

Scientific Article

UDC 616.5-006.3.04

DOI: 10.17816/pmj413153-159

THE CASE OF DEVELOPMENT OF HIV-ASSOCIATED KAPOSI'S SARCOMA WITH SKIN AND LUNG LESIONS

M.Yu. Kobernik^{1*}, V.V. Nikolenko¹, O.E. Mikova², A.A. Zavyalova¹, M.A. Pyankova¹

¹ E.A. Vagner Perm State Medical University,

² Perm Regional Center for the Prevention and Control of AIDS and Infectious Diseases, Russian Federation

СЛУЧАЙ РАЗВИТИЯ ВИЧ-АССОЦИИРОВАННОЙ САРКОМЫ КАПОШИ С ПОРАЖЕНИЕМ КОЖИ И ЛЕГКИХ

М.Ю. Коберник^{1*}, В.В. Николенко¹, О.Е. Микова², А.А. Завьялова¹, М.А. Пьянкова¹

¹ Пермский государственный медицинский университет имени академика Е.А. Вагнера,

² Пермский краевой центр по профилактике и борьбе со СПИД и инфекционными заболеваниями, Российская Федерация

A clinical case of HIV-associated Kaposi's sarcoma with skin and lung lesions is presented. A patient referred to the Perm Regional Center for the Prevention and Control of AIDS and Infectious Diseases complaining of rash on the skin of the right wing of the nose, forehead, in the right axillary and right inguinal areas, on the shins. The first skin changes occurred in December 2020 on the right wing of the nose, later the pathological process spread to other areas of the skin. HIV was revealed in 2009 and the patient had not received specialized medical care until 2022 as he had been in prison. Since March 2022, the patient has been registered at the dispensary and regularly receives antiretroviral therapy. In April 2022, PET/CT tests and histological examination of a biopsy of skin rashes were performed. On the basis of these findings the diagnosis of Kaposi's sarcoma with skin and lungs lesions was made.

HIV-associated Kaposi's sarcoma is accompanied by lesions of the skin and internal organs. Skin changes in Kaposi's sarcoma are characterized by the primary localization of foci on the face and upper extremities, and without anti-

© Kobernik M.Yu., Nikolenko V.V., Mikova O.E., Zavyalova A.A., Pyankova M.A., 2024

tel. +7 902 830 20 92

e-mail: margo110875@yandex.ru

[Kobernik M. Yu. (*contact person) – PhD (Medicine), Associate Professor of the Department of Dermatovenereology, ORCID: 0000-0002-3549-0076; Nikolenko V.V. – DSc (Medicine), Professor of the Department of Infectious Diseases, ORCID: 0000-0002-9505-1569; Mikova O.E. – PhD (Medicine), Deputy Chief Medical Officer; Zavyalova A.A. – 5th-year student of the Medical Faculty; Pyankova M.A. – 5th-year student of the Medical Faculty].

© Коберник М.Ю., Николенко В.В., Микова О.Е., Завьялова А.А., Пьянкова М.А., 2024

тел. +7 902 830 20 92

e-mail: margo110875@yandex.ru

[Коберник М.Ю. (*контактное лицо) – кандидат медицинских наук, доцент кафедры дерматовенерологии, ORCID: 0000-0002-3549-0076; Николенко В.В. – доктор медицинских наук, профессор кафедры инфекционных болезней, ORCID: 0000-0002-9505-1569; Микова О.Е. – кандидат медицинских наук, заместитель главного врача по медицинской части; Завьялова А.А. – студент V курса лечебного факультета; Пьянкова М.А. – студент V курса лечебного факультета].

retroviral therapy, by rapid progression and generalization of the pathological process. Visceral lesions worsen the course of the disease and complicate its prognosis. Patients with HIV-associated Kaposi's sarcoma need dynamic monitoring and complex therapy from infectious diseases specialists, dermatovenerologists, oncologists.

Keywords. Kaposi's sarcoma, HIV infection, skin lesions, lungs.

Представлен клинический случай ВИЧ-ассоциированной саркомы Капоши с поражением кожи и легких. В Пермский краевой центр по профилактике и борьбе со СПИД и инфекционными заболеваниями обратился пациент с жалобами на высыпания на коже правого крыла носа, лба, в правой подмышечной и правой паховой областях, на голенях. Первые кожные изменения возникли в декабре 2020 г. на правом крыле носа, в дальнейшем патологический процесс распространился на другие участки кожного покрова. ВИЧ-инфекция с 2009 г., до 2022 г. пациенту не оказывалась специализированная медицинская помощь, поскольку он находился в местах лишения свободы. С марта 2022 г. пациент находится на диспансерном учете и регулярно получает антиретровирусную терапию. В апреле 2022 г. были выполнены ПЭТ/КТ и гистологическое исследование биоптата кожных высыпаний, по результатам которых установлен диагноз саркомы Капоши с поражением кожных покровов и легких. ВИЧ-ассоциированная саркома Капоши сопровождается поражением кожи и внутренних органов. Кожные изменения при саркоме Капоши характеризуются первичной локализацией очагов на лице и верхних конечностях, а при отсутствии антиретровирусной терапии – быстрым прогрессированием и генерализацией патологического процесса. Висцеральные поражения усугубляют течение заболевания и осложняют его прогноз. Пациенты с ВИЧ-ассоциированной саркомой Капоши нуждаются в динамическом наблюдении и комплексной терапии у инфекционистов, дерматовенерологов, онкологов.

Ключевые слова. Саркома Капоши, ВИЧ-инфекция, поражения кожи, легкие.

INTRODUCTION

The continuous improvement of methods for working with patients infected with the human immunodeficiency virus (HIV), combining timely diagnosis and administration of antiretroviral therapy (ART), has led to an increase in the length and quality of life of these patients [1]. However, the incidence rates of HIV infection in the Russian Federation and the Perm region remain high, ranging from 43.2 to 89.2 per 100,000 population, respectively*. Against the background of this trend, there are patients who

do not seek medical help and do not receive antiretroviral therapy (ART). This leads to an increase in secondary viral and bacterial diseases recorded in this nosology, as well as the number of cancer patients among these individuals [1–3]. Disseminated Kaposi's sarcoma, a rarely recorded secondary disease in patients with HIV infection, is an indicator of oncological pathology. It is a tumorous, multi-focal disease of vascular origin that affects the skin, lymph nodes, and internal organs. It is known that the first description of this pathology was made in 1872 by the Hungarian dermatologist Moritz Kaposi. The development of sarcoma is based on immunosuppression with a pronounced violation of antitumor immunity and subsequent neoangiogenesis: the formation of spindle-

* Federal Service for Supervision of Consumer Rights Protection and Human Welfare, available at: <https://www.rospotrebnadzor.ru/deyatelnost/epidemiological-surveillance>; Federal Service for Supervision of Consumer Rights Protection and Human Welfare in the Perm Territory, available at <https://59.ru/text/health/2023/07/28/72544472>.

shaped cells lining the walls of new vessels, capillaries, the formation of anastomoses between adjacent blood vessels. [4; 5]. Kaposi's sarcoma occurs when the number of CD₄⁺ T-lymphocytes in the blood is less than 500/mm³, dissemination is recorded in patients with a level of CD₄⁺ T-lymphocytes less than 200/mm³ [1; 6].

In view of the above, we present the clinical case of a patient with the development of Kaposi's sarcoma against the background of HIV infection.

CLINICAL CASE

Patient Ch., born in 1981, applied to the Perm Regional Center for AIDS and Infectious Diseases on December 12, 2023, complaining of skin rash on the right wing of his nose, forehead, in the right axillary and right inguinal areas, on the shins, which were not accompanied by subjective sensations.

According to his medical history, the patient first noticed changes in the skin of the right wing of his nose in December 2020. In 2021, the pathological process spread to the right frontal region and shin. In April 2022, the patient was referred to the Perm Regional Oncology Dispensary for a more accurate diagnosis. A positron emission tomography combined with X-ray computed tomography (PET/CT) was performed, and surgical excision of efflorescences on the right wing of the nose followed by histological examination was carried out. Based on the results of the studies, the diagnosis was established: Kaposi's sarcoma of the skin af-

fecting the right wing of the nose, right frontal region, shin skin, lungs. Subsequently, in 2022, similar rashes were also noted in the right armpit and groin areas.

From the patient's life history, it was known that he had five criminal records, incomplete secondary education, was single, and had a son born in 2007.

Past medical history included chronic cytomegalovirus infection since 2005, intravenous drug use since 2007, HIV infection since 2009 (ART has been administered since March 2022), chronic viral hepatitis C since 2009, mild cytolysis syndrome, oral candidiasis.

The patient denied any occupational hazards.

Allergological anamnesis revealed a urticaria-type reaction to the administration of penicillin antibiotics.

No family history of cancer.

Objectively, the patient's condition is satisfactory, body temperature is 36.5 °C. Height is 170 cm, weight is 86 kg, BMI is 30. The musculoskeletal system is proportionally formed. The tongue is moist, there is a curdled coating on the back of the tongue and gums. Breathing through the nose is free, vesicular breathing in the lungs is carried out to all parts, no wheezing, respiratory rate is 18 per minute. Heart sounds are clear, rhythmic, heart rate is 74 beats per minute, blood pressure is 120/80 mmHg. The abdomen is soft, painless, the liver is 1.0 cm below the edge of the costal arch, the spleen is not palpable. The symptom of shaking the lumbar region is negative on both sides. Submandibular lymph

nodes of 1.0 cm, anterior cervical lymph nodes of 0.5 cm, axillary and inguinal lymph nodes of 0.5 cm are palpated, elastic consistency, mobile, not soldered with surrounding tissues and among themselves, the skin above them is of physiological color.

Status localis: the skin pathological process is widespread, asymmetric, located on the face in the forehead and right wing of the nose, in the right axillary and right inguinal areas, on the shins. It is represented by polymorphic rashes in the form of purple-brown hemorrhagic spots of round and elongated shape, 2.5–3.0 cm in diameter, with clear borders and smooth surface, as well as single lenticular reddish-brown rounded papules of dense elastic consistency (Fig. 1). An atrophic scar of irregular white shape is determined in the area of the right wing of the nose (Fig. 2).

Laboratory and instrumental studies were performed: the complete blood test showed an increase in hemoglobin levels – 165 g/L, eosinophils – 5.5 %, lymphocytes – 52.9 %, a decrease in segmented neutrophils to 35.6 %. The urine test was unchanged.

The biochemical blood test revealed an increase in AST – 51.7 U/L, ALT – 43.0 U/L, glucose – 6.27 mmol/L. The immunogram showed an increase in the number of T-lymphocytes – $2232/\text{mm}^3$ (82 %), CD_8^+ – $2024/\text{mm}^3$ (74 %), a significant decrease in CD_4^+ – $197/\text{mm}^3$ (7 %), a change in the ratio $\text{CD}_4^+/\text{CD}_8^+ = 0.10$.

When examining the patient for viral hepatitis, serological markers for hepatitis B

were not detected. Antibodies to HCV (IgM and IgG) and anamnestic antibodies to cytomegalovirus were found. Quantitative determination of HIV-1 RNA by PCR was 240 copies/ml.

PET/CT scans performed in dynamics revealed a neoplastic lesion of the right wing of the nose with increased metabolic activity, focal soft tissue thickening in the right frontal region with low metabolic activity (metastases?), focal changes in the lungs, the largest ones with low fixation of fluorodeoxyglucose, probably metastases, multiple foci of fluorodeoxyglucose fixation in the shin skin.

Pathohistological examination of the skin biopsy specimen from the right wing of the nose revealed the following: the epidermis is slightly thinned, in the dermis



Fig. 1. Lesion of the nose in HIV-associated Kaposi's sarcoma



Fig. 2. Purple-brown spots and papules in the right axillary area

there are proliferates of round and spindle-shaped cells around the vessels, the vessels are dilated, hemorrhages, hemosiderin deposits, foci of hyalinosis, infiltration by lymphocytes and plasma cells are determined. Conclusion: the morphological picture corresponds to Kaposi's sarcoma.

Diagnosis: HIV infection, stage 4B, remission against the background of antiretroviral therapy. Chronic hepatitis C, mild cytotoxic syndrome. Kaposi's sarcoma of the skin and lungs. Oral candidiasis.

RESULTS AND DISCUSSION

It should be noted that clinical types of sarcomas are divided into four varieties – classical, occurring in elderly people, im-

munosuppressive, endemic (African) and HIV-associated [7]. The case described by us belongs to the latter type. According to literature data, HIV-associated Kaposi's sarcoma develops at the age of 40, more often in men, and in 95 % of cases is accompanied by skin manifestations, with the clinical picture beginning with lesions of the face skin, upper extremities and mucous membranes, where small pinkish-red spots similar to insect bites form, which was also recorded in this patient [8; 9]. Foreign researchers note that as the disease progresses, the spots that have appeared increase to 3–4 cm, transforming into nodes and plaques of cherry-violet-brown color, spreading to other areas of the skin, and the elements acquire a yellow halo, which indicates tumor growth [10]. In addition to the skin, internal organs can be involved in the process, more often lymph nodes, stomach, duodenum and lungs. Visceral lesions worsen the course and prognosis of the disease [11]. Thus, the clinical picture of the disease developed in this patient according to the noted studies with a level of CD_4^+ T-lymphocytes less than $200/\text{mm}^3$ of blood.

The diagnosis was established for the patient based on the characteristic clinical picture and histological examination data, which revealed proliferations of spindle-shaped cells around newly formed vessels, lymphocytic infiltration, diapedesis of red blood cells, and hemosiderin deposits [12].

Healthcare practitioners should remember that if HIV-associated Kaposi's sarcoma is

suspected, a comprehensive examination of patients should be performed to assess the prevalence of the tumor process: a complete medical examination of the oral and genital mucous membranes, abdominal ultrasound, and, if necessary, computed tomography or magnetic resonance imaging [13].

It is also necessary to conduct differential diagnosis of the disease with pseudosarcomas (Mali type and Stewart–Bluefarb type), bacillary angiomatosis, pyogenic granuloma, glomus tumor, sarcoidosis, hematomas, pigmentary urticaria, lichen planus, cutaneous B-cell lymphoma [14].

It should be noted that treatment of HIV-associated Kaposi's sarcoma begins with antiretroviral therapy; if the effect is insufficient, it is advisable to add chemotherapy. At the same time, it must be remembered that all known methods of therapy do not lead to a complete cure, but only provide temporary suppression of the pathological process [15].

CONCLUSIONS

1. Long-term HIV infection without antiretroviral therapy contributes to the development of tumor processes, primarily Kaposi's sarcoma.

2. Kaposi's sarcoma against the background of HIV infection is characterized by primary facial lesions; the pathological process is widespread and rapidly progressive, affecting internal organs.

3. HIV-associated Kaposi's sarcoma is a multidisciplinary disease that requires com-

plex therapy from infectious disease specialists, dermatologists, venereologists, and oncologists.

REFERENCES

1. HIV infection and AIDS: national guidelines: 2nd edition. Ed. V.V. Pokrovsky. M.: GEOTAR-Media, 2020; 686 (in Russian).
2. Nikolenko V.V., Nikolenko A.V., Minikeyeva M.R. Study of changes in nutritional status in HIV-positive patients with pneumonia caused by *Streptococcus pneumoniae*. *Perm Medical Journal* 2018; 4: 14–19. DOI: 10.17816/pmj35414-19 (in Russian).
3. Kosbkin S.V., Evseeva A.P., Ryabova V.V., Kovrova O.S. Features of the course of syphilis in HIV-infected patients: a clinical case. *Bulletin of Dermatology and Venereology*. 2020; 96 (1): 52–57. DOI: 10.25208/vdv553-2020-96-1-52-57 (in Russian).
4. Cesarman E., Damania B., Krown S.E. Kaposi Sarcoma. *Nat. Rev. Dis. Primers*. 2019; 5 (1): 9. DOI: 10.1038/s41572-019-0060-9
5. Debordes P.A., Hamoudi C., Di Marco A. Metastatic Kaposi sarcoma in a non-HIV patient leading to metacarpal lysis then upper-limb amputation: a case report. *Case Reports. Plast. Surg. Hand. Surg.* 2023; 10 (1): 2251581. DOI: 10.1080/23320885.2023.2251581
6. Openshaw M.R., Gervasi E., Fulgenzi C.A., Pinato D.J., Dalla Pria A., Bower M. Taxonomic reclassification of Kaposi Sarcoma identifies disease entities with distinct immunopathogenesis. *J. Transl. Med.* 2023; 21 (1): 283. DOI: 10.1186/s12967-023-04130-6

7. *Shiels M.S., Engels E.A.* Evolving epidemiology of HIV-associated malignancies. *Curr. Opin. HIV AIDS.* 2017; 12 (1): 6–11. DOI: 10.1097/COH.0000000000000327

8. *El'kin V.D., Kobernik M.Yu., Mikova O.E.* AIDS is an indicator dermatological syndrome in an HIV-infected patient. *Perm Medical Journal* 2022; 32 (1): 131–134 (in Russian).

9. *Koshkin S.V., Evseeva A.P., Ryabova V.V., Kovrova O.S.* Clinical observation of secondary syphilis in an HIV-infected patient. *Russian Medical Inquiry* 2021; 5 (11): 778–781. DOI: 10.32364/2587-6821-2021-5-11-778-781 (in Russian).

10. *Vangipuram R., Tyring S.K.* Epidemiology of Kaposi sarcoma: review and description of the nonepidemic variant. *Int. J. Dermatol.* 2019; 58 (5): 538–542. DOI: 10.1111/ijd.14080

11. *Tekcan Sanli D.E., Kiziltas S.* Gastrointestinal Kaposi's Sarcoma. *N. Engl. J. Med.* 2023; 388 (13): e45. DOI: 10.1056/NEJMicm2102502

12. *Vally F., Selvaraj W., Ngalamika O.* Admitted AIDS-associated Kaposi sarcoma patients. Indications for admission and predictors of mortality. *Medicine (Baltimore).* 2020; 99 (39): e22415. DOI: 10.1097/MD.00000000000022415

13. *Nwabudike S.M., Hemmings S., Paul Y.* Pulmonary Kaposi Sarcoma: an uncommon cause of respiratory failure in the era of highly active antiretroviral the-

rapy – case report and review of the literature. *Case Rep. Infect. Dis.* 2016; 2016: 9354136. DOI: 10.1155/2016/9354136

14. *Radu O., Pantanowitz L.* Kaposi sarcoma. *Arch. Pathol. Lab. Med.* 2013; 137 (2): 289–294. DOI: 10.5858/arpa.2012-0101-RS

15. *Dupin N.* Update on oncogenesis and therapy for Kaposi sarcoma. *Curr. Opin. Oncol.* 2020; 32 (2): 122–128. DOI: 10.1097/CCO.0000000000000601

Funding. The study had no external funding.

Conflict of interest. The authors declare no conflict of interest.

Author contributions:

Kobernik M.Yu. – contributed to the concept and design of the study; prepared the first version of the article.

Nikolenko V.V. – edited and finally approved the manuscript sent to the editorial office.

Mikova O.E. – proposed the idea of the research, assisted in collecting information.

Zavyalova A.A. – collected main information.

Pyankova M.A. – assisted in collecting information and preparing the article.

Received: 02/22/2024

Revised version received: 04/04/2024

Accepted: 05/15/2024

Please cite this article in English as: Kobernik M.Yu., Nikolenko V.V., Mikova O.E., Zavyalova A.A., Pyankova M.A. The case of development of HIV-associated Kaposi's sarcoma with skin and lung lesions. *Perm Medical Journal*, 2024, vol. 41, no. 3, pp. 153-159. DOI: 10.17816/pmj413153-159