

Summary of Professional Accomplishments

Proceeding for obtaining the postdoctoral degree

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1.0 Personal data

Rafał Adamczak

2.0 Held diplomas and degrees

Oct 16, 1986 – Graduation from the Faculty of Medicine, Collegium Medicum in Bydgoszcz,
Nicolaus Copernicus University in Torun

Specialization

Nov 14, 1990 – obtaining the first degree of specialization in the field of obstetrics
and gynecology

Nov 23, 1993 – obtaining the second degree of specialization in the field of obstetrics
and gynecology – with honors

Nov 29, 2019 – obtaining the title of specialist in gynecological endocrinology
and procreation medicine

Doctoral degree

May 28, 1997 – obtaining the academic degree of doctor of medical sciences in the field
of medicine, awarded by the resolution of the Medical Faculty Council of the Medical Academy
in Bydgoszcz

Dissertation title: **Analysis of the gestational age of human embryos and fetuses based on
routine ultrasound measurements.**

Supervisor: Prof. Wiesław Szymański, MD, PhD

3.0 History of employment

Employment in scientific institutions:

Feb 1, 2022 – present – Assistant Professor – research and teaching group at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology, Collegium Medicum, UMK

Oct 1, 2019 – Jan 31, 2022 – Assistant Professor – teaching group at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology, Collegium Medicum, UMK

Oct 1, 2008 – Sep 30, 2019 – senior lecturer at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology, Collegium Medicum, UMK

Oct 1, 1999 – Sep 30, 2008 – Assistant Professor – academic teacher at the Chair and Teaching Department of Obstetrics and Feminine Diseases of the “L. Rydygier” Medical Academy in Bydgoszcz, and since Nov 24, 2004 at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology, Collegium Medicum, UMK

Dec 1, 1990 – Sep 30, 1999 – Assistant – academic teacher at the Chair and Teaching Department of Obstetrics and Feminine Diseases of the “L. Rydygier” Medical Academy in Bydgoszcz

Employment in a hospital and outpatient clinics:

Oct 01, 2022 - Coordinator of the Obstetrics Ward in the Department of Obstetrics, Feminine Diseases and Oncologic Gynaecology Collegium Medicum UMK University Hospital No. 2 in Bydgoszcz

Oct 1, 2008 - present – Assistant Professor – research and teaching group at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology, Collegium Medicum, UMK, University Hospital No. 2 in Bydgoszcz – civil contract

Oct 1, 1999 – Sep 30, 2008 – Assistant Professor – academic teacher at the Chair and Teaching Department of Obstetrics and Feminine Diseases of the “L. Rydygier” Medical Academy in Bydgoszcz, a since Nov 24, 2004 at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic

Gynecology, Collegium Medicum, UMK, at the Independent, Public Healthcare Institution of the “J. Biziel” District Hospital in Bydgoszcz – full-time hospital job

Jan 23, 1998 – May 22, 1998 – Senior Assistant at the “Dr. J. Brudzinski” District Pediatric Hospital in Bydgoszcz

Apr 1, 1992 – Nov 30, 1993 – Senior Assistant at the Tertiary Outpatient Clinic of the Family Development Society in Bydgoszcz

Dec 1, 1990 – Sep 30, 1999 – Assistant – academic teacher at the Chair and Teaching Department of Obstetrics and Feminine Diseases of the “L. Rydygier” Medical Academy in Bydgoszcz, at the Independent, Public Healthcare Institution of the “J. Biziel” District Hospital in Bydgoszcz

May 16, 1989 – Nov 30, 1990 – Junior Assistant at the the “J. Biziel” District Hospital in Bydgoszcz and continuation of specialization internship in obstetrics and gynecology

Mar 1, 1989 – May 31, 1990 – Assistant at the District Centre of Occupational Medicine in Bydgoszcz

Mar 1, 1989 – May 31, 1990 – Junior Assistant at the Industrial Medicine Clinic of the Tertiary, Industrial Medicine Healthcare Institution in Bydgoszcz

Nov 13, 1987 -Dec 13, 1987 – Healthcare Institution No. 1 – General Outpatient Clinic of the Local Healthcare Clinic No. 31 in Bydgoszcz

Dec 14, 1987 – Apr 30, 1989 – Junior Assistant, start of the specialization internship in obstetrics and gynecology at the Healthcare Institution No. 1 of the “Dr. E. Warminski” Municipal Polyclinic in Bydgoszcz

Dec 3, 1986 – obtaining a license to practice as a doctor, No. 9478055

Oct 20, 1986 – Nov 13, 1987 – post-graduation internship at the Healthcare Institution No. 1 of the “Dr. E. Warminski” Municipal Polyclinic in Bydgoszcz

4.0 Discussion of achievements referred to in art. 219 paragraph. 1 point 2 of the Act

4.1 Main scientific achievement

- A series of 5 publications entitled:

„ Immune imbalance, including those associated with atopic diseases, in patients treated for infertility”

- The achievement was documented in a series of 5 original publications published in journals participating in the Journal Citation Reports (JCR) database with an international coverage, including one paper accepted for publication.

The total bibliometric value of the presented publications is:

The achievement includes 5 original publications (papers 1, 2, 3, 4, 5):

Impact Factor (IF): $0,254+3,298+1,573+1,664+3.298=10.087$

Score of the Ministry of Science and Higher Education (MNiSW): $20+70+40+70+70=270$ points

Papers included in the achievement:

1. **Adamczak R**, Ukleja-Sokolowska N, Dubiel M. Allergy to airborne allergens and menstrual cycles of women treated for infertility. *Revue Française d'Allergologie*. 2022 Dec 1;62(8):689-94.
2. **Adamczak R**, Ukleja-Sokołowska N, Pasińska M, Zielińska J, Leśny M, Dubiel M. Abnormal sperm morphology is associated with sensitization to inhaled allergens. *Int J Immunopathol Pharmacol*. 2022 Jan-Dec;36:20587384211066718. doi: 10.1177/20587384211066718. PMID: 34984934; PMCID: PMC8743921.

3. **Adamczak R**, Ukleja-Sokołowska N, Lis K, Bartuzi Z, Dubiel M. Concentrations of matrix metalloproteinase 9, interleukin 4, and interleukin 8 in follicular fluid, and the results of in vitro fertilization. *Journal of International Medical Research*. 2022 Sep;50(9):03000605221125641.DOI: 10.1177/030006052211256 PMID: 36138563
4. **Adamczak R**. Ukleja-Sokołowska N., Lis K., Bartuzi Z., Dubiel M. Assessment of RANTES, MIP4A, MMP7, MMP9, MMP14, TIMP 1, TIMP 2 and TIMP 3 concentration in the follicular fluid of patients undergoing IVF/ET procedure. *Advances in Dermatology and Allergology*, accepted for publication on 07.12.2022.
5. **Adamczak R**, Ukleja-Sokołowska N, Lis K, Bartuzi Z, Dubiel M, PIBF 1 and cytokine profile of follicular fluid of infertile women qualified to IVF – the influence on fetus development and pregnancy outcome, *Int J Immunopathol Pharmacol*. 2022

4.2 Discussion of the scientific achievement publication cycle

4.2.1 Introduction

Infertility becomes epidemic in the 21st century. Between 10% and 18% of couples have difficulty conceiving. Etiology of infertility is heterogeneous. Some causes are known (e.g., anovulation, obstruction of fallopian tubes, male factor, etc.). There are also cases of infertility causes of which are unknown and characterized by the inability to conceive in the absence of any abnormalities detectable by basic diagnostic tests. This phenomenon is called idiopathic infertility, which affects 10-15% of infertile couples. When looking for the causes of idiopathic infertility, lifestyle factors such as stress, diet, smoking, obesity, lack of exercise and alcohol consumption are taken into account. It is also postulated that there is a correlation between infertility and endocrine, neurological and immunological disorders [1, 2].

Balance within the immune system is essential for the proper development of the ovarian follicles. Cytokines promote proper oocyte maturation, timely follicle rupture, and neoangiogenesis. They indirectly contribute to the supply of oxygen, nutrients and substrates for subsequent steroidogenesis [3].

Exogenous administration of gonadotropins during in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) can significantly affect the endogenous alveolar regulation system and oocyte quality. Analysis of the cytokine and hormonal profile of follicular fluid (FF) in natural and stimulated physiological cycles is crucial in assessing the role of FF in follicle development [4].

The central role of cytokines suggests that any modulation during follicle development and oocyte maturation may have a significant impact on the development of physiological conditions for fertilization. Expanding the knowledge on the role of various cytokines in individual phases of the cycle and follicular maturation may ultimately help in determining an individual approach to fertility treatment.

Literature

1. Gade EJ, Thomsen SF, Lindenberg S, Backer V, Fertility outcomes in asthma: a clinical study of 245 women with unexplained infertility., *Eur Respir J.* 2016 Apr;47(4):1144-51. doi: 10.1183/13993003.01389-2015. Epub 2016 Feb 11.
2. Jensen-Jarolim E, Untersmayr E., Gender-medicine aspects in allergology., *Allergy.* 2008 May;63(5):610-5. doi: 10.1111/j.1398-9995.2008.01645.x
3. 1. Baskind NE, Orsi NM, Sharma V. Follicular-phase ovarian follicular fluid and plasma cytokine profiling of natural cycle in vitro fertilization patients. *Fertil Steril.* 2014 Aug;102(2):410-8. doi: 10.1016/j.fertnstert.2014.04.032. Epub 2014 May 27. PMID: 24875396.
4. 2. Piccinni MP, Vicenti R, Logiodice F, Fabbri R, Kullolli O, Pallecchi M, Paradisi R, Danza G, Macciocca M, Lombardelli L, Seracchioli R. Description of the Follicular Fluid Cytokine and Hormone Profiles in Human Physiological Natural Cycles. *J Clin Endocrinol Metab.* 2021 Jan 23;106(2):e721-e738. doi: 10.1210/clinem/dgaa880. PMID: 33247906; PMCID: PMC7823236.

4.2.2 Purpose of the research

- Assessment of the influence of hypersensitivity to inhalation allergens in women with menstrual disorders.
- Comparison of semen quality parameters in men allergic to airborne allergens in comparison to men not burdened with atopy.
- Determination of the cytokine profile of the follicular fluid in patients undergoing fertility treatment.
- Determination of PIBF 1 concentration in cytokine fluid and its correlation with the chance of a positive pregnancy test result.
- To determine whether the concentration of metalloproteinases and their inhibitors in follicular fluid can be one of the markers to predict the effectiveness of in vitro fertilisation.

4.2.3 Presentation of the publication No. 1

Adamczak R, Ukleja-Sokolowska N, Dubiel M. Allergy to airborne allergens and menstrual cycles of women treated for infertility. *Revue Française d'Allergologie*. 2022 Dec 1;62(8):689-94.

IF 0.254; MNiSW score: 20

My contribution to this work consisted of designing the study, qualifying patients for the study, interviewing and obtaining written consent from patients to participate in the study, collecting clinical data, analysing the data, collecting and analysing the literature, writing the manuscript, and making any necessary post-review revisions.

Abstract

Introduction: Nowadays allergy and fertility problems are important issues. Hormonal status can influence the expression of atopic diseases.

Objective.:The aim of this study was to assess a connection between sensitization to aeroallergens and the menstruation cycle in infertile women.

Method: Eighty two women (age range 24–42 years, mean age 32.5), treated for difficulties with conception were selected. A detailed history was taken from all patients, including history of allergic diseases. They were physically examined, including gynaecological assessment. All women had skin prick tests with the most important inhalatory allergens (HAL allergy, Leiden, Netherlands).

Results: Positive skin prick tests (SPT) to at least one allergen were observed in 33 patients (40.24%). Grass and rye were the most common sensitizing allergen (22% each), followed by mugwort (19.5%), and house dust mites (14.6%). Correlations between positive SPT and the menstrual cycle were analyzed. The age at the time of the first period is associated with positive SPT for mugwort ($P < 0.05$). Length of the cycle is associated with positivity SPT to *Dermatophagoides farinae* ($P < 0.05$).

Conclusion: In this study on women treated for infertility, the global rate of sensitization to pneumallergens is 40%. A statistically significant relationship was found between the early onset of menarche and mugwort sensitization- this relationship requires further examination.

4.2.4 Presentation of the publication No. 2

Adamczak R, Ukleja-Sokołowska N, Pasińska M, Zielińska J, Leśny M, Dubiel M. Abnormal sperm morphology is associated with sensitization to inhaled allergens. *Int J Immunopathol Pharmacol.* 2022 Jan-Dec;36:20587384211066718. doi: 10.1177/20587384211066718. PMID: 34984934; PMCID: PMC8743921.

IF 3.298; MNiSW score: 70

My contribution to this work consisted in developing the study design, qualifying patients for the study, taking medical history and obtaining patients' written consent to participation in the study, collecting clinical data, data analysis, collecting and analyzing the literature, writing the manuscript, making necessary corrections after reviews.

Abstract

Introduction: Allergy is associated with the loss of tolerance of environmental antigens, which results in a pathological immune response. Infertility, both related to the male and female factors, is a huge problem in developed countries. The test is the first to find out if the quality of male sperm decreases in people with allergic diseases.

Material and methods: The study included men who came to the Gynecological Outpatient Clinic due to reproductive difficulties, defined as the partner's lack of pregnancy after one year of regular intercourse. The quality of semen was assessed according to the World Health Organization (WHO) standard. All patients had skin prick tests with the most important inhaled allergens (hazel, silver birch, mugwort, rye, dog, cat, *Dermatophagoides farinae*, *Dermatophagoides pteronyssinus*, alder, *Alternaria alternata*, *Cladosporium herbarum* and grass mix). The results were analyzed statistically.

Results: Results obtained for 52 patients aged 25-52 years (34.62 ± 4.96) were analyzed. The mean BMI (body mass index) was 28.25 ± 3.77 . It was found that 38 men (73%) had increased body weight and 14 men (26.9%) were obese ($BMI > 30$). Thirteen patients declared smoking (25%), and 24 patients (46%) had a positive skin test for at least one inhaled allergen. Sperm tail defects were statistically more common in patients allergic to birch, rye, cat, alder, and grass. Sperm head defects occurred more frequently in patients allergic to *Alternaria alternata* than in non-allergic patients ($p < 0.05$). There was no association between allergies to house dust mites, mugwort, hazel and dogs and the deterioration of semen.

Conclusion: An allergy caused by inhaled allergens had an impact on the quality of male sperm. More research is needed to establish the immunological basis of this phenomenon.

4.2.5 Presentation of the publication No. 3

Adamczak R, Ukleja-Sokołowska N, Lis K, Bartuzi Z, Dubiel M. Concentrations of matrix metalloproteinase 9, interleukin 4, and interleukin 8 in follicular fluid, and the results of in vitro fertilization. *Journal of International Medical Research*. 2022

Sep;50(9):03000605221125641.DOI: 10.1177/030006052211256 PMID: 36138563

IF 1,573; MNiSW score: 40

My contribution to this work consisted of developing the topic and design of the work, collecting and analysing the literature, research material, obtaining the necessary information from the medical history of the patients, obtaining the patients' consents, writing the manuscript, making the necessary corrections after reviews.

Abstract

Introduction: Follicular fluid is rich in cytokines and enzymes. Immune balance in follicular fluid (FF) may play a key role in fertility. The aim of this study was to analyse the results of in vitro fertilisation, defined as a positive pregnancy test after embryo transfer, and compare them with matrix metalloproteinase 9 (MMP-9) concentrations and concentrations of selected cytokines present in FF.

Methods: This case–control study included 20 randomly selected patients with a positive pregnancy (PPG) test and 20 with a negative pregnancy (NPG) test after IVF/ET. In FF obtained during oocyte retrieval, the concentrations of soluble forms of MMP-9, interleukin 1 (IL-1) alpha, IL-1 beta, interferon gamma, IL-2, IL-4, IL-6, IL-8, and IL-10 were measured. The results were analysed statistically. Their effect on the characteristics of follicles, embryos, and the efficiency of IVF and ET were analysed.

Results: High-sensitivity IL-4 concentrations were significantly higher in patients with a PPG test than in those with an NPG test (3.15 ± 3.23 vs 1.91 ± 0.35 pg/mL). The number of top-quality embryos achieved was significantly higher in patients with a PPG test than in those with an NPG test (2.6 ± 1.39 vs 1.75 ± 1.21), and they were negatively correlated with IL-8 concentrations in FF.

Conclusion: Further research on the role of IL-4 and IL-8 in FF is required to establish any clinical benefit of determining their concentrations in FF of infertile women.

4.2.6 Presentation of the publication No. 4

Adamczak R. Ukleja-Sokołowska N., Lis K., Bartuzi Z., Dubiel M.

Assessment of RANTES, MIP4A, MMP7, MMP9, MMP14, TIMP 1, TIMP 2 and TIMP 3 concentration in the follicular fluid of patients undergoing IVF/ET procedure. *Advances in Dermatology and Allergology*

IF 1,664; MNiSW:70

This work has been accepted for publication on 07.12.2022.

My contribution to this work consisted of designing the study, collecting the research material, interviewing the patients, performing the gynecological examination, performing IVF/ET, obtaining consent from the patients, drafting the manuscript, final approval of the version for publication, and undertaking responsibility for all aspects of the paper related to its accuracy and integrity.

Abstract

Introduction: Matrix metalloproteinases (MMP) degrade extracellular matrix. In some studies show, that MMP9 concentration in follicular fluid (FF) may play a role in oocyte maturation and in vitro fertilization (IVF) success. The immunology of follicular fluid is still not fully understood. Complex interactions between particular cytokines and enzymes in FF requires further research.

Methods: : This case-control study included 20 randomly selected patients with a positive pregnancy (PPG) test and 20 with a negative pregnancy (NPG) test after IVF/ET. In FF obtained during oocyte retrieval, the concentrations of MIP4A, MMP7, MMP14, TIMP 1, TIMP 2, TIMP 3, RANTES, IL12p40, and IL17A were measured. Their effect on the characteristics of follicles, embryos, and the efficiency of IVF and ET were analyzed.

Results: There was no statistically significant relationship between a positive pregnancy test and the results of performed immunoassay. The number of COC-1 correlates significantly and positively with RANTES ($r=0.34$; $p=0.038$) and IP-10 ($r=0.329$; $p=0.038$). MII correlates significantly and positively with RANTES ($r=0.341$, $p=0.031$). The number of top quality embryo correlates significantly and positively with IL17A ($r=0.451$, $p=0.004$) and TIMP 1 ($r=0.44$, $p=0.005$).

Conclusion: The concentration of IL17A and TIMP 1 may predict IVF/ET success. Further studies are required on the influence of the follicular fluid immunological environment on oocyte maturation and quality and, subsequently, embryo development.

4.2.7 Presentation of the publication No. 5

Adamczak R, Ukleja-Sokołowska N, Lis K, Bartuzi Z, Dubiel M, PIBF 1 and cytokine profile of follicular fluid of infertile women qualified to IVF – the influence on fetus development and pregnancy outcome, *Int J Immunopathol Pharmacol.* 2022, Vol.36
DOI: 10.1177/03946320221111134

IF 3.298; MNiSW score: 70

My contribution to this work consisted in developing the study design, qualifying patients for the study, taking medical history and obtaining patients' written consent to participation in the study, collecting clinical data, data analysis, collecting and analyzing the literature, writing the manuscript, making necessary corrections after reviews.

Abstract

Introduction: Progesterone is necessary for both the initiation and maintenance of pregnancy. In the immune system, the progesterone-induced blocking factor (PIBF) is the modulating factor. It has pregnancy-supporting properties. The aim of the study was to determine the cytokine profile and PIBF1 concentration in the follicular fluid (FF) of patients undergoing in vitro fertilization (IVF).

Methods: A detailed medical history was taken from 78 patients who qualified for IVF, including the course of fertility treatment. A physical, gynecological and cytological examination was also performed. Concentration of PIBF1, IL-18, IL-2, IL-4, IL-6, IL-10, interferon gamma (IFN-gamma), IL-1 α , IL-1 β , IL-5, IL-8 and IL-15 follicular fluid collected during ovarian puncture was determined using commercially available ELISA kits.

Results: FF IL-1 beta levels were lower in patients whose IVF/ET was successful, defined as a positive pregnancy test 10-15 days after ET. The FF concentration of IL-8 correlated with the number of obtained cumulus-oocyte complexes (COC-1), as well as cells in the metaphase II (MII) stage and the highest quality embryos. PIBF1 concentration showed a statistically significant, positive correlation with the number of MIIs and the number of the highest quality

embryos. The concentrations of IL-2 and IL-6 were positively correlated with the number of COC-1 and MII. The number of the highest quality embryos obtained turned out to be an important parameter in the assessment of the chances of IVF success.

Conclusion: A higher concentration of PIBF1 in FF may indicate a greater possibility of a successful IVF due to the greater number of the highest quality embryos. It was found that the FF concentration of IL-1 beta was lower in patients with successful IVF. PIBF1 and IL-1 beta in FF may be considered a marker of IVF/ET success in the future, but this requires further research.

4.2.8. Conclusions

- A statistically significant relationship was found between the early onset of menarche and allergy to mugwort.
- Atopy had an impact on the quality of male sperm. Sperm tail defects were statistically more common in patients allergic to birch, rye, cat, alder, and grass. Sperm head defects occurred more frequently in patients allergic to *Alternaria alternata* than in non-allergic patients.
- Follicular fluid in women undergoing IVF is rich in cytokines, and significant amounts of PIBF1, IL-18, IL-2, IL-4, IL-6, IL-10, interferon gamma (IFN-gamma), IL-1 α , IL-1 β , IL-5, IL-8 and IL-15 were found in it.
- Determining the concentration of PIBF1 and IL-1 beta in FF may in the future be considered a marker of IVF/ET success, but this requires further research.
- Concentration of IL17A and TIMP1 may become one of the factor predicting IVF/ET success in the future.

4.3 Discussion of other fields of research

4.3.1 A series of (2) scientific papers on the use of laparoscopic techniques and hysteroscopy in gynaecology

The surgical treatment of ovarian tumours is laparotomy and laparoscopy.

The aim of this study (**Publication 1**) was to retrospectively evaluate the usefulness and effectiveness of laparoscopy and laparotomy in the treatment of ovarian tumours.

A total of 185 patients were eligible for laparoscopy and 240 patients diagnosed with ovarian tumour were eligible for laparotomy. The majority of patients underwent sparing procedures involving either excision or removal of the tumour. Laparoscopy and laparotomy were found to be two complementary rather than mutually exclusive surgical methods. Among laparoscopic procedures, ovarian cyst excision was the most common procedure and the most common histopathological diagnosis was Cystis serosa. For benign ovarian tumours, laparoscopic treatment was found to be twice as expensive as laparotomy. **Publication 2** was reported in the Pregnancy Pathology series of papers.

A series of papers included in the discussed field of research:

1. Adamczak Rafał, Szymański Marek, Szymański Wiesław, Ludwikowski G., Pasińska Magdalena. [Przydatność laparoskopii i laparotomii w leczeniu guzów jajnika.] Ginekol. Prakt.2001 : R. 9, nr 6, s. 11-15. Polish Article

2. Ludwikowski G., Adamczak Rafał, Szymański Marek, Pasińska Magdalena, Grabiec Marek, Szymański Wiesław. [Przebieg ciąży i porodu po histeroskopowym przecięciu przegrody macicy.] Ginekol. Prakt.2001 : R. 9, nr 8, s. 6-7. Polish Article

4.3.2. A series (3) of scientific papers on the application of ultrasonography in obstetrics and gynaecology

In the doctoral degree abstract (**Publication 1**), the errors during ultrasound measurements were analysed in terms of accuracy and reliability. The following features were analysed: CRL in 969 individuals, BPD in 2822 individuals, femoral length in 461 individuals,

transverse thoracic dimension in 1780 individuals. The assessment of gestational age in the second half of pregnancy using the patterns and normograms developed so far does not take gender variation into account and has poor validity and reliability.

Ultrasound measurements of CRL provide an approximate estimate of gestational age between 7 and 13 weeks of gestation, and measurements of BPD and THD from 16 weeks of gestation to the middle of the ninth month of gestation. In contrast, femoral length measurements provide a relatively correct estimate of gestational age up to 20 weeks' gestation. Attention was drawn to the need for national standards and benchmarks in ultrasound assessment taking into account gender differentiation.

The diagnostic value of ultrasound examination of ovarian tumors was assessed based on postoperative histopathological evaluation (**Publication 2**) and concluded, that a unicellular ovarian cyst with hypoechoic structure and smooth capsular outline, without papillary masses, is 84% defined as Cystadenoma. In contrast, when a cyst with papillary masses and fluid in the Douglas pouch was visualized on ultrasound, this suggested a neoplastic process, which in 20% proved to be Cystis simplex. Ultrasound is an adjunctive imaging study and in case of suspicious ultrasound lesions requires extended diagnostics.

Publication 3 evaluated ultrasound-guided fetal growth in singleton and twin pregnancies based on BPD and CRL measurements. 865 pregnant women were analyzed, including 465 singleton pregnancies and 400 twin pregnancies. It was found, that at the beginning and end of pregnancy, BPD and CRL growth measurements were different in single and twin fetuses. Significantly, BPD and CRL measurements were higher in singleton pregnancies. It would be advisable to develop separate ultrasound standards for twin pregnancies.

A series of papers included in the discussed field of research:

1. Adamczak Rafał [Analiza wieku ciążowego zarodków i płodów ludzkich na podstawie rutynowych pomiarów ultrasonograficznych.] T. 12, s. 9. Ann. Acad. Med. Bydg. 1998 Doctoral degree abstract

2. Szymański W[iesław], Adamczak R[afał], Szymański M[arek], Czech-Stankiewicz M[ałgorzata]. Diagnostic value of ultrasonographic examination of ovary tumors based on postoperative histopathological evaluation. Gynecol. Endocrinol. 1998 : Vol.12 suppl.2, FC 137

3. Szymański W[iesław], Adamczak R[afał], Adamczak I., Nowak D[ariusz].

Ultrasonographical evaluation of growing rate in fetuses from unifetal and bigeminal

pregnancies. W: *Advances in Polish Clinical Anatomy*. Ed. B. Ciszek. Warszawa, 2003 s. 243-248.

4.3.3 A series of (2) scientific papers on the role of cross allergy in sensitivity to dog allergen Can f 5 based on inhibition tests

Despite the progress made in recent years in allergological diagnosis, there is still a lack of universal tools to confirm or exclude a cross-allergy. Similarity in the molecular structure of individual proteins does not have to directly translate into IgE-related cross-reactions, because the reaction also involves complex mechanisms of post-translational modification of proteins and polyclonal nature of the immune response.

One of the widely reported phenomena is cross-allergy between human kallikrein (PSA) and canine kallikrein (Can f 5). The publication uses an experimental model of an inhibition test on the ELISA plate. Patient serum containing anti-Can f 5 IgE antibodies and PSA derived from the calibration solution (ROCHE total PSA CalSet II; ref. 04485220 190) , as an inhibition substrate were used.

The study confirmed a moderate ability to cross-reaction between sIgE Can f 5 and human PSA, which may be clinically significant in some women. At the same time, it was observed that the symptoms of an allergy to male sperm do not represent a typical clinical presentation of Can f 5 allergy in analyzed patients.

A series of papers included in the discussed field of research:

1. Ukleja-Sokołowska N, Lis K, Żbikowska-Gotz M, **Adamczak R**, Bartuzi Z. Analysis of allergen profile in patients sensitized to canine allergen and potential Can f 5 cross-reactivity with human PSA. *Int J Immunopathol Pharmacol*. 2021 Jan-Dec;35:20587384211023670. doi: 10.1177/20587384211023670. PMID: 34116601; PMCID: PMC8202253.
2. Lis K, Ukleja-Sokołowska N, **Adamczak R**, Bartuzi Z. Experimental Research Models to Assess the Cross-Reactivity between Can f 5 and Human PSA—Two Different Perspectives. *International Journal of Molecular Sciences*. 2022 Sep 23;23(19):11223.

4.3.4 A series of (4) scientific papers on shrimp allergy, in cooperation with the Teaching Department of Allergology, Clinical Immunology and Internal Diseases

An allergy to shrimp is a new phenomenon in Poland. Changes in the diet and the increasing availability of seafood have increased the allergy to these crustaceans. The main allergen in shrimp is tropomyosin, a muscle protein that is interspecific pan-allergen and is responsible for cross-reactions between shellfish and arachnid allergens. An interesting issue is the cross-allergy between house dust mites and shrimp tropomyosin. Our studies analyzed the frequency of allergy to shrimp in patients with symptoms of perennial rhinitis. **(Publication 1)**.

There are various commercially available diagnostic methods that can be used in the assessment of an allergy to shrimp. These methods are based on provocation tests, skin prick tests, and the increasingly extensive *in vitro* diagnostics. Currently, it is possible to determine IgE specific for both shrimp allergen extracts and individual shrimp allergenic components, both by high-sensitivity quantitative and semi-quantitative methods using multiparametric tests.

However, which method to choose? We compared the diagnostic effectiveness of selected diagnostic methods in patients allergic to shrimp, taking into account legitimacy and effectiveness of individual methods **(Publication 2)**.

An interesting issue, which has been increasingly often discussed in recent years, is the participation of alarmins, TSLP, IL-25 and IL-33 in the pathogenesis of inflammation of allergic etiology. Studies conducted in patients allergic to shrimp confirmed statistically significantly higher levels of TSLP and IL-25 compared to the healthy population **(Publication 3)**. Comparison of concentrations of the above-mentioned alarmins in patients with asymptomatic form of allergy to shrimp (i.e., patients who tolerate shrimp consumption) and in patients with full-blown shrimp allergy was very interesting. There were no statistically significant differences between these two groups **(Publication 4)**.

A series of papers included in the discussed field of research:

1. Ukleja-Sokołowska N, Gawrońska-Ukleja E, Lis K, Żbikowska-Gotz M, **Adamczak R**, Sokołowski Ł, Bartuzi Z. Shrimp sensitization in house dust mite allergic patients. *International Journal of Immunopathology and Pharmacology*. 2020
2. Ukleja-Sokołowska N, Lis K, Żbikowska-Gotz M, **Adamczak R**, Kuźmiński A, Bartuzi Z. Clinical utility of immunological methods based on the singleplex and multiplex ImmunoCap systems for diagnosis of shrimp allergy. *Journal of International Medical Research*. 2021 Apr;49(4):03000605211006597.
3. Ukleja-Sokołowska N, Żbikowska-Gotz M, Lis K, **Adamczak R**, Bartuzi Z. Assessment of TSLP, IL 25 and IL 33 in patients with shrimp allergy. *Allergy, Asthma & Clinical Immunology*. 2021 Dec;17(1):1-1.
4. Ukleja-Sokołowska N, Lis K, Żbikowska-Gotz M, **Adamczak R**, Bartuzi Z. IgE, IgG, TSLP, IL 25 and IL 33 in symptomatic and asymptomatic patients sensitized to shrimp allergens. *Food and Agricultural Immunology*. 2021 Jan 1;32(1):837-50. Mar;34:2058738420907188.

4.3.5 A scientific paper on in vivo diagnostics in food allergy

Food allergy diagnosis is difficult and complex. It requires both a detailed allergological history regarding the nature of clinical symptoms and a cause-and-effect relationship between their occurrence and the consumed food. It is also necessary to establish the length of time it takes for symptoms to develop after exposure to the sensitizing food.

Subsequent stages of diagnostics can be divided into *in vivo* - including, first of all, skin prick tests, provocation tests, and *in vitro* - based mainly on the assessment of the concentration of specific IgE in the blood serum, as well as experimental methods, such as basophil and mast cell activation tests.

The described case is of a patient whose symptoms of anaphylaxis occurred only when exposure to the Pru p 3 peach allergen took place together with an allergic reaction enhancer, the so-called co-factor. Exercise, non-steroidal anti-inflammatory drugs, alcohol and many

others can be co-factors for allergic reactions. The dependence of allergy on the co-factor in the presented case was proven by diagnostics based on allergen components and a provocation test with the use of allergenic food and a co-factor.

A paper included in the discussed field of research:

1. Ukleja-Sokołowska N, Zacniewski R, Gawrońska-Ukleja E, Żbikowska-Gotz M, Lis K, Sokołowski Ł, **Adamczak R**, Bartuzi Z. Food-dependent, exercise-induced anaphylaxis in a patient allergic to peach. *International Journal of Immunopathology and Pharmacology*. 2018 Sep;32:2058738418803154

4.3.6 A series of (5) scientific papers on pathology of pregnancy

Pregnancy is a difficult and demanding time for a woman's body. Unfortunately, along with the development of medicine, as well as the delay in the age of reproduction in the population, the incidence of complications in pregnant women increases. In 2001, we conducted a study on the course of pregnancy and childbirth after hysteroscopic transection of the uterine septum. Uterine defects impinge on abnormal embryo implantation, are often the cause of miscarriages and abnormal pregnancy and delivery. They can also have an impact on difficulties in getting pregnant. We evaluated the course of pregnancy and delivery in 27 patients after hysteroscopic uterine septum transection. We found that hysteroscopic transection of the uterine septum significantly increases the chances of pregnancy delivery for patients who have had previous miscarriages. Caesarean section, on the other hand, is the preferred method of pregnancy termination in patients after hysteroscopic uterine septum transection. The procedure of cutting the uterine septum, in our opinion does not improve the chance of pregnancy in patients with previously established infertility **(Publication 1)**.

In 2013, we conducted a study of the serum of 52 patients with recurrent miscarriages and compared the protein fractions present to those contained in the serum of women who had given birth to at least two healthy babies. A protein fraction of 38 kDa present exclusively in women with recurrent miscarriages was identified. Protein fractions of 76 and 151 kDa were present only in patients who gave birth to healthy babies **(Publication 2)**.

During my research work, I also undertook the analysis of indications for amniocentesis related to the suspicion of genetic defects of the fetus, based on the experience of the Teaching Department of Gynecology and Obstetrics, Collegium Medicum in Bydgoszcz. (**Publication 3**).

In 2019, thanks to the team work of specialists from various fields, it was possible to identify the 3q partial duplication syndrome in the fetus (**Publication 4**).

An interesting problem is the influence of pharmacotherapy on the welfare of a fetus.

A situation where a chronically ill patient, for example with connective tissue diseases, is treated biologically is particularly problematic. Due to bioethical concerns, biological and disease-modifying drugs are not tested in pregnant women. Only animal models and case reports of patients who became pregnant during the treatment of rheumatic diseases are available. **Publication 5** discusses current state of knowledge on safety of the biological and disease-modifying drugs in pregnant women and women during lactation.

A series of papers included in the discussed field of research:

1. Ludwikowski G., **Adamczak Rafał**, Szymański Marek, Pasińska Magdalena, Grabiec Marek, Szymański Wiesław. [Przebieg ciąży i porodu po histeroskopowym przecięciu przegrody macicy]. Ginekol. Prakt. 2001 : R. 9, nr 8, s. 6-7.

Polish Article

2. Nowak-Łoś L, Odrowąż-Sypniewska G, Zegarska J, Zalewska-Zacharek M, Kłyszajko-Molska J, Grabiec M, **Adamczak R**. Analysis of serum protein fractions from women with recurrent miscarriage. Ginekologia Polska. 2013;84(10).

3. Sadłecki P, Walentowicz-Sadłecka M, Pasińska M, **Adamczak R**, Grabiec M. Indications for genetic amniocentesis investigated at the Department of Gynecology, Obstetrics, and Oncologic Gynecology, Nicolaus Copernicus University, Collegium Medicum, Bydgoszcz. Ginekologia polska. 2014 Jun 1;85(6):420-3.

4. Pasińska M, **Adamczak R**, Repczyńska A, Łazarczyk E, Iskra B, Runge AK, Haus O. Prenatal identification of partial 3q duplication syndrome. BMC Medical Genomics. 2019 Dec;12(1):1-8.

5. Góralczyk A, Kolossa K, Waszczak-Jeka M, **Adamczak R**, Jeka S.

The exposure to biologic and targeted synthetic disease-modifying antirheumatic drugs in pregnancy and lactation. *Advances in Dermatology and Allergology/Postępy Dermatologii i Alergologii*. 2020 Jun;37(3):306

4.3.7. A series of (3) scientific papers on the role of the generalised inflammatory response in other diseases, including fertility disorders

In collaboration with the Department of Allergology, Clinical Immunology and Internal Medicine at the Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University (UMK) in Toruń, research is being carried out in search of a link between immunological processes responsible for the occurrence of atopic diseases and diseases responsible for fertility disorders. The theoretical aspects behind the research conducted are discussed in

Publication 1 and **Publication 2**.

In **Publication 3**, the results of studies indicating an increased risk of sperm defects in semen from patients with atopic diseases are presented, which may be related to the chronic low-grade inflammation that allergy generates.

In addition, studies are being conducted on the content of specific pro-inflammatory cytokines in follicular fluid, which is collected in preparation for in vitro fertilisation of women with infertility of various aetiologies.

A series of papers included in the discussed field of research:

1. **Adamczak R**, Ukleja-Sokołowska N, Bartuzi Z., Fertility and allergy : is there a correlation? *Postępy Hig. Med. Dośw.*, 2019 : T. 73, s. 440-446.

2. **Adamczak, R.**; Ukleja-Sokołowska, N.; Lis, K.; Dubiel, M. Function of Follicular Cytokines: Roles Played During Maturation, Development and Implantation of Embryo. *Medicina* **2021**, 57, x.

3. **Adamczak R**, Ukleja-Sokołowska N, Pasińska M, Zielińska J, Leśny M, Dubiel M, Abnormal sperm morphology is associated with sensitization to inhaled allergens, *International journal of immunopathology and pharmacology*, 2022.01.05 Vol.36 DOI: 10.1177/20587384211066718

5.0 Information on significant scientific activity carried out in more than one university, scientific institution, in particular foreign.

5.1 Internships abroad

- Aug 1995 – one-week internship - Infertility Treatment Center Sophia Ziekenhuis Zwolle - the Netherlands.
- Mar 22 – Mar 26, 2000 – one-week internship - Practical endocrinology for gynecologists Weimar – Germany.
- Jul 1, 2016 – Jul 31, 2016 – one-month internship - Parens Infertility Treatment Center Lviv – Ukraine.
- Jun 24, 2019 – Jul 24, 2019 – one-month internship - Centre de Sante Psychique a Roubaix in France - Assessment of mental disorders in patients treated for infertility Roubaix – France.
- Sep. and Oct. 2021 research internship – 1 month - West Ukrainian Medical Center of Clinical Immunology and Allergology in the Lviv Provincial Clinical Diagnostic Center and in the Department of Clinical Immunology and Allergology of the ‘Danil Halicki’ Lviv National Medical University.

Internships in the above-mentioned foreign centers allowed me to expand my interests in the field of infertility diagnostics and treatment. Being in the Infertility Treatment Center in the Netherlands, I got acquainted with techniques of assisted reproduction in the field of qualifying patients for diagnosis and treatment based on the internal treatment algorithms. I have become familiar with medical procedures such as ovulation stimulation, IVF protocols, as well as performing intrauterine insemination and embryo transfer.

Practical classes held in Weimar were devoted to the subject of endocrine disorders in infertility, especially in polycystic ovary syndrome, as well as in obese women. These classes also allowed me to familiarize myself with the technological process of producing hormonal drugs used in the treatment of endocrine disorders in women at the Jenafarm plant.

During my stay at the Lviv Parens Infertility Center, I participated in a practical internship in the implementation of laboratory medical procedures, I personally performed all stages from

ovum collection, cell fertilization by ICSI, embryo culture, embryo transfer and cryopreservation of embryos and sperm. Each of the stages of laboratory techniques was repeated by me and checked for compliance with the applicable medical procedures, which allowed me to gain valuable skills and information in order to eliminate errors that may affect the effectiveness of IVF methods when performing laboratory techniques.

The internship at the Centre de Sante Psychique a Roubaix in France allowed me to become acquainted with mental disorders that affect fertility. I participated in various forms of therapy, interactions between doctors and patients, which brought me closer to problems of diagnosis and treatment of psychological diseases that affect fertility. It was important that the diseases most often affected very young people trying to have children.

The patients' openness to the proposed treatment in the Mental Treatment Center and the variety of therapies used were significant.

The research internship at the Lviv National Medical University was devoted to the exchange of experiences between Poland and Ukraine in the field of causes of infertility. In cooperation with doctors, clinical immunologists and allergists of the West Ukrainian Medical Center of Clinical Immunology and Allergology, we analyzed clinical cases of patients with autoimmune and allergic diseases treated for infertility. Results of laboratory tests, especially *in vivo* and *in vitro* methods of identifying allergens, as well as immunotropic treatment regimens for these patients were discussed. A decision was made on a future comparative analysis of clinical cases in Poland and Ukraine for a scientific summary in order to write joint papers and official practical recommendations for Healthcare Institutions with algorithms for examining and treating patients with immunopathological infertility.

The above-mentioned internships allowed me to get acquainted with various infertility problems and treatment methods in various European countries.

5.2 Scientific cooperation with other institutions

- Since March 2020 I have been cooperating with the Faculty of Psychology at the 'Kazimierz Wielki' University in Bydgoszcz, in the field of research and development, including research for master's/post-graduate theses and student volunteering in the field of psychological aspects in gynecology and obstetrics.
- Since 2019 I have been conducting multidirectional research with the Teaching Department of Allergology, Clinical Immunology and Internal Diseases at the Collegium Medicum in Bydgoszcz - University Hospital No. 2 in Bydgoszcz, in the field of the impact of allergic factors on fertility.
- Since Oct 1, 2020 I have been cooperating with the University of Bydgoszcz in the field of conducting classes on basics of physiotherapy in gynecology and obstetrics and professional internships for students in the field of physiotherapy.
- Since 2019 I have been cooperating with the 'Danyła Halicki' Lviv National Medical University, Department of Clinical Immunology and Allergology - Lviv - Ukraine - in the field of the impact of immunological and allergological diseases on female and male fertility.
- Since 2014 - Cooperation with ESHRE European Society of Human Reproduction and Embryology in the field of analysis, reporting and treatment results of patients with infertility using assisted reproductive techniques.
- Since 2014 - Cooperation with PTMRiE - Polish Society of Reproductive Medicine and Embryology - in the field of staff training of the Embryology Department - Embryology and Andrology Laboratory.

6.0 Information about achievements in fields of education, organization and popularization of science.

- Index H = 4 (Web of Science)
- Index H = 5 (Scopus)
- Citations 41 (Web of Science)
- Citations 61 (Scopus)

	Total	Before obtaining the doctoral degree	After obtaining the doctoral degree
IF	42,876 + accepted for publication 1,664= 44,540 IF	0	42,786 + accepted for publication 1,664 = 44,540 IF
KBN/MNiSzW score	1181,500 + accepted for publication 70 = 1251.500 points	35 points	1146,500 + accepted for publication 70= 1216,500 points
<u>First author</u> IF	8,423 + accepted for publication 1,664 = 10.087 IF	0	8,423 + accepted for publication 1,664 = 10.087 IF
<u>First author</u> KBN/MNiSzW score	200 points + accepted for publication 70 points = 270 points	35 points	165 points + accepted for publication 70 points = 235 points

List of carried out functions

- Coordinator of the Obstetrics Ward in the Department of Obstetrics, Feminine Diseases and Oncologic Gynaecology Collegium Medicum UMK University Hospital No. 2 in Bydgoszcz – since 2022.
- Voivodship consultant in the field of gynecological endocrinology and reproduction for the Kuyavian-Pomeranian Voivodeship – 2015-2018.
- Coordinator of the Department of Early Pregnancy and Reproductive Pathology, Department and Clinic of Obstetrics and Women's Diseases, University Hospital No. 2 in Bydgoszcz - 1999-2014.
- Scientific director of courses and lecturer of the "Individual endoscopy course" - obligatory specialization course as part of the specialization program in obstetrics and gynecology, intended for doctors specializing in obstetrics and gynecology organized by the Chair and Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology CM in Bydgoszcz 2011-2015 - cyclical courses in 2011 - 6 courses, in 2012 - 7 courses, in 2013 - 5 courses, in 2014 - 8 courses, in 2015 - 8 courses.
- Scientific director of the courses and lecturer of the "Gynecological endocrinology, gynecology of developmental age" course in 2021 - a course within the CMKP organized by the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology CM in Bydgoszcz - Specialization course for those qualified to specialize in obstetrics and gynecology.
- Lecturer and supervisor of practical classes of the course: "Endoscopy - individual practical course - modular mode; Endoscopy - individual course -

current mode" in 2021 and 2022, for doctors specializing in obstetrics and gynecology within the CMKP organized by the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology CM in Bydgoszcz - cyclical courses in 2021 - 4 courses, in 2022 - 4 courses.

- Member of the CMKP Committee preparing questions for the test exam for doctors specializing in obstetrics and gynecology 1994-1996.
- Chairman of the Examination Board of the Initial Test Examination for applicants for admission to the Medical University of Bydgoszcz at the Faculty of Medicine - 1995 and member of the Examination Board in 1994, 1996-1997.
- Member of the Examination Board for 6th-year students taking the exam in obstetrics and gynecology 1996-2005.
- Preparation of drafts, tests for exams for students since 1995.
- Preparing questions for the Medical Qualification Exam in the field of gynecology, obstetrics and gynecological endocrinology since 2019.
- Supervisor of specialization in obstetrics and gynecology for 4 attendees.
- Trainee supervisor in endocrinology for doctors as part of the specialization in gynecology and obstetrics since 2021, for 4 attendees.
- Supervisor of the specialization in gynecological endocrinology and reproduction since 2020, for 2 attendees.
- By the decision of the Medical Center for Postgraduate Education as part of my own activity, I obtained accreditation for conducting two directional internships in the field of fertility and infertility and in an assisted

reproductive center for doctors specializing in gynecological endocrinology and reproduction, since Jun 14, 2017 (the only center in the Kujawsko-Pomorskie Voivodeship).

- FMF Certificate - The Fetal Medicine Foundation Nr ID 77427 authorizing for prenatal assessment of fetuses – since 2009 – reviewed yearly.
- Leader of the ISO process at the Teaching Department of Obstetrics, Feminine Diseases and Oncological Gynecology, since 2004.

Research projects:

- Diagnostic tests in girls and women with disorders of somatic and sexual development - BW 36/2000 - Research Project Manager.
- Clinical evaluation of patients with disorders of somatic and sexual development - BW 92/2000 - Research Project Manager.
- Genetic basis of recurrent spontaneous abortions - BW 9/2001 - member of the research team.

Representing Polish science at home and abroad:

- Co-organizer, member of the Organizational Committees and lecturer in Polish and international scientific and practical workshops in the field of gynecological endoscopy, organized annually for 20 years at the Teaching Department of Obstetrics and Feminine Diseases, Medical University in Bydgoszcz:
 1. Scientific and Practical Workshop on Gynaecological Endoscopy - co-organiser and lecturer, Bydgoszcz 30.05 - 01.06.2001.
 2. Scientific and Practical Workshop on Gynaecological Endoscopy - co-organiser and lecturer, Bydgoszcz 5.06 - 5.06.2003.

3. 13th Scientific and Training Conference with Endoscopy Workshops - co-organiser and lecturer. Lecture "Laparoscopy in the diagnosis of pelvic pain" Bydgoszcz 3.06- 4.06.2004.
 4. 15th Scientific and Training Conference with Endoscopic Workshops - co-organiser and lecturer. Lecture "Laparoscopy or laparotomy" Bydgoszcz 8.06- 9.06.2006.
 5. 16th Scientific and Training Conference with Endoscopic Workshops - co-organiser and lecturer .
Lecture "The use of hysteroscopy in the diagnosis of uterine bleeding" Bydgoszcz 31.05- 01.06.2007.
 6. 18th Scientific and Training Conference with Endoscopic Workshops - co-organiser and lecturer. Lecture "Laparoscopy - complications" Bydgoszcz 20-22.05.2009.
 7. Scientific conference "Current issues in obstetrics and gynaecology". - co-organiser and lecturer. Lecture "Gigantomastia - case report" Bydgoszcz 10.10.2009.
 8. 20th Jubilee Training Conference - Scientifically with workshops in gynaecology - co-organiser and lecturer Lecture " Laparoscopy in diagnostics of infertility treatment" Bydgoszcz 27.05-28.05.2011.
 9. 21st Scientific and Training Conference with Operative Workshops - co-organiser and lecturer. Lecture "Complications after hysteroscopy". Bydgoszcz 31.05.- 01.06.2012.
 10. International Surgery Workshop - co-organizer and lecturer. Lecture "Single access Laparoscopy" Bydgoszcz 30.05.2014.
 11. International Laparoscopy Workshop - co-organiser and lecturer Lecture "Hysteroscopy in an outpatient setting" Bydgoszcz 10.06.2016.
- Jubilee Congress of Practical Gynaecology
Lecture "Laparoscopy in the diagnosis and treatment of ovarian tumours" Poznań 1997.
 - VIIth Scientific Conference "Twins" in Szczecin
Lecture "Course and complications of multifetal pregnancy - triplet and quadruplet and quadruplets" Szczecin 14.05 - 15.05.2004.

- Participation in the 1st International Congress of UENPS. Rome, Italia, 17-19 November 2008 - where 4 papers were presented:
 1. Clinical significance of scpB gene based PCR test improving *Streptococcus agalactiae* carriage screening in pregnant women.
 2. Comparison of delivering mothers and umbilical cord plasma interleukin-6 concentrations as a marker of early onset neonatal infection.
 3. Fetal hypotrophy and pregnancies in women experienced hypogonadotrophic hypogonadism after biliopancreatic diversion with duodenal switch.
 4. Partial hydatidiform mole and coexisting live fetus with normal karyotype - The dilemma of management and diagnosis - Case report.

- Participation in the XIX FIGO World Congress of Gynecology and Obstetrics. Cape Town, South Africa, 4-9 October 2009, where two papers were presented in the poster session:
 1. Interleukin-6 concentrations in maternal and umbilical cord plasma and the early onset neonatal infection.
 2. Serotype I, II, III distribution and antimicrobial susceptibility of *Streptococcus agalactiae* among Polish delivering women.

Participation and lectures by invitation in:

1. The 3rd International Scientific and Research Conference "Smart LION Immunotechnology in Medicine 2019, LVIV, UKRAINE" - Allergic diseases with skin reactions in couples treated for infertility - Lviv National Medical University - September 2019, Lviv, Ukraine – lecture.
2. The X Scientific-Practical International Conference Christmas Readings In Lviv „Covid-19, Long-Covid-19, Post-Covid-19: Their Multiplicity And Immune Disorders” December 2021 – Allergic factors of infertility – lecture.
3. Prenatalia 2022 Love in the time of Covid organized by CM UMK Department of Obstetrics, Feminine Diseases and Oncologic Gynaecology .Member of the Scientific Committee and lecturer

Lecture "Infertility diagnosis and treatment in the time of Covid-19 pandemic"
Toruń 06-07.05.2022.

- In cooperation with the Infertility Treatment Center Parens Krakow, co-organizer of trainings and lectures on compulsory initial and continuing training for embryologists, doctors and midwives recommended by the Ministry of Health - topics of delivered lectures:
 1. Qualification for in vitro fertilization 2017 Krakow.
 2. Securing fertility for the future - indications - including oncology - 2017 Krakow.
 3. Diagnostics of infertility - panel of genetic tests in male infertility - 2019 Krakow.
 4. Making a therapeutic decision in infertility - assessment of the probability of pregnancy depending on the therapy and treatment discontinuation - 2019 Krakow.
 5. Monitoring the course of treatment. Ultrasound and endocrine evaluation of stimulation and controlled ovary hyperstimulation.
 6. Determinants of time and type of ovulation peak - 2021 Krakow.
 7. Late hyperstimulation syndrome - 2021 Kraków.
- Co-authorship of a chapter in a textbook for doctors:

Title of the book: Current topics in caesarean section
Chapter: Hemodynamic changes during preterm birth treatment.
Editor's address: IntechOpen, 2021.

Social educational activity:

- Establishing cooperation with the Bydgoszcz branch of the TPD Association, TPD Club for Children with Diabetes - lectures on:
 1. Diagnosis and management of diabetes in the puberty period
 2. Diabetes and procreation - 2008/2009.
- Lectures on: Medical and human dimension of infertility - as part of the National Day of Life organized by the Kuyavian-Pomeranian Voivodeship Office in Bydgoszcz - March 2016.
- White Saturdays - organizer - ultrasound examinations during pregnancy, education on the topics of: Posture defects in pregnancy, Testing during pregnancy, Course of pregnancy and childbirth – 2014 – 2015 – 2016.
- Radio speech on "The need to organize infertility treatment programs" as a provincial consultant in the field of gynecological endocrinology and reproduction – 2018.
- Popularization of knowledge about endometriosis and proper nutrition during pregnancy and the role of vaccinations among women during procreation - two TV appearances on TVP Bydgoszcz 2019.
- Popularization of knowledge in the field of care for a newborn on the occasion of the International Mother and Child Day for the inhabitants of the Kuyavian-Pomeranian Voivodeship - lecture for high school students – 2018.
- Lecture "The use of minimally invasive techniques in gynecology" as part of the Bydgoszcz Science Festival - May 2019.
- Popularization of medical knowledge in a local journal 'Panorama Osielsko'
Topics:
 1. Vaccinations during pregnancy – Dec. 2021.
 2. Osteoporosis in mature women – Jun. 2022.
 3. Prevention of female cancer - cervical cancer Dec.2022.

- Appearance on the TV programme "Oncoczujni" episode 13.2022 - on preventive , cervical cytological screening. - 10/2022.
- Appearance on TVP 3 Bydgoszcz in the programme "Na Zdrowie" as an expert on prevention of cervical, endometrial and ovarian cancer. - 11/2022.

Achievements in the field of staff training:

- Participation in education in the field of gynecology and obstetrics for students of the 'Ludwik Rydygier 'Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Torun.
- Conducting classes in the form of lectures, seminars and exercises in the field of obstetrics and gynecology with students of the 3rd, 4th, 5th and 6th year of the Medical Faculty of CM in Bydgoszcz, since 1990.
- Conducting classes for 4th and 5th year students at the CM Simulation Center in Bydgoszcz.
- Multiple participations in the work of the team preparing endoscopic scientific and practical workshops organized annually for last 20 years at the Teaching Department of Obstetrics and Feminine Diseases, Medical University in Bydgoszcz.
- Conducting numerous in-ward training for doctors and midwives as the Coordinator of the Early Pregnancy Pathology Ward at the University Hospital No. 2 in Bydgoszcz, in 1999-2014.
- Conducting individual practical courses in gynecological endoscopy for doctors specializing in obstetrics and gynecology organized by the Chair and Teaching Department of Obstetrics and Feminine Diseases, University Hospital No. 2 in Bydgoszcz, 2008-2015 and 2021-2022.
- Participation in final exams for 6 bachelor's and 1 master's theses as a supervisor and reviewer - 2011, 2020 for students of the Faculty of Health Sciences, CM in Bydgoszcz:
 1. Prophylactic examinations in cervical cancer - BA in Nursing - supervisor 2011, Faculty of Health Sciences, Medical College in Bydgoszcz.

2. The influence of cigarette smoking on selected serum biochemical parameters in pregnant women in the first trimester of pregnancy - BA in Nursing - reviewer - 2011 Faculty of Health Sciences, Medical College in Bydgoszcz.
 3. Genetic causes of male infertility - BA in Nursing - reviewer - 2020 Faculty of Health Sciences CM in Bydgoszcz.
 4. Autosomal chromosome abnormalities as the cause of procreation failures - BA in Nursing - reviewer - 2020 Faculty of Health Sciences, Medical College in Bydgoszcz.
 5. Genetic abnormalities of sex chromosomes as the cause of procreation failures - BA in Nursing - reviewer - 2020 Faculty of Health Sciences, Medical College in Bydgoszcz.
 6. The level of plasma pregnancy protein PAPA-A and Beta-hCG in the serum of women with hypothyroidism in the first trimester of pregnancy - Master's thesis - reviewer - 2020 Faculty of Medicine, CM in Bydgoszcz.
 7. The influence of genetic and environmental factors on the occurrence of habitual miscarriages - BA in biotechnology - reviewer - 2020 Faculty of Medicine, Medical College in Bydgoszcz.
- Participation in the proceedings of doctoral dissertation - Assessment of the dependence of the fluorescence intensity of advanced glycation end products with the activity of systemic lupus erythematosus and the patient's quality of life - doctoral thesis - auxiliary supervisor - 2020 Faculty of Health Sciences, Medical College in Bydgoszcz.
 - Conducting individual practical training in the field of gynecological ultrasound for doctors since 1999.
 - Supervisor of specialization for doctors specializing in obstetrics and gynecology as well as gynecological and reproductive endocrinology - 6 doctors.
 - Tutor of the Student Scientific Society at the Teaching Department of Obstetrics and Feminine Diseases, Medical University of Bydgoszcz in 2000-

2008 and 2020 - until now - the name of the Society: Student Scientific Society of Perinatology, Gynecology and Reproductive Medicine at the Teaching Department Obstetrics, Feminine Diseases and Oncologic Gynecology CM in Bydgoszcz.

Students take part in numerous Symposiums of Students and Young Doctors at both national and international level, many times presenting highly scored works:

1. The usefulness of laparoscopy and laparotomy in the treatment of ovarian tumours.
2. The course of pregnancy and childbirth and the postnatal status of newborns of underage mothers.
3. Results of genetic testing in 31 male couples with primary infertility.
4. Laparoscopic treatment of ectopic pregnancy.
5. Ultrasound assessment of fetal growth based on BPD values and CRL in singleton versus twin pregnancies.
6. The value of routinely used normograms to determine fetal growth rates for twin pregnancies.
7. Ultrasound assessment of gestational age based on routinely used normograms for singleton pregnancies.
8. Analysis of the postnatal status of neonates from multiple pregnancies complicated by intrauterine fetal death.
9. Course of pregnancy and delivery after hysteroscopic transection of the uterine septum.
10. The course of multiple pregnancy and how it is terminated when fetal demise is confirmed.
11. the course of pregnancy and delivery and the postnatal condition of newborns of mothers with thrombocytopenia.

o Theoretical and practical classes for doctors and

and midwives at the Medical Simulation Centre CM UMK in Bydgoszcz

on: Shoulder dystocia - 2022.

Information on organizational achievements:

- o Co-founder in the implementation of gynecological endoscopy techniques in the Teaching Department of Obstetrics and Feminine Diseases, Medical University of Bydgoszcz.

- Co-founder in the implementation of minimally invasive techniques in gynecology at the Teaching Department of Obstetrics and Feminine Diseases, Medical University of Bydgoszcz.
- Co-organizer of scientific and practical workshops in the field of gynecological endoscopy at the Teaching Department of Obstetrics and Feminine Diseases, Medical University in Bydgoszcz.
- As part of the Fertility and Infertility Section, co-organizer of the introduction of assisted reproductive techniques at the Teaching Department of Obstetrics and Feminine Diseases, Bydgoszcz Medical University.
- Organizer and conductor of individual courses in the field of gynecological endoscopy at the Teaching Department of Obstetrics and Feminine Diseases, Medical University of Bydgoszcz.
- Co-organizer of the Prenatal Laboratory at the Teaching Department of Obstetrics and Feminine Diseases, Medical University in Bydgoszcz.
- Initiator of the treatment of intrauterine defects of the fetus under ultrasound guidance.
- Education of assistants at the Teaching Department of Obstetrics, Feminine Diseases and Oncologic Gynecology CM in Bydgoszcz in the field of ultrasound.

Characteristics of scientific interests:

- Laparoscopic and hysteroscopic methods in gynecology and obstetrics.
- Perinatology.
- Fetal intrauterine therapy - intrauterine surgery.
- Ultrasound evaluation of fetal defects.
- Defects of the reproductive organ.
- Biophysical methods of fetal surveillance and new imaging techniques in obstetrics and gynecology.
- Endocrinopathy in obstetrics and gynecology.

- Infertility therapy and treatment.
- Influence of allergic factors on infertility.
- Immune disorders and atopic diseases in infertility.

Membership in scientific organizations:

- Polish Society of Gynecologists and Obstetricians
- Polish Society of Reproductive Medicine and Embryology
- ESHRE European Society of Human Reproduction and Embryology

Awards:

- Individual Rector's 2nd degree Award for educational activity – 2000.
- Individual Rector's 3rd degree Award for educational activity – 2003.
- Special address of President of the City of Bydgoszcz Konstanty Dąbrowicz for long work for the benefit of patients of the region – 2003.
- Jubilee Award for 20 years of working – 2006.
- "Meritorious for the Hospital" Award – 'Dr. J. Biziel' University Hospital No. 2 in Bydgoszcz – 2010.
- Jubilee Award for 25 years of working -2011.
- "Meritorious for the Hospital" Award – 'Dr. J. Biziel' University Hospital No. 2 in Bydgoszcz – 2013.
- Jubilee Award for 30 years of working – 2017.
- The jubilee award with address for years of full dedication to work for the society and academic youth - Vice-Rector for Collegium Medicum, CM UMK – Dec 9, 2021.
- Jubilee Award for 35 years of working – 2022.

Languages – German, English, Russian

Non-professional interests:

Classical music, cars and motor industry, art

