At the same time, HIV-infected people have a more severe clinical course of acne with the development of deep and ulcerative elements,

which end with the formation of cicatricial tissue in the skin.

An important feature of HIV-infection/AIDS in inhabitants of Chernivtsi region is the oral candidiasis (13.1%), in the form of white layers on the mucous membranes of the tongue and cheeks, which has a long chronic course and are characterized by resistance to topical therapy. Candida balanoposthitis is less often registered – in 5.3% of patients.

Tinea versicolor (Pityriasis versicolor) is a quite common manifestation of HIV-infection/AIDS in patients (12.7% of people) of Chernivtsi region. It is a chronic fungal skin disease from the group of keratomycoses, which in patients with immunodeficiency is characterized by common skin lesions (Fig. 6, 7), often with an atypical localization (buttocks, lower limbs), development of inflammation in the area of rash with manifestations of hyperemia, edema, itching. This dermatosis is difficult to treat, it has a chronic course with frequent relapses.



**Figure 6.** Pityriasis versicolor in a patient with HIV (photoillustration given by Dr. Brodovska N.B.)



**Figure 7.** Pityriasis versicolor in a patient with HIV (photoillustration given by Dr. Karvatska Yu.P.)



**Figure 8.** Herpes zoster with secondary pyoderma in a patient with HIV (photoillustration given by Dr. Majkan I.J. ).



**Figure 9.** Pustular psoriasis in a patient with HIV (photoillustration given by Dr. Karvatska Yu.P.).

An important feature of HIV-infection/AIDS is herpes zoster (diagnosed in 12.7% of people), which is characterized by the formation of a significant number of sharply painful bladders, often with purulent (Fig. 8) or hemorrhagic content, with the formation of ulcers. Dermatitis can occur repeatedly and is difficult to heal.

The other signs of HIV-infection/AIDS in inhabitants of Chernivtsi region are chronic viral diseases in the form of numerous warts and contagious genital warts (8.9%), as well as common (up to 100 and more elements) molluscum contagiosum (in 3.6% of patients).

Extremely frequent manifestations of HIV/AIDS are fungal skin diseases of the feet – epidermophytia of the feet (in 8.4% of patients), characterized by torpid, often recurrent course. In 6.9% of patients, fungal lesions of the nails (onychomycosis) were diagnosed, the etiological agents being dermatomycetes (*Trichophyton rubrum*) and yeast-like fungi (*Candida albicans*). Due to immunodeficiency, rapid lesions of nail plates occur, not only on the feet, but also on the hands.

HIV-infected people have more severe clinical course of psoriasis with the development of exudative, pustular (Fig. 9) or rupioid forms (Fig. 10).



**Figure 10.** Rupoid psoriasis in patient with HIV (photoillustration given by Dr. Denysenko O.I.)

Kaposi's sarcoma was diagnosed in five patients (1.1%) with AIDS. It is characterized by a significant number of rash elements and rapid metastasis. Manifestations of hairy leukoplakia of the tongue, which is considered a specific marker of HIV-infection/AIDS, were found in only 3 (0.67%) of HIV-infected people in Chernivtsi region.

We have also conducted the analysis of the frequency of dermatological manifestations of HIV-infection/AIDS in patients with different clinical stages of the disease, which are presented in Table 3.

**Table 3.** Distribution of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region depending on the clinical stage of the disease

Nosological forms	Total number of cases	Clinical stages of HIV-infection/AIDS			
		I stage	II stage	III stage	IV stage
Angular cheilitis	107	6 (5.3%)	45 (24.3%)	35(13.7%)	21(10.7%)
Seborrheic dermatitis	105	9 (8.0%)	26 (14.1%)	33 (12.9%)	37 (18.9%)
Labial herpes	98	37 (32.7%)	21 (11.4%)	25 (9.8%)	15 (7.7%)
Pyodermias	74	12 (10.6%)	16 (8.6%)	24 (9.4%)	22 (11.2%)
Candidiasis of mucous membranes of the oral cavity	59	8 (7.1%)	12 (6.5%)	18 (7.1%)	21(10.7%)
Tinea versicolor	57	10(8.8%)	12(6.5%)	23(9.0%)	12(6.1%)
Genital herpes	57	8 (7.1%)	7 (3.8%)	22(8.6%)	20(10.2%)
Viral warts	40	5 (4.4%)	15(8.1%)	12(4.7%)	8 (4.1%)
Epidermophytia of the feet	38	4 (3.5%)	6 (3.2%)	18(7.1%)	10(5.1%)
Onychomycosis	31	2 (1.8%)	7 (3.8%)	9 (3.5%)	13(6.7%)
Candida balanoposthitis	24	7 (6.2%)	4 (2.2%)	12(4.7%)	1 (0.5%)
Herpes zoster	22	0 (0%)	3 (1.6%)	14(5.5%)	5 (2.6%)
Molluscum contagiosum	16	3 (2.7%)	6 (3.2%)	4 (1.6%)	3 (1.5%)
Psoriasis	10	2 (1.8%)	4 (2.2%)	3 (1.2%)	1 (0.5%)
Kaposi's sarcoma	5	0 (0%)	1 (0.5%)	2 (0.8%)	2 (1.0%)
Eosinophilic folliculitis	3	0 (0%)	0 (0%)	0 (0%)	3 (1.5%)
Hairy leukoplakia of the tongue	3	0 (0%)	0 (0%)	1 (0.4%)	2 (1.0%)
Total:	749	113 (100.0%)	185 (100.0%)	255 (100.0%)	196 (100.0%)

According to the data presented in Table 3, the most frequently detected dermatological manifestations in HIV-infected individuals with the first clinical stage of the disease are: labial herpes (32.7%), pustular skin diseases – pyodermias (10.6%), pityriasis versicolor (8.8%).

In the second clinical stage: angular cheilitis (24.3%), seborrheic dermatitis (14.1%), labial herpes (11.4%), pyodermias (8.6%), warts (8.1%), candidiasis of mucous membranes of the oral cavity (6.5%) and Tinea versicolor (6.5%). Kaposi's sarcoma was diagnosed in only one patient.

In the third clinical stage of the disease, the most frequent manifestations were: angular cheilitis (13.7%), seborrheic dermatitis (12.9%), labial herpes (9.8%), pyodermias (9.4%), Tinea versicolor (9.0%), genital herpes (8.6%), candidiasis of mucous membranes of the oral cavity (7.1%) and epidermophytia of feet (7.1%). Kaposi's sarcoma was diagnosed in 2 patients (0.8%), and hairy leukoplakia of the tongue was detected in 1 patient (0.4%).

In patients with AIDS (the fourth stage of HIV-infection), the following dermatological diseases have been diagnosed: seborrheic dermatitis (18.9%), pyodermias (11.2%), angular cheilitis (10.7%), and candidiasis of mucous membranes of the oral cavity (10.7%), genital (10.2%) and labial (7.7%) herpes and onychomycosis (6.7%). In 2 patients (1.0%) hairy

leukoplakia of the tongue was diagnosed and in 2 more patients (1.0%) Kaposi's sarcoma was detected.

## DISCUSSION

We have identified certain particularities of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region, which partially differ from the generally accepted clinical manifestations of HIV-infection<sup>4,11</sup>. These particularities should be taken into account during the comprehensive examination of patients in this region and the training of medical personnel from different units.

## CONCLUSIONS:

1. Among the HIV-infected people and patients with AIDS, inhabitants of Chernivtsi region, the most frequent dermatological pathologies are infectious skin diseases (fungal, viral, pustular) (in 92.9% of patients) and nonspecific dermatoses, particularly seborrheic dermatitis (26.2%), which, due to immune deficiency, are characterized by severe clinical course, torpidity to standard treatment methods and tendency to frequent relapses. The tumors (Kaposi's sarcoma) were diagnosed in five patients (1.1%) with HIV-infection/AIDS.

2. In the structure of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region at the Ist clinical stage of the disease viral dermatoses (labial herpes) and pyodermias prevail; at the IIrd and IIIrd stages the most common are angular cheilitis, seborrheic dermatitis and herpesvirus dermatoses, and in patients with AIDS (the IVth stage of HIV-infection) – seborrheic dermatitis, pyodermias, candidiasis of the skin and mucous membranes of the oral cavity and genital herpes, while Kaposi's sarcoma and hairy leukoplakia of the tongue were detected only in single patients at the IIIrd – IVth stages of the disease.
3. The identified peculiarities of dermatological manifestations of HIV-infection/AIDS in the inhabitants of Chernivtsi region may be useful for physicians working in this geographical area, and also for teaching dermatovenereology to medical students.

**Conflict of Interest:** The authors declared no conflict of interest.

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