

STD-Related sexual and gynaecological issues, including lesions of the genital organs and oral cavity

Problemy seksuologiczne i ginekologiczne związane z STD z uwzględnieniem zmian chorobowych w obrębie narządów płciowych i jamy ustnej

Katarzyna Plagens-Rotman¹ , Piotr Merks² , Justyna Opydo-Szymaczek³ ,
Witold Kędzia⁴ , Grażyna Jarząbek-Bielecka⁴ 

¹Hipolit Cegielski State University of Applied Sciences, Gniezno, Poland

²Faculty of Medicine, Collegium Medicum, Cardinal Stefan Wyszyński University, Warsaw

³Department of Pediatric Dentistry, Poznan University of Medical Sciences, Poznan, Poland

⁴Division of Developmental Gynecology and Sexology, Department of Perinatology and Gynecology, Poznan University of Medical Sciences, Poznan, Poland

CORRESPONDING AUTHOR:

Katarzyna Plagens-Rotman
Państwowa Szkoła Wyższa im. Hipolita Cegielskiego w Gnieźnie
ul. Wyszyńskiego 38, 62-200 Gniezno
e-mail: plagens.rotman@gmail.com

STRESZCZENIE

PROBLEMY SEKSUOLOGICZNE I GINEKOLOGICZNE ZWIĄZANE Z STD Z UWZGLĘDNIENIEM ZMIAN CHOROBYCH W OBRĘBIE NARZĄDÓW PŁCIOWYCH I JAMY USTNEJ

Życie seksualne człowieka rozgrywa się w trzech płaszczyznach: biologicznej, psychicznej, społecznej. Istotnym zagadnieniem związanym z sferą biologiczną zwłaszcza, są choroby przenoszone drogą płciową. Należą one do chorób zakaźnych, na które częstość zachorowań w ostatnich latach stale wzrasta. Spektrum objawów oraz następstw omawianych zakażeń jest bardzo szerokie, uzależnione od etiologii i stadium zakażenia, od objawów towarzyszących i/lub ich braku, poprzez zmiany miejscowe, uogólnione i wielonarządowe, a dotyczyć też mogą jamy ustnej. Zapobieganie tym chorobom, ich leczenie są szczególnym aspektem troski o zdrowie, także w kontekście zdrowia seksualnego pojmowanego jako integracja biologicznych, emocjonalnych, intelektualnych i społecznych aspektów życia seksualnego, ważnych dla pozytywnego rozwoju osobowości, komunikacji i miłości.

Słowa kluczowe: choroby przenoszone drogą płciową, jama ustna, seksuologia, ginekologia

ABSTRACT

STD-RELATED SEXUAL AND GYNAECOLOGICAL ISSUES, INCLUDING LESIONS OF THE GENITAL ORGANS AND ORAL CAVITY

Human sexual life takes place at the biological, mental and social levels. Sexually transmitted diseases are an important issue associated particularly with the biological sphere, and have been on the rise in recent years. The wide spectrum of symptoms and consequences depends on aetiology and advancement, accompanying symptoms and/or their absence, as well as local, generalised and multiorgan lesions. They can also be present in the oral cavity. The prevention and treatment of these diseases is a special sphere of healthcare. In the context of sexual health, healthcare can be understood as integration of the biological, emotional, intellectual and social aspects of sexual life, being also important for the positive development of personality, communication and love.

Key words: sexually transmitted diseases, oral cavity, sexology, gynaecology

INTRODUCTION

One of the fundamental dimensions of human health is sexual life, which is essential for appropriate development and existence [1].

“Sexual health is a state of physical, emotional, and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled” [2-3], and the condition for good sexual health is having safe and responsible sexual behaviours.

It should be emphasised that human immunodeficiency virus (HIV) and human papillomavirus (HPV) prevail among the consequences of risky behaviours. Sexual health is particularly threatened in early-maturing girls as they are tending to experience intercourse at younger ages. Kugler et al. [4] found that adolescents who became sexually active before the age of 15 were three times more likely to have two or more partners in adult life.

Sexually transmitted diseases (STDs) have been considered “embarrassing diseases”, connected with huge mental burden, embarrassment and shame [5-6].

STD-Related sexual and gynaecological issues, including lesions of the genital organs

STDs are the most common infectious diseases. The pathogens transmitted through sexual contact include bacteria, viruses, protozoans, fungi, parasites and insects. Currently, about 40 microorganisms responsible for nearly 30 different diseases are known to be transmitted through sexual activity [7-9].

The World Health Organisation (WHO) points out that the high and constantly increasing incidence of sexually transmitted disease can be observed mainly in poor and developing countries in South-East Asia, Africa, Latin America and Caribbean. The number of 12 million new cases of syphilis and 62 million new cases of gonorrhoea show the scale of this phenomenon. In addition, new nongonococcal urethritis (NGU) caused by *Chlamydia trachomatis*, ureaplasmas, mycoplasmas and other bacteria has been observed. An estimated 89 million new cases of chlamydia and 170 million new cases of trichomoniasis occur worldwide each year.

One common sexually transmitted genital infection is candidiasis – a fungal infection caused by the *Candida* yeast. This genus contains approximately 200 species, 15 of which have been recognised as causes of human infections. Vulvovaginal candidiasis has been diagnosed in 20-25% of reproductive age women, and about 75% of all women experience vulvovaginal candidiasis at least once in their lifetime. It is assumed that infections with endogenous yeasts from the lower gastrointestinal tract are caused by microbes from the anal and vaginal area [10-11].

Parasites such as pubic lice, human itch mites and insects (pinworms) are also transmitted through sexual contact.

An alarming number of newly diagnosed STDs (85%) concern mainly people under the age of 25 who are most often single, from low socioeconomic status, living in large cities, and from national or racial minorities. People who have unprotected sex with multiple casual partners are particularly vulnerable. Drinking alcohol and taking psychoactive substances or drugs favour risky sexual behaviours.

Sexually transmitted diseases can lead to numerous negative consequences. The wide spectrum of symptoms and consequences of these infections depends on aetiology and advancement, accompanying symptoms and/or their absence, as well as local, generalised and multiorgan lesions. It should be strongly emphasised that the synergism of sexually transmitted diseases is a growing concern as the best documented group of HIV risk factors. STDs increase the risk of HIV transmission by breaching the protective barrier of the mucous membrane, and can impact the recruitment of immune system cells vulnerable to infections (e.g. CD4 T helper lymphocytes, macrophages) to the sites of infection [12]. Half the patients with newly diagnosed HIV are infected with herpes simplex virus 2 (HSV-2). Trichomoniasis and bacterial vaginosis are twelve times more likely to cause vaginal bleeding [13]. Gonorrhoea increases the risk of HIV infection 10-fold, chlamydia – 5-fold, and HSV-2 – 3-fold [14]. The concentration of HIV in semen and vaginal secretions shows a direct relationship with the number of leucocytes migrating from the genitourinary tract. A link between the concentration of leukocytes (signs of infection) and HIV secretion has also been observed [15].

Sexually transmitted diseases caused by viruses and genital ulcers as the consequence of HSV-2 also increase the HIV concentration in serum and genital tract secretions.

Trichomoniasis can lead to infertility in both women and men, and in pregnant women, to premature birth and dystrophy in newborn babies [16-17].

Neisseria gonorrhoeae can cause pelvic inflammatory disease in women, which can result in infertility.

Skin lesions, such as erosions and genital ulcers caused by herpes simplex virus, result from the smaller vaginal epithelium integrity, which leads to an increased vulnerability to infections with other pathogens, including a 3-fold risk of HIV infection.

Chlamydia trachomatis is transmitted by direct contact with the mucous membrane through genital, anal or oral sex. Other risk factors include pregnancy, cervical ectopy and hormonal contraception that can contribute to lesions in the vaginal portion of the cervix and to genitourinary tract infection.

Chronic *Chlamydia trachomatis* increases the risk of human papillomavirus, particularly HPV16 and HPV18, which can then lead to vulvar, vaginal, mouth and throat cancers [18-20]. Urogenital infection with *Chlamydia trachomatis* in women can manifest itself in pelvic inflammatory disease that leads to tubal factor infertility, ectopic pregnancy and lower abdominal pain [21].

Over the last years there has been a steady upward trend in the incidence of high-risk oncogenic HPV, responsible for cervical intraepithelial neoplasia and invasive

cervical cancer [22]. In 2018 new cases of cervical cancer were noted, mainly in Southern Africa, Eastern Africa, Western Africa, Melanesia, South – Eastern Asia, Caribbean (43.1, 40.1, 29.6, 27.7, 17.2 and 15.5, respectively) [23]. It should be strongly emphasised that the most effective form of protection against HPV infections are vaccinations and smear tests.

As part of the implementation of cancer prevention activities, the World Health Organisation called all global institutions for action towards the elimination of cervical cancer to a level ≤ 4 cases/100,000/year by the end of the century. The WHO assumes achieving the 90-70-90 targets by 2030, i.e. 90% of girls fully vaccinated against human papillomavirus (HPV) by 15 years of age, 70% of women screened with a high-performance test two times per lifetime by the ages of 35 and 45, and 90% of women identified with cervical disease receiving treatment and care [24-26].

Sexually transmitted diseases in dental practice

Although sexually transmitted infections are the domain of dermatology, gynecology and urology, dental practitioners may also play an important role in diagnosing patients with STD. STD often affects the mucous membranes producing characteristic lesions in the mouth [27]. Oral symptoms suggesting the presence of a sexually transmitted infection include oral ulcers, fever blisters around the mouth, exophytic hyperkeratotic lesions, sore throat and difficulty swallowing, redness of the oral mucosa, lymphadenopathy [27-31]. Besides, some STD such as chlamydia, gonorrhoea, syphilis, herpes, and HPV (human papillomavirus) may be transmitted via oral sexual contact [32-35].

Among bacterial infections, syphilis gives the broadest range of symptoms in the mouth. All its stages can be associated with oral lesions [27, 36]. Primary syphilis, in the form of the chancre appears at the site of the penetration of the *Treponema pallidum* into the mucosa. It is a painless ulcer with raised borders that heals after several weeks without scarring. Secondary syphilis may manifest itself as pharyngitis, ulcers, and the shallow, sometimes ulcerated, covered by a necrotic membrane, mucous patch. The lesions can be confluent and occasionally painful. Characteristic manifestations of tertiary syphilis are destructive granulomas (gummas) and glossitis with mucosal atrophy. It must be remembered that oral manifestation of syphilis may also occur in children with congenital infection [27-28]. Children at or older than 2 years of age, who acquired the infection trans-placentally, may develop the oral symptoms of latent syphilis, including blunted upper incisor teeth known as Hutchinson's teeth, hard palate defects, and overgrowth of the mandible [28, 37]. Cases with poor symptomatology can be diagnosed with a delay of many years based on Hutchinson's triad consisting of notched Hutchinson's incisors, interstitial keratitis, and eighth cranial nerve deafness [37].

The oral manifestations of gonorrhoea are not specific and may mimic other oral infections. Patients with oral gonococcal infection may be asymptomatic or present with multiple ulcers, red mucosa, pharyngitis and lymphadenopathy [27].

Chlamydia infection in the throat is usually asymptomatic. When symptoms are present, they are not specific and can include redness and soreness of the throat or mouth. Pharyngeal chlamydia may increase the risk of other STD co-infections due to local inflammation and epithelial tissue damage [27].

Regarding herpes simplex virus (HSV), there are two types of this pathogen: HSV-1 and HSV-2. HSV-1 is usually acquired during childhood by mucocutaneous contact with the infected person to cause oral herpes lesions. Primary infection can be asymptomatic or associated with fever, redness of the gingiva and painful blisters or oral ulcers. Recurrent infection usually affects lips (herpes labialis) [38]. Occasionally, HSV-1 can also be spread by oral-genital contact or hand-genital contact in patients with active oral lesions to cause genital herpes [30, 32, 39].

Most human papilloma virus (HPV) infections are asymptomatic and unrecognized [30]. Oncogenic HPV types 18 and 16 may cause HPV-associated cervical, penile, vulvar, vaginal, anal, and oropharyngeal cancers and precancers, while non-oncogenic HPV infection (e.g., HPV types 6 and 11) causes genital warts and recurrent respiratory papillomatosis [27, 30-31]. Various oncogenic and non-oncogenic HPV genotypes have been detected in benign oral lesions such as squamous papilloma, verruca vulgaris, and epithelial focal hyperplasia, as well as in oral squamous cell carcinoma and premalignant lesions [27, 30-32, 40]. It is noteworthy that the aetiology of head and neck cancer has changed significantly over the past 35 years. Previously, oropharyngeal squamous cell carcinoma affected mainly older adults with a history of tobacco and alcohol use. Nowadays, we observe decreasing incidence of tobacco and alcohol-related cancers and increasing number of HPV-related cases in younger population of adults in their 40s and 50s. Being more responsive to treatment, HPV-related cancers have better 2-year and 5-year survival rate. They commonly affect back of the tongue, tonsils and posterior pharyngeal wall. Use of the vaccine that creates immunity against HPV16 (the virus responsible for >95% of HPV-related head and neck cancers) is likely to reduce future burden of the oropharyngeal malignancy [41].

The oral signs of HIV infection, observed in up to 90% of HIV-positive patients during the different stages of the disease, are a result of immunosuppression and include: recurrent HSV lesions, herpes zoster, candidiasis, Kaposi sarcoma, linear gingival erythema, non-Hodgkin's lymphoma, histoplasmosis, HIV salivary gland disease, necrotizing ulcerative periodontitis, exfoliative cheilitis, oral hairy leukoplakia caused by Epstein-Barr virus and cytomegalovirus reactivation resulting in severe major aphthous ulcers [27, 31-32]. Among these lesions, oral hairy leukoplakia, a benign asymptomatic hyperkeratotic plaque on the later borders of the tongue, was considered pathognomonic for HIV infection and can be the first sign of HIV infection in many patients [27, 31]. Interestingly, transmission rate of HIV through the oral mucosa during oral sex may vary from 0.1% to 2% [42], while the frequency of transmission during breastfeeding can be as high as 16.2% [43].

Oral and pharyngeal STD may be an important reservoir of pathogenic microorganisms and contribute to the ongoing transmission of the disease. Some of them, such as syphilis, produce irreversible destructive oral lesions, while others, such as infection by oncogenic HPV genotypes, increase the risk of squamous cell carcinoma. It is noteworthy that cases of oral infection in children might be evidence of child's sexual abuse [44].

Dental practitioners should be familiar with signs and symptoms of STD, since early diagnosis prevents further transmission of the disease and increase the chance of the patient's recovery.

According to the WHO, sexual health-related issues are wide-ranging and also include negative consequences or conditions, related, among others, to risky sexual behaviours, such as sexually transmitted infections and reproductive tract infections. These conditions and their adverse outcomes can pose a real threat to human health.

It is worth emphasizing that the discussed issue has important gynecological implications related to the issues of inflammation and genital infection. Patients with these problems report to gynecologists with symptoms such as itching, discharge, smell, pelvic pain and STD usually also has skin lesions. It is worth remembering that behavior related to oral sex causes symptoms to also appear around the mouth. In the context of gynecology, it is worth adding that vaginitis is the most common gynecological problem. This may be the result of a sexually transmitted disease, bacterial infection, fungal infection, protozoan infection, contact dermatitis, atrophic vaginosis, or an allergic reaction. It is important to emphasize the role of a gynecologist in sexual and health education related to preventive measures in the context of STD [45].

SUMMARY

In the context of the analyzed problem, it is really worth emphasizing that the problem is also very important in gynecology. It is worth mentioning once again that early initiation and risky sexual behavior, frequent changes of partners lead to the transmission of the infection from the partner, but also to the introduction into the vagina of opportunistic flora of external genitalia from the vaginal vestibule and large intestine.

In this regard, the prevention of sexually transmitted diseases, the use of barrier contraceptives (condoms) is a method of disease prevention also in gynecology of developmental age. Oral sexual behavior comes at an additional risk.

ORCID

Katarzyna Plagens-Rotman  <https://orcid.org/0000-0001-7646-7430>
 Piotr Merks  <https://orcid.org/0000-0001-8966-3799>
 Justyna Opydo-Szymaczek  <https://orcid.org/0000-0001-5091-331>
 Grażyna Jarząbek-Bielecka  <https://orcid.org/0000-0003-1385-5641>
 Witold Kędzia  <https://orcid.org/0000-0001-9905-0857>

REFERENCES

1. Standardy edukacji seksualnej w Europie. Podstawowe zalecenia dla decydentów oraz specjalistów zajmujących się edukacją i zdrowiem. Biuro Regionalne WHO dla Europy i BZgA. Lublin, 2013.
2. Plagens-Rotman K, Jarząbek-Bielecka G, Merks P, et al. Disability vs the sexual life of women – selected issues. *Clin. Exp. Obstet. Gynecol.* 2021; 48(1):19-23.
3. Kugler KC, Vasilenko SA, Butera NM, et al. Long-term consequences of early sexual initiation on young adult health: A causal inference approach. *J. Early Adolesc.* 2015; 37: 662-676.
4. Rzepa T, Jakubowicz O, Żaba R. Views of patients and healthy population on the reasons for the spread of embarrassing illnesses. *Hygeia Public Health* 2013; 48: 486-493.
5. Rzepa T. Shame experienced due to illness versus life satisfaction. *Czasop. Psych.* 2014; 20: 11-118.
6. Rzepa T, Jakubowicz O, Witmanowski H, et al. Disease-induced level of shame in patients with acne, psoriasis and syphilis. *Postep Derm. Alergol.* 2013; XXX, 4: 233-236 DOI: 10.5114/pdia.2013.37033
7. Santacroce L, Colella M, Charitos LA. The Persistence and Increase in Sexually Transmitted Diseases (STDs) to Pandemic Levels. *Venereology.* 2022; 1: 2-8.
8. Plagens-Rotman K, Przybylska R, Gerke K, et al. Syphilis and a pregnant woman: a real danger for the woman and the child. *Post. Derm. Alerg.* 2019; 1: 119-124.
9. Machalski T, Der J, Sikora J. Kandydoza pochwy u ciężarnych. *Mikologia Lekarska.* 2006; 13(3): 185-186.
10. Perenc M. Zakażenia grzybicze pochwy i sromu w praktyce lekarza rodzinnego. *Lekarz Rodzinny.* 2007; 12(3): 316-322.
11. Ward H, Ronn M. Contribution of sexually transmitted infections to the sexual transmission of HIV. *Curr. Opin. HIV AIDS.* 2010; 5: 305e10.
12. Aboud S, Msamanga G, Read JS, et al. genital tract infections among HIV-infected pregnant women in malawi, Tanzania and Zambia. *Int. J. STD AIDS.* 2008; 19: 824e32.
13. Plagens-Rotman K, Przybylska R, Gerke K, et al. Genital herpes as still significant dermatological, gynaecological and venereological problem. *Advances in Dermatology and Allergology.* 2021; 2: 210-213.
14. Johnson LF, Lewis Da. The effect of genital tract infections on HIV-1 shedding in the genital tract: a systematic review and metaanalysis. *Sex Transm. Dis.* 2008; 35: 946e59.
15. Alcaide ML, Feaster DJ, et al. The incidence of *Trichomonas vaginalis* infection in women attending nine sexually transmitted diseases clinics in the USA. *Sex Transm. Infect.* 2016; 92: 58-62.
16. Muzny CA, Blackburn RJ, Sinsky RJ, et al. Added benefit of nucleic acid amplification testing for the diagnosis of *Trichomonas vaginalis* among men and women attending a sexually transmitted diseases clinic. *Clin. Infect. Dis.* 2014; 59: 834-841.
17. Gronowicz J. Chlamydia trachomatis – charakterystyka patogenu i diagnostyka zakażeń. *Post Dermatol Alergol.* 2008; 25: 125-128.
18. Domińska K, Piastowska-Ciesielska A. Sojusznicy raka, czyli czynniki infekcyjne w etiopatogenezie chorób nowotworowych. *Uniwersytet Medyczny. Łódź,* 2017.
19. Jiang S, Dong Y. Human papillomavirus and oral squamous cell carcinoma: A review of HPV-positive oral squamous cell carcinoma and possible strategies for future. *Curr. Probl. Cancer.* 2017; 41: 323-327.
20. Witkin SS, Minis E, Athanasiou A, et al. Chlamydia trachomatis: the persistent pathogen. *Clin. Vaccine Immunol.* 2017; 24: e00203-17.
21. Wentzensen N, Arbyn M. HPV-based cervical cancer screening facts, fiction, and misperceptions. *Prev. Med.* 2017; 98: 33-35.
22. Human Papillomavirus and Related Diseases Report. 2019 <https://hpvcentre.net/statistics/reports/XWX.pdf> (Accessed 26 January 2022, 13:18)
23. WHO Call: Global Strategy Towards the Elimination of Cervical Cancer as a Public Health Problem. Geneva, Switzerland: WHO; 2019. <https://www.who.int/docs/default-source/documents/cervicalcancerelimination-draft-strategy.pdf> (Accessed 5 June 2020).
24. Draft Global Strategy towards eliminating cervical cancer as a public health problem. WHO 5 April 2020/Publication. <https://www.who.int/publications/m/item/draft-global-strategy-towards-eliminating-cervical-cancer-as-a-public-health-problem> (Accessed 5 June 2020).
25. Gultekin M, Ramirez PT, Broutet N, et al. World Health Organization call for action to eliminate cervical cancer globally. *Int. J. Gynecol. Cancer.* 2020; 30(4): 426-427. doi: 10.1136/ijgc-2020-001285. Epub 2020 Mar 2. PMID: 32122950.
26. Bruce AJ, Rogers RS. Oral manifestations of sexually transmitted diseases. *Clinics in Dermatology.* 2004; 22(6): 520-527.
27. Soares AB, Gonzaga HFS, Jorge MA, et al. Oral manifestations of syphilis: a review. *Journal of Venomous Animals and Toxins including Tropical Diseases.* 2004; 10(1): 2-9. <https://doi.org/10.1590/S1678-91992004000100002>

28. Vanakul M, Poonpipatgul S, Reichart P. Oro-facial manifestations of HIV infections. *J Dent. Assoc. Thai.* 1988; 38(5): 225-231. PMID: 3270651.
29. Mosmann JP, Talavera AD, Criscuolo MI, et al. Sexually transmitted infections in oral cavity lesions: Human papillomavirus, Chlamydia trachomatis, and Herpes simplex virus. *J. Oral. Microbiol.* 2019; 11(1): 1632129. Published 2019 Jun 25. doi:10.1080/2002297.2019.1632129
30. Pakfetrat A, Falaki F, Delavarian Z, et al. Oral manifestations of human immunodeficiency virus-infected patients. *Iran. J. Otorhinolaryngol.* 2015; 27(78): 43-54.
31. Centers for Disease Control and Prevention. STD Risk and Oral Sex. Retrieved from <https://www.cdc.gov/std/healthcomm/stdfactstdriskandoralsex.htm> (Accessed 26 January 2022, 13:21)
32. Bernstein KT, Stephens SC, Barry PM, et al. Chlamydia trachomatis and Neisseria gonorrhoeae Transmission from the Oropharynx to the Urethra among Men Who Have Sex with Men. *Clinical Infectious Diseases.* 2009; 49(12): 1793-1797.
33. Javanbakht M, Westmoreland D, Gorbach P. Factors Associated With Pharyngeal
34. Gonorrhoea in Young People: Implications for Prevention. *Sex Transm. Dis.* 2018; 45(9): 588-593.
35. Xu X, Chow EPF, Ong JJ, et al. Chlamydia trachomatis transmission between the oropharynx, urethra and anorectum in men who have sex with men: a mathematical model. *BMC Med.* 2020; 18: 326.
36. Soares AB, Gonzaga HFS, Jorge MA, et al. Oral manifestations of syphilis: a review. *Journal of Venomous Animals and Toxins including Tropical Diseases.* 2004; 10(1): 2-9.
37. Singhal P, Patel P, Marfatia YS. A case of congenital syphilis with Hutchinson's triad. *Indian J. Sex Transm. Dis AIDS.* 2011; 32(1): 34-36. doi:10.4103/0253-7184.81252.
38. Opstelten W, Neven AK, Eekhof J. Treatment and prevention of herpes labialis. *Can Fam. Physician.* 2008; 54(12): 1683-1687.
39. Hammerschlag MR. Sexually transmitted diseases in sexually abused children: medical and legal implications. *Sex Transm. Infect.* 1998; 74:167-174.
40. Chen X, Zhao Y. Human papillomavirus infection in oral potentially malignant disorders and cancer. *Arch. Oral Biol.* 2017; 11(83): 334-339. doi: 10.1016/j.archoralbio.2017.08.011. Epub 2017 Aug 26. PMID: 28886585.
41. Young D, Xiao CC, Murphy B, et al. Increase in head and neck cancer in younger patients due to human papillomavirus (HPV). *Oral. Oncol.* 2015; 51(8): 727-730.
42. Tebit DM, Ndembu N, Weinberg A, et al. Mucosal transmission of human immunodeficiency virus. *Curr. HIV Res.* 2012; 10(1): 3-8.
43. Nduati R, John G, Mbori-Ngacha D, et al. Effect of breastfeeding and formula feeding on transmission of HIV-1: a randomized clinical trial. *JAMA.* 2000; 283(9): 1167-1174.
44. Opydo-Szymaczek J, Jarząbek-Bielecka G, Kędzia W, et al. Child sexual abuse as an etiological factor of overweight and eating disorders – considerations for primary health care providers. *Ginekol. Pol.* 2018; 89(1): 48-54. doi: 10.5603/GP.a2018.0009.
45. Jakubek E, Jarząbek-Bielecka G, Boroch J, et al. Autosexual behavior as a topic for inclusion in gynecological practice. *Clin. Exp. Obstet. Gynecol.* 2021; 48(2): 212-215.

Manuscript received: 01.11.2021

Manuscript accepted: 09.01.2022

Translation: Piotr Merks