

VOLUME LXXVI, ISSUE 3, MARCH 2023

ISSN 0043-5147

E-ISSN 2719-342X

Wiadomości Lekarskie Medical Advances



Official journal of Polish Medical Association has been published since 1928



INDEXED IN PUBMED/MEDLINE, SCOPUS, EMBASE, EBSCO, INDEX COPERNICUS,
POLISH MINISTRY OF EDUCATION AND SCIENCE, POLISH MEDICAL BIBLIOGRAPHY

VOLUME LXXVI, ISSUE 3, MARCH 2023

ISSN 0043-5147

E-ISSN 2719-342X

Wiadomości Lekarskie Medical Advances



Official journal of Polish Medical Association has been published since 1928



ALUNA Publishing House



Memory of
dr Władysław
Biegański

Wiadomości Lekarskie is abstracted and indexed in: PUBMED/MEDLINE, SCOPUS, EMBASE, INDEX COPERNICUS,
POLISH MINISTRY OF EDUCATION AND SCIENCE, POLISH MEDICAL BIBLIOGRAPHY

Copyright: © ALUNA Publishing House.

Articles published on-line and available in open access are published under Creative Common Attribution-Non Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) allowing to download articles and share them with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially.

The journal Wiadomości Lekarskie is cofinanced under Contract No.RCN/SN/0714/2021/1
by the funds of the Minister of Education and Science



Wiadomości Lekarskie Medical Advances

Editor in-Chief:

Prof. Władysław Pierzchała

Deputy Editor in-Chief:

Prof. Aleksander Sieroń

Statistical Editor:

Dr Lesia Rudenko

Managing Editor:

Agnieszka Rosa – amarosa@wp.pl

International Editorial Office:

Nina Radchenko (editor)

– n.radchenko@wydawnictwo-aluna.pl

Polish Medical Association (Polskie Towarzystwo Lekarskie):

Prof. Waldemar Kostewicz – President PTL

Prof. Jerzy Woy-Wojciechowski – Honorary President PTL

International Editorial Board – in-Chief:

Marek Rudnicki

Chicago, USA

International Editorial Board – Members:

Kris Bankiewicz	San Francisco, USA	George Krol	New York, USA
Christopher Bara	Hannover, Germany	Krzysztof Łabuzek	Katowice, Poland
Krzysztof Bielecki	Warsaw, Poland	Jerzy Robert Ładny	Białystok, Poland
Zana Bumbuliene	Vilnius, Lithuania	Henryk Majchrzak	Katowice, Poland
Ryszarda Chazan	Warsaw, Poland	Ewa Małecka-Tendera	Katowice, Poland
Stanislav Czudek	Ostrava, Czech Republic	Stella Nowicki	Memphis, USA
Jacek Dubiel	Cracow, Poland	Alfred Patyk	Gottingen, Germany
Zbigniew Gasior	Katowice, Poland	Palmira Petrova	Yakutsk, Russia
Mowafaq Muhammad Ghareeb	Baghdad, Iraq	Krystyna Pierzchała	Katowice, Poland
Andrzej Gładysz	Wrocław, Poland	Waldemar Priebe	Houston, USA
Nataliya Gutorova	Kharkiv, Ukraine	Maria Siemionow	Chicago, USA
Marek Hartleb	Katowice, Poland	Vladyslav Smiiianov	Sumy, Ukraine
Roman Jaeschke	Hamilton, Canada	Tomasz Szczepański	Katowice, Poland
Andrzej Jakubowiak	Chicago, USA	Andrzej Witek	Katowice, Poland
Peter Konturek	Saalfeld, Germany	Zbigniew Wszolek	Jacksonville, USA
Jerzy Korewicki	Warsaw, Poland	Vyacheslav Zhdan	Poltava, Ukraine
Jan Kotarski	Lublin, Poland	Jan Zejda	Katowice, Poland

Distribution and Subscriptions:

Bartosz Guterman prenumerata@wydawnictwo-aluna.pl

Graphic design / production:

Grzegorz Sztank

www.red-studio.eu

Publisher:

ALUNA Publishing House

ul. Przesmyckiego 29,

05-510 Konstancin – Jeziorna

www.wydawnictwo-aluna.pl

www.wiadomoscilekarskie.pl

www.wiadlek.pl

CONTENTS

ORIGINAL ARTICLES

- Aidyn G. Salmanov, Volodymyr Artyomenko, Svitlana Y. Hladenko, Irina M. Kocytjuk, Andrii O. Marchenko, Galina O. Tolstanova, Svitlana M. Korniyenko
HYPERPLASIA OF THE FEMALE REPRODUCTIVE ORGANS IN UKRAINE 467
- Ghaneemah Malik Hamadi
CORRELATION OF SOME IMMUNOLOGICAL MARKERS WITH *HELICOBACTER PYLORI* IN PATIENTS IN THI-QAR PROVINCE 474
- Victoria S. Sukhan, Olha V. Antalovtsi, Victoria V. Pylyp
THE BASIS FOR PROVIDING QUALITY MEDICAL SERVICES AT THE STAGE OF REHABILITATION TREATMENT FOR PATIENTS WITH ASTHMA 481
- Halyna O. Khomyn, Liliya S. Babinets, Iryna M. Halabitska
THE STRUCTURAL AND FUNCTIONAL STATE OF THE PANCREAS AND LIVER IN CHRONIC PANCREATITIS IN COMBINATION WITH CHRONIC VIRAL HEPATITIS C DEPENDING ON THE INDEX OF THE SURVEY ACCORDING TO THE INTERNATIONAL CAGE QUESTIONNAIRE 487
- Valeriy P. Nespryadko, Victoria V. Vovk, Daryna I. Bohatyrova
COMPARATIVE EVALUATION OF THE TEMPOROMANDIBULAR JOINT STRUCTURES AFFECTED BY TMJ DYSFUNCTION 495
- Noah A. Mahmood, Firas S. Salah, Zaynab S. Abdulghany
EVALUATION OF ANTIOXIDANTS ENZYMES AND AUTOPHAGY GENES IN THE BLOOD OF IRAQI SMOKER VOLUNTEERS 500
- Tetiana V. Stoieva, Liubov B. Bratkova, Maxim V. Fedin, Tamara L. Godlevska, Olena V. Titkova, Olga V. Dzhagiashvili, Roman M. Papinko
PECULIARITIES OF EATING BEHAVIOR IN CHILDREN WITH AUTISTIC SPECTRUM DISORDERS 508
- Yaroslav P. Feleshtynsky, Krystina D. Derkach
SURGICAL TREATMENT OPTIMISATION OF RECURRENT ABDOMINAL WALL HERNIAS ASSOCIATED WITH LIGATURE FISTULA 515
- Ksenia I. Chubirko, Mykhaylo M. Hechko, Taras I. Griadil, Ivan V. Chopey
EFFECT OF INTERMITTENT FASTING ON CARBOHYDRATE, LIPID AND ULTRASONOGRAPHIC PARAMETERS IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE AND PREDIABETES 520
- Yevgenii O. Grechukha, Ganna V. Gnyloskurenko, Fedir I. Lapii, Alla P. Volokha
DETERMINANTS OF VACCINE HESITANCY AMONG PARENTS IN KYIV 527
- Olga Gorbatyuk, Andrew Kovalenko, Mikita Veselyi, Mykola Gomon
BILATERAL CRYPTORCHIDISM IN PEDIATRIC SURGEON'S PRACTICE: CURRENT TACTICS OF PATIENT MANAGEMENT 534
- Olesya M. Horlenko, Iryna Yu. Pikina, Lyubomyra B. Prylypko, Mariya A. Derbak, Olena V. Debretseni, Kristian O. Debretseni, Ivan I. Myhovych
INFLAMMATORY RESPONSE AND METABOLIC ADAPTATION IN CHILDREN WITH ACUTE RESPIRATORY PATHOLOGY 540
- Yelyzaveta S. Sirchak, Stepan S. Kydybyts, Nelli V. Bedey, Victoria I. Chendey, Michailo P. Stan, Stepan M. Chobej
CHANGES IN SERUM SOMATOSTATIN AND GASTRIN LEVELS IN PATIENTS AFTER CHOLECYSTECTOMY AND GASTROESOPHAGEAL REFLUX DISEASE 548
- Olexii I. Dronov, Inna O. Kovalska, Andrii I. Horlach, Ivanna A. Shchyhel, Tetiana Y. Ivanets
ABDOMINAL PERFUSION PRESSURE IN PREDICTION OF THE TERMS OF ACUTE NECROTIZING PANCREATITIS INFECTION 554

HYPERPLASIA OF THE FEMALE REPRODUCTIVE ORGANS IN UKRAINE

DOI: 10.36740/WLek202303101

Aidyn G. Salmanov^{1,2}, Volodymyr Artyomenko³, Svitlana Y. Hladenko⁴, Irina M. Kocytjuk⁵, Andrii O. Marchenko⁶, Galina O. Tolstanova¹, Svitlana M. Korniyenko³

¹SHUPYK NATIONAL HEALTHCARE UNIVERSITY OF UKRAINE, KYIV, UKRAINE

²INSTITUTE OF PEDIATRICS, OBSTETRICS AND GYNECOLOGY OF THE NATIONAL ACADEMY OF MEDICAL SCIENCES OF UKRAINE, KYIV, UKRAINE

³ODESA NATIONAL MEDICAL UNIVERSITY, ODESA, UKRAINE

⁴SUMY STATE UNIVERSITY, SUMY, UKRAINE

⁵NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY, VINNYTSIA, UKRAINE.

⁶ODESA REGIONAL CLINICAL ANTITUMOR CENTER, ODESA, UKRAINE

ABSTRACT

The aim: To determine the role of infectious diseases as the cause of the Cervical, Ovarian and Breast hyperplasia in Ukraine.

Materials and methods: We conducted a retrospective multicenter cohort study from January 1st, 2020 to December 31st, 2022. This study included patients aged 20-59 years with a diagnosis of hyperproliferative pathology of the women reproductive organs without atypia, who sought medical care for hyperplastic processes admitted to the 12 hospitals from 9 regions of Ukraine.

Results: We had examined 4,713 women; out of which 81.1% met the clinical definition of female reproductive organs hyperplasia. Of all hyperplasia cases, most frequently recorded types were breast hyperplasia (41,7%), followed by cervical hyperplasia (31,1%) and ovarian hyperplasia (27,2%). History of Cervicitis ($p < 0.001$), Vaginal cuff infection ($p < 0.001$), Oophoritis ($p < 0.001$), and Mastitis ($p < 0.001$) were identified as independent risk factors of Cervical, Ovarian and Breast hyperplasia.

Conclusions: This study showed that surgical site infections after obstetric and gynecological operations are the cause of Cervical, Ovarian and Breast hyperplasia. Therefore, early detection and treatment SSIs can reduce the risk of hyperplasia these organs.

KEY WORDS: cervical hyperplasia, ovarian hyperplasia, breast hyperplasia, surgical site infection, risk factors, Ukraine

Wiad Lek. 2023;76(3):467-473

INTRODUCTION

Hyperplasia of women reproductive organs remain important public health problems. They are not cancer, but may become cancer. Before cancer cells form in tissues of the body, the cells go through abnormal changes called hyperplasia and dysplasia. Gynecological malignancies continue to be an important cause of cancer-related mortality [1]. With an estimated annual incidence of more than 3.6 million and mortality exceeding 1.3 million, these cancers account for nearly 40% of all cancer incidence and for more than 30% of all cancer mortality in women worldwide [2]. Breast cancer are the top three malignancies involving the female reproductive system worldwide. According to literature, in 2020, Breast cancer surpassed lung cancer as the most common type of cancer diagnosed in women, with an estimated 2.3 million new cases in 2020 accounted for 6.9% of all cancer-related deaths, making it the leading cause of cancer

death in women as well. Cervical cancer is currently the second most common gynecological cancer, with 0.6 million new cases in 2020, and it is the fourth leading cause of cancer death in women, with approximately 342,000 deaths worldwide. Ovarian cancer is the fourth most common gynecological malignancy, with 313,959 new cases and 207,252 deaths in 2020, making it the most lethal gynecological cancer [2-4].

Researchers in many countries around the world are paying attention search for modern diagnostic criteria, risk factors of hyperplasia of women reproductive organs and optimal treatment concepts. Hyperplasia is thought to be part of the complex transition of cells that may evolve into reproductive organs cancer. The process begins when normal cell development and growth become disrupted, causing an overproduction of normal-looking cells (hyperplasia). However, it's not clear what causes hyperplasia.

Hyperproliferative pathology of the women reproductive organs (hyperplasia) occupies a special place among the risk factors for cervical, ovarian and breast cancer. Despite numerous studies, neither the etiology nor the pathogenesis of hyperplastic processes has been elucidated to date, so treatment options are not fully substantiated. According to literature, the leading role in the pathogenesis of hyperplasia in patients of reproductive age is attributed to the increased estrogen concentrations arising from the absence or insufficient antiestrogenic effect of progesterone. However, the results of researches of the last years testify in favor of infectious-inflammatory concept of developing the hyperplastic processes of genitals [2, 4-7].

In the context of economic turmoil, high mortality rates and given the low birth rate in Ukraine, the problem of maintaining reproductive health is extremely relevant and acquires high medical and social significance, in turn, is a qualitative criterion for the reproduction of the population at the population level [8, 9]. However, the data on the prevalence of Cervical, Ovarian and Breast hyperplasia in various population in our country is not known. There is an urgent need for initiation of community screening and educational programs for the control and prevention of female reproductive organs cancer in Ukraine.

THE AIM

The aim of this study was to determine the role of infectious diseases as the cause of the Cervical, Ovarian and Breast hyperplasia in Ukraine.

MATERIALS AND METHODS

STUDY DESIGN, SETTINGS AND PARTICIPANTS

We conducted a retrospective cohort study from January 1st, 2020 to December 31st, 2022. This study included patients of the gynecological departments of the various hospitals with a diagnosis of hyperproliferative pathology of the women reproductive organs without atypia, who sought medical care for hyperplastic processes in reproductive age. We compiled list of the 14 women hospitals. Of these, only 12 hospitals from 9 regions (Lviv, Vinnytsia, Zhytomyr, Kyiv, Sumy, Dnipro, Kharkiv, Zaporizhzhia, and Odesa) of Ukraine agreed to take part in our study. The age of women ranged from 18 to 59 years (average 34.52 ± 2.51). The inclusion criteria in this study for participants were as follows: the presence of benign hyperplasia of the female genital organs; local residents. The exclusion criteria: pregnant women, menstruating women, women with invasive

carcinoma at the time of clinical evaluation, and women previously treated for cervical neoplasm were excluded from the study.

DEFINITION

Diagnosis of hyperplasia of reproductive organs should be based upon histological assessment of a tissue sample obtained by biopsy, curettage, or hysterectomy and ultrasound method. In this study hyperplasia is classified by whether certain cell changes are present or absent. If abnormal changes are present, it is called atypical.

DATA COLLECTION

We examined 185 patients of the gynecological departments various hospitals. Histological examination of cervical, ovarian and breast tissue was performed according to the generally accepted method. The surgical material and cervical, ovarian and breast tissue obtained by hysteroscopy and aspiration biopsy were subjected to morphological examination. Biopsy material was fixed in 10% neutral formalin. Further processing was performed according to the standard generally accepted unified method. All procedures were carried out in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2000. All patients were divided into three groups, up to group I women with cervical hyperplasia; group II – patients diagnosed with ovarian hyperplasia; group III included patients with breast hyperplasia. This work includes interviews, questionnaires, and examinations medical records for the all patients. In our study a standard data collection form was created to extract demographic and clinical data, and outcome information from routine patient records. In this study patients' folders and the hospitals' database were used to obtain all the other information needed concerning the study participants clinical and gynecological history. Women who did not give informed consent for this study were excluded.

ETHICS

Ethical clearance for this study was obtained from the ethics committee of the Shupyk National Healthcare University of Ukraine. This study was performed in line with the principles of the Declaration of Helsinki.

STATISTICAL ANALYSIS

All clinical and other information needed concerning the study participants and gynecological history

were entered in an Excel (Microsoft Corp., Redmond, WA, USA) database for statistical analysis. Results are expressed as median (range), mean \pm standard deviation for continuous variables, and number and corresponding percentage for qualitative variables. In this study chi-square test/Fischer's Exact test and the binary logistic regression analysis were employed to test for associations and the strength thereof between the dependent variable and independent variables. All statistical analyses were two-sided and significance was set at $P < 0.05$.

RESULTS

In our study, between January 2020 and December 2022, we had examined 4,713 women; out of which 3,822 (81.1%) met the clinical definition of female reproductive organs hyperplasia. The epithelial cell abnormalities constituted 3.2% of all cases and rest of 3,690 cases (96.8%) fell in the category of negative for intraepithelial lesion or malignancy. Of all hyperplasia cases, most frequently recorded types were breast hyperplasia (41.7%, [95% confidence interval (CI), 40.9-42.5]), followed by cervical hyperplasia (31.1%, [95% (CI), 30.3-31.8]) and ovarian hyperplasia (27.2%, [95% (CI), 26.5-27.9]).

This study showed that the situation with female reproductive organs hyperplasia in Ukraine varies greatly by region. In general, lower breast, cervical and ovarian hyperplasia percentages were reported by Ukrainian regions in the east while higher percentages were reported in the central region, north, south and west of Ukraine. In terms of regions, ten-fold fluctuations of the indicator values were observed – from the smallest in Kharkiv region to the largest in Dnipropetrovsk region and in Kyiv. The difference between the smallest and largest value of the indicator was threefold.

The ratio of risks of reproductive organs hyperplasia among patients for the period 2020-2022 in most regions was lower than the general figure for Ukraine. The lowest indicator of relative risk was in Lviv region (OR – 0.56 [95% CI 0.54-0.57], $p < 0.05$), Vinnytsia (OR – 0.56 [95% CI 0.55-0.57], $p < 0.05$), and Sumy (OR – 0.57 [95% CI 0.57–0.58], $p < 0.05$). At the same time on the territory of other regions (Vinnytsia (OR – 1.05 [95% CI 1.04–1.07], $p < 0.05$), Kharkiv (OR – 1.12 [95% CI 1.11 – 1.13], $p < 0.05$), Dnipro (OR 1.49 [95% CI 1.48–1.50], $p < 0.05$), Zhytomyr (OR 1.56 [95% CI 1.54–1.5], $p < 0.05$) and Kyiv (OR – 1.26 [95% CI 1.24–1.28], $p < 0.05$).

Different risk factors associated with breast, cervical and ovarian hyperplasia detected in the present study were analyzed in detail. The findings are summarized below (Table I). In this study the greatest number of hyperplasia cases (45.7%) were in age group 30-49 years,

followed by 34.7% in age group 20-29 years. The epithelial abnormalities including (atypical squamous and glandular cells of undetermined significance, atypical glandular cells of undetermined significance, low-grade squamous intraepithelial lesion, high-grade squamous intraepithelial lesion, and squamous cell carcinoma constituted 3.2% of all cases. A progressive rise was seen in the frequency of cytopathological abnormalities with increasing age, and maximum frequency of low-grade squamous intraepithelial lesion, high-grade squamous intraepithelial lesion, and breast, cervical and ovarian carcinoma was observed in age above 40 years.

Table II showed the odds ratio (OR) and 95% confidence interval (CI) for the risk factors associated with hyperplasia of female reproductive organs in logistic multivariate regression analyses. Unsurprisingly, cervical, ovarian and breast hyperplasia was associated with history of Cervicitis ($p < 0.001$), Vaginal cuff infection ($p < 0.001$), Oophoritis ($p < 0.001$), and Mastitis ($p < 0.001$) as shown in logistic regression analysis. Further, there were differences among risk factors associated with cervical, ovarian and breast hyperplasia.

DISCUSSION

To the best of our knowledge, this is the first study examining healthcare-associated infections associated with obstetric and gynecological surgeries as a cause of female reproductive organs hyperplasia in Ukraine. In this study we had examined 4,713 women; out of which 81.1% met the clinical definition of female reproductive organs hyperplasia. The epithelial cell abnormalities constituted 3.2% of all cases and rest of 96.8% fell in the category of negative for intraepithelial lesion or malignancy. Of all hyperplasia cases, most frequently recorded types were breast hyperplasia (41.7%), followed by cervical hyperplasia (31.1%) and ovarian hyperplasia (27.2%). Cervical, ovarian and breast hyperplasia was associated with history of Cervicitis, Vaginal cuff infection, Oophoritis, and Mastitis as shown in logistic regression analysis. Further, there were differences among risk factors associated with cervical, ovarian and breast hyperplasia.

In this study the main factors associated with cervical, ovarian and breast hyperplasia were history surgical site infections (SSIs) after obstetric and gynecological surgeries. The prevalence of SSIs after obstetric and gynecological surgeries varies greatly in different countries and regions, and change all the times. The SSI cases estimates use different definitions considering different periods, which make direct comparisons difficult between various studies. SSIs in Ukraine are among the most common healthcare-associated infections (HAIs) after, obstetric and gynecological surgeries [10].

Table I. Characteristics of women with breast, cervical and ovarian hyperplasia in Ukraine (2020-2022)

Variables	All hyperplasia cases (n=3,822)		p-value	95% CI
	n	%		
Age (years)				
20-29	296	7,7	<0.001	6.2 – 9.2
30-39	646	16,9		15.4 – 18.4
40-49	1243	32,5		31.2 – 33.8
≥50	1637	42,8		41.6 – 44.1
Education				
Primary	2529	66,2	0,517	65.3 – 67.1
High school or technical secondary school	321	8,4		6.9 – 9.9
Bachelor's degree and above	972	25,4		24.0 – 26.8
Smoking				
No	1399	36,6	0,681	35.3 – 37.9
No, secondhand smoke	784	20,5		19.1 – 21.9
Yes	1639	42,9		41.7 – 44.1
Drinking				
No	2184	57,1	0,638	56.1 – 58.2
Yes	1638	42,9		41.7 – 44.1
BMI (kg/m ²)				
Thin	1641	42,9	0,472	41.7 – 44.1
Normal	1796	47		45.8 – 48.2
Overweight	321	8,4		6.9 – 9.9
Obese	64	1,7		1.1 – 2.3
Bacterial vaginosis				
No	1984	51,9	0,512	50.8 – 53.1
Yes	1837	48,1		46.9 – 49.3
History of Pelvic abscess or cellulitis				
No	2678	70,1	<0.001	69.2 – 71.0
Yes	1144	29,9		28.6 – 31.2
History of Adnexa utery				
No	2891	75,6	<0.001	74.8 – 76.4
Yes	931	24,4		21.0 – 25.8
History of Cervicitis				
No	634	16,6	<0.001	15.2 – 18.0
Yes	3188	83,4		82.7 – 84.1
History of Oophoritis				
No	604	15,8	<0.001	14.3 – 17.3
Yes	3218	84,2		83.6 – 84.8
History of Endometritis				
No	2837	74,2	<0.001	73.4 – 75.1
Yes	985	25,8		24.5 – 27.1
History of Chorioamnionitis				
No	3610	94,5	<0.001	94.1 – 94.9
Yes	212	5,5		4.0 – 7.0

Table I. (continuation)

History of Vaginal cuff infection					
No	3109	81,3	<0.001	80.6 – 82.0	
Yes	713	18,7		17.3 – 20.1	
History of Episiotomy infection					
No	2810	73,5	<0.001	72.7 – 74.3	
Yes	1012	26,5		25.2 – 27.8	
History of Mastitis					
No	510	13,3	<0.001	11.8 14.8	
Yes	3312	86,7		86.1 – 87.3	
History of Chlamydial infections					
No	1789	46,8	0,378	45.6 – 48.0	
Yes	2033	53,2		52.1 – 54.3	
History of sexually transmitted infections					
No	2701	70,7	<0.001	69.8 – 71.6	
Yes	1121	29,3		27.9 – 30.7	

CI, confidence interval

BMI, Body Mass Index

Table II. Logistic multivariate regression analyses of risk factors for breast, cervical and ovarian hyperplasia among women in Ukraine (2020-2022)

Characteristics	p-value	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)
Age (years)				
	< 0.001		< 0.001	
20-29		Ref		Ref
30-39	0.003	9.379 (2.165–40.619)	0.011	6.862 (1.557–30.247)
40-49	0.012	6.618(1.549–28.274)	0.031	5.036 (1.163–21.83)
≥50	0.025	5.577 (1.244–25.011)	0.109	3.49 (0.758–16.071)
History of Cervicitis				
No		Ref		Ref
Yes	< 0.001	9.379 (2.165–40.619)	< 0.001	5.033 (1.162–21.81)
History of Oophoritis				
No		Ref		Ref
Yes	< 0.001	3.611 (2.234–5.831)	< 0.001	3.063 (1.819–5.158)
History of Vaginal cuff infection				
No		Ref		Ref
Yes	< 0.001	5.131 (2.662–9.878)	< 0.001	3.835 (1.908–7.712)
History of Mastitis				
No		Ref		Ref
Yes	< 0.009	3.623 (2.231–5.841)	0.001	3.081 (1.816–5.157)
Constant			0.003	0.109

CI, confidence interval

OR, Odd Ratio

According to literature, the prevalence of healthcare-associated deep pelvic tissue infection and other infections of the female reproductive tract after obstetric and gynecologic surgery in Ukraine was 26.3%. Incidence rate of HAI was: 13.3% Pelvic abscess or cellulitis, 14.6% Adnexa utery,

9.5% Salpingitis, 7.1% Oophoritis, 12.2% Parametritis, 4.6% Chorioamnionitis, and 38.8% Bacterial Vaginitis [11], and 11.6% breast abscess, and 88.4% postpartum mastitis [12]. The prevalence of HAIs varies from country to country and ranges from 1.8% to 48% [10]. Incidence of SSI after induced

abortion in Ukraine was 25.9%. Of these SSIs, 25.9 were Endometritis, 21.8% Bacterial Vaginitis, 14.3% Parametritis, 13.1% Cervicitis, 9.9% Adnexa utery, 7.8% Salpingitis, 6.3% Chorioamnionitis, and 0.9% other reproductive tract infections [8]. Despite the introduction into surgical practice of new diagnostic technologies and treatment, as well as broad-spectrum antibiotics, the number of SSI after obstetric and gynecological surgeries is not decreasing [13].

A number of different aspects should be considered in the treatment of the Cervical, Ovarian and Breast Hyperplasia. Depending on the histological features and the patient's medical history, all established risk factors for progression to hyperplasia of reproductive organs or the concurrent presence of the infectious diseases should be determined.

Women who have a history of Cervical, Ovarian and Breast infections are at greater risk for progression to hyperplasia and of poor outcomes in pregnancies. Health providers in hospitals should be aware of this risk when treating patients with a history of poor pregnancy outcomes. In addition, a specialized gynecopathologist should be consulted given the diagnostic uncertainties of differentiating between Cervical, Ovarian and Breast Hyperplasia, atypical hyperplasia, and cancer of reproductive organs.

The WHO classification of hyperplasia women reproductive organs for the two—hyperplasia without atypia (benign hyperplasia) and atypical hyperplasia—should be applied in order to guarantee comparability of histopathological data both in clinical practice and in academic studies. The presence or absence of nuclear atypia is the most important factor for appropriate therapy planning and monitoring.

CONCLUSIONS

This study showed that surgical site infections after obstetric and gynecological operations are the cause of Cervical, Ovarian and Breast hyperplasia. Therefore, early detection and treatment SSIs can reduce the risk of hyperplasia these organs. A number of different aspects should be considered in the treatment of the Cervical, Ovarian and Breast Hyperplasia. Depending on the histological features and the patient's medical history, all established risk factors for progression to hyperplasia of reproductive organs or the concurrent presence of the disease should be determined. However, larger studies are needed to confirm these findings.

REFERENCES

1. Piechocki M., Koziółek W., Sroka D. et al. Trends in Incidence and Mortality of Gynecological and Breast Cancers in Poland (1980-2018). *Clin Epidemiol.* 2022;14:95-114. doi: 10.2147/CLEP.S330081.
2. Sung H., Ferlay J., Siegel R.L. et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA a Cancer J Clin.* 2021;71(3):209-249. doi: 10.3322/caac.21660.
3. Wentzensen N., Poole E.M., Trabert B. et al. Ovarian cancer risk factors by histologic subtype: an analysis from the ovarian cancer cohort consortium. *JCO.* 2016;34(24):2888-2898. doi: 10.1200/jco.2016.66.8178.
4. Momenimovahed Z., Tiznobaik A., Taheri S. et al. Ovarian cancer in the world: epidemiology and risk factors. *IJWH.* 2019;11:287-299. doi: 10.2147/ijwh.s197604.
5. Upadhyaya J.D., Fitzpatrick S.G., Islam M.N. et al. A retrospective 20 year analysis of proliferative verrucous leukoplakia and its progression to malignancy and association with high-risk human papillomavirus. *Head. Neck. Pathol.*, 2018; 12 (4): 500-510. doi:10.1007/s12105-0180893-7.
6. Nikitina I., Boiko V., Smiian S. et al. Estimation to efficiency of the multifunction method of endometriosis ovaries treatment. *Wiad. Lek.* 2020; 5:868-873.
7. Kamińska M., Ciszewski T., Łopacka-szatan K. et al. Breast cancer risk factors. *Menopause Review Przegląd Menopauzalny.* 2015;14(3):196-202. doi: 10.5114/pm.2015.54346.
8. Salmanov A.G., Baksheev S.M., Kuflovskiy D.V. et al. Healthcare-associated infection after legal induced abortions in Ukraine: results a multicenter study. *Wiad Lek.* 2021;74(7):1559-1565. doi: 10.36740/WLek202107103.
9. Salmanov A.G., Terekhov V.A., Baksheev S.M. et al. Infections associated with obstetric and gynecological surgeries as a cause of female infertility in Ukraine. *Wiad Lek.* 2022;75(7):1634-1641. doi: 10.36740/WLek202207104.
10. Salmanov A., Shcheglov D., Svyrydiuk O. et al. Epidemiology of healthcare-associated infections and mechanisms of antimicrobial resistance of responsible pathogens in Ukraine: a multicentre study. *J Hosp Infect.* 2023;131:129-138. doi: 10.1016/j.jhin.2022.10.007.
11. Salmanov A.G., Suslikova L.V., Pandei S.A. et al. Healthcare associated Deep pelvic tissue infection and other infections of the female reproductive tract in Ukraine. *Wiad Lek.* 2021;74(3):406-412. doi:10.36740/WLek202103105.
12. Salmanov A.G., Savchenko S.E., Chaika K. et al. Postpartum Mastitis in the Breastfeeding Women and Antimicrobial Resistance of Responsible Pathogens in Ukraine. *Wiad Lek.* 2020;73(5):895-903. doi: 10.36740/WLek202005111.
13. Salmanov A., Shcheglov D., Artyomenko V. et al. Nosocomial transmission of multi-drug-resistant organisms in Ukrainian hospitals: results of a multi-centre study (2019-2021). *J Hosp Infect.* 2022;132:104-115. doi: 10.1016/j.jhin.2022.12.008.

We would like to thank all the physicians and students who contributed to the prevalence surveys.

ORCID and contributorship:

Aidyn G. Salmanov: 0000-0002-4673-1154^{A,C,F}

Volodymyr Artyomenko: 0000-0003-2490-375X^{B-D,F}

Svitlana Y. Hladdenko: 0000-0002-6660-1410^{B-D,F}

Irina M. Kocytjuk: 0000-0001-6765-7267^{B-D,F}

Andrii O. Marchenko: 0000-0002-8831-9731^{B-D,F}

Galina O. Tolstanova: 0000-0001-6998-4595^{B-D,F}

Svitlana M. Korniyenko: 0000-0003-3743-426X^{B-D,F}

Conflict of interest:

The Authors declare no conflict of interest

CORRESPONDING AUTHOR**Aidyn G. Salmanov**

Shupyk National Healthcare University of Ukraine,

9 Dorohozhytska St., 04112 Kyiv, Ukraine

tel: +380667997631

e-mail: mozsago@gmail.com

Received: 23.08.2022**Accepted:** 27.02.2023

A – Work concept and design, **B** – Data collection and analysis, **C** – Responsibility for statistical analysis, **D** – Writing the article, **E** – Critical review, **F** – Final approval of the article

 Article published on-line and available in open access are published under Creative Common Attribution-Non Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0)