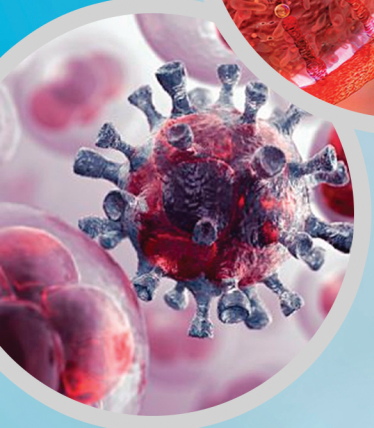
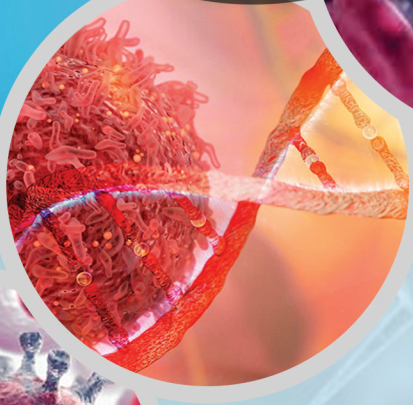
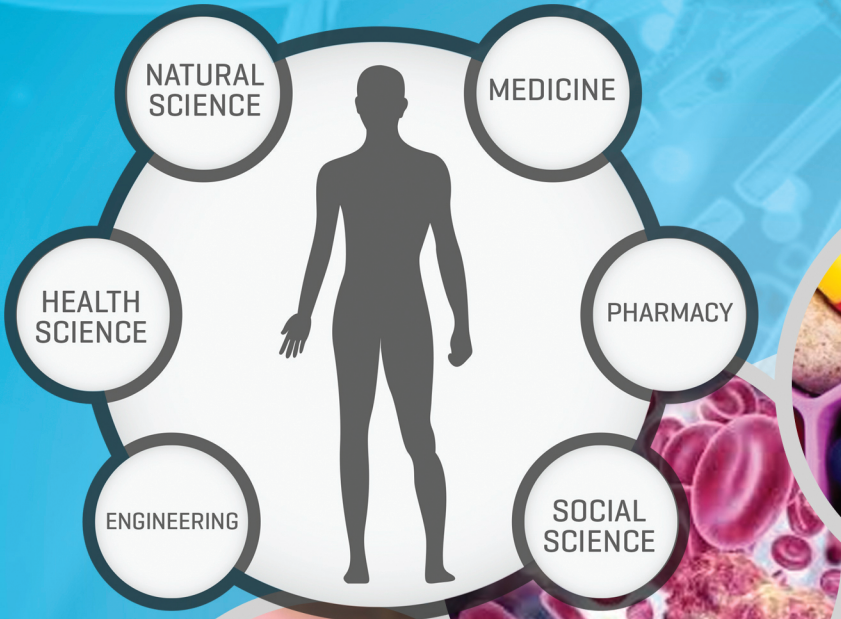




4. ULUSLARARASI KANSER GÜNLERİ (4. UKG) INTERNATIONAL 4. CANCER DAYS CONGRESS BOOK



Editors

Prof. Dr. Hilmi Ataseven

Prof. Dr. Zekiye Hasbek

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SIVAS 2023



SIVAS CUMHURİYET UNIVERSITY

4th International Cancer Days
Congress Book

ISBN

978-625-6497-07-8

Publishing Director

Prof. Dr. Alim Yıldız

Editors

Prof. Dr. Hilmi Ataseven

Prof. Dr. Zekiye Hasbek

Associate Prof. Dr. Hayreddin Gezegen

Teaching Assistant Rukiye Aslan

Cover and Internal Layout

Abdulkadir Kocatürk

Printing

Sivas Cumhuriyet University Rectorate Printing House

Certificate Number: 40954

Distribution

Sivas Cumhuriyet University

Sivas / 23.10.2023

SIVAS CUMHURİYET UNIVERSITY PUBLICATIONS Number: 271

It has been deemed appropriate for printing based on the decision of the Sivas Cumhuriyet University Publishing Board dated 18/10/2023 and numbered 34, and the decision of the Sivas Cumhuriyet University Board of Directors dated 16/10/2023 and numbered 28.

ASSESSMENT OF THE RELATIONSHIP BETWEEN ENDOMETRIAL CANCER AND SYSTEMIC INFLAMMATION

Şerife Özlem Genç^{1*}, Hüseyin Erdal²

¹Sivas Cumhuriyet University, Faculty of Medicine, Department of Obstetrics and Gynecology

²Aksaray University, Faculty of Medicine, Department of Medical Genetics

ABSTRACT

Objective

The relationship between endometrial cancer and systemic inflammation has been evaluated in recent years, particularly in terms of pre-treatment assessment, lymph node metastasis, and prognosis prediction. However, a conclusive consensus on this topic has yet to be reached. This study is based on the retrospective data from a tertiary center study conducted on patients who underwent surgery for endometrial cancer in our clinic within the past 2 years. The aim of this research is to assess the potential effects of age, gravidity, parity, hemoglobin (Hb), platelet (PLT), white blood cell count (WBC), lymphocyte count (LYM), monocyte count (MONO), and calculated systemic inflammatory indexes (NLR, PLR, LMR, dNLR, SII, SIRI, PIV) on the diagnosis and prognosis of endometrial cancer.

Methods

This study is based on the analysis of retrospective data from endometrial cancer patients treated at a single center. Patient data including age, obstetric characteristics, and hematologic parameters were recorded. Systemic inflammatory indexes were calculated using the following formulas: NLR (Neutrophil-to-lymphocyte ratio), PLR (Platelet-to-lymphocyte ratio), LMR (Lymphocyte-to-monocyte ratio), dNLR (Derived NLR ratio - neutrophil count divided by the result of leucocyte count minus neutrophil count), SII (Systemic inflammatory index - neutrophil x platelet / lymphocyte), SIRI (Systemic inflammatory response index - neutrophil x monocyte / lymphocyte count), and PIV (Pan-immune inflammation value - neutrophil x platelet x monocyte / lymphocyte count).

Results

Our study includes 21 patients who underwent surgery for endometrial cancer in our clinic within the past 2 years. We examined the relationships between age, obstetric characteristics, and hematologic parameters in endometrial cancer patients. The results indicated that the mean age was 56.6 years, with an average gravidity of 3. The average hemoglobin level was within the normal range at 12.7. The mean values for the systemic inflammatory indexes were as follows: SII (694.6 ± 319.1) SIRI (1.4 ± 0.9) PIV (346.8 ± 137.2), NLR (2.9 ± 2.6), PLR (147.3 ± 51.7), LMR (4.1 ± 1.43), and dNLR (2.03 ± 1.6). In conclusion, the relationship between endometrial cancer and systemic inflammation is a significant focal point for future cancer research and treatments. Current research findings in this area may contribute to a better understanding of this relationship and improve the healthcare of patients.

Keywords: Endometrial cancer, systemic inflammation, pan-immun inflammation value, systemic inflammatory index

Introduction

The idea of assessing systemic inflammation in endometrial cancer, as in other cancers, is based on the hypothesis that chronic inflammation may play a role in cancer development. Chronic inflammation can lead to cellular damage, genetic mutations, and the formation of cancer cells.

Systemic inflammatory indexes are combinations of parameters measured through blood tests ((such as leucocyte, lymphocyte, monocyte, platelet count) and reflect the inflammatory response in the body. Among these indexes, there are well-known ones like SII (Systemic Inflammatory Index), NLR (Neutrophil-to-Lymphocyte Ratio), and PLR (Platelet-to-Lymphocyte Ratio), which have been studied in various cancer types. In recent years, studies examining the relationship between endometrial cancer and systemic inflammation have raised [1-3].

Several studies suggest that elevated SII, NLR, or PLR values may increase the risk of endometrial cancer and impact prognosis [2]. These indexes have also been linked to the ability of cancer cells to metastasize and grow [3]. The role of systemic inflammatory indexes in the treatment and monitoring processes of endometrial cancer patients is also under investigation. These indexes can assist in determining patients' response to treatment, lymph node metastasis and their risk of recurrence. Furthermore, in recent years, systemic inflammatory indexes have been used to predict the presence of lymph node metastasis in endometrial cancer [4]. The exact mechanisms underlying the relationship between endometrial cancer and systemic inflammation are still not clear, and further research is needed. Studies in this field can help us better understand this relationship and optimize the treatment processes for patients.

Method

This study is conducted based on the retrospective analysis of data from patients diagnosed with endometrial cancer who received treatment. The patients included in this study are those who underwent surgical intervention for endometrial cancer within the past two years at a single medical center. All of these patients have received a definitive diagnosis of endometrial cancer and conform to the FIGO 2009 stage I-III classification [5].

Exclusion and Inclusion Criteria

Specific exclusion and inclusion criteria were applied in the selection of participants for our study.

The inclusion criteria comprise patients who meet the following criteria:

Diagnosis of endometrial cancer.

Treatment at a single center.

Availability of complete records of hematologic parameters and obstetric characteristics.

The exclusion criteria encompass:

Presence of other cancer types or serious systemic illnesses.

Patients with missing data or incomplete records during the treatment process.

Data Collection

The necessary data for this study were retrospectively collected from the medical records of the patients. Demographic information including age and obstetric characteristics (gravida and parity) of the patients was recorded.

Hematologic Parameters

Hematologic parameters were obtained using the results of routine blood tests conducted on the patients. These parameters include hemoglobin levels, leucocyte, lymphocyte count, monocyte count, and platelet count. These data were utilized in the calculation of the patients' systemic inflammatory indexes.

Systemic Inflammatory Indexes

In this study, the prominent indexes used in the calculation of systemic inflammatory indexes are as follows: Neutrophil-to-Lymphocyte Ratio (NLR), Platelet-to-Lymphocyte Ratio (PLR), Lymphocyte-to-Monocyte

Ratio (LMR), derived NLR (dNLR), Systemic Inflammatory Index (SII), Systemic Inflammatory Response Index (SIRI) and Pan-immune Inflammation Value (PIV).

The collected data were used for statistical analysis. The data analysis aimed to investigate potential relationship between the patients' cancer diagnosis and systemic inflammatory indexes. These analyses were conducted to assess the characteristics of patient groups and their outcomes. The study includes 21 endometrial cancer patients treated at the same center within the last two years. The obtained results provide a comprehensive analysis, including patients' age, obstetric characteristics, and hematologic parameters. Mean values for the systemic inflammatory indexes are separately reported.

Results and Discussion

The study includes 21 endometrial cancer patients treated at the same center within the last two years. The data were analyzed by means of IBM SPSS 22 statistical program for statistical analysis.. Whether the data showed normal distribution or not was determined by Kolmogorov-Smirnov test. Data are reported as Mean \pm SD.

The results were calculated individually for each systemic inflammatory index, and the findings are presented in Table 1. In our study, the mean age of the patients was 56.6, and the average parity of the patients was 3,3.

In a study conducted by Aoyama and colleagues in 2019, aiming to determine whether pretreatment NLR (Neutrophil-to-Lymphocyte Ratio) and PLR (Platelet-to-Lymphocyte Ratio) serve as predictors of lymph node (LN) metastasis in 197 patients with endometrial cancer, a relationship was found between lymphovascular invasion and NLR. The study identified a cutoff value of 2.18 for NLR [2]. In our study, the average NLR was found to be 2.91, which is higher.

In a study conducted by Holub and colleagues, which included 155 patients and aimed to assess the effects of systemic inflammatory factors on survival outcomes, NLR, SII, and lymphopenia were associated with decreased survival. Similarly, in our study, NLR was found to be high (2.9) and lymphopenia was observed (2.1), which is consistent with this study [3].

In a study conducted in 2021 involving 392 cases of endometrial cancer to predict lymph node metastasis by assessing systemic inflammation, those with lymph node metastasis had an SII of 636.74 or higher. In our study, the average SII was 694.62, which is in line with this study, indicating a high SII [4].

Table 1.

Parameters	Endometrial Cancer (n=21) Mean \pmSD
Age (years)	56.6 \pm 8.4
Gravida	3.3 \pm 1.8
Parity	2.7 \pm 1.3
Hemoglobin (g/dl)	12.7 \pm 1.5
Neutrophil (10⁹/L)	4.7 \pm 1.4
Lymphocyte (10⁹/L)	2.1 \pm 0.7
Platelet (10⁹/L)	283.2 \pm 88.1
NLR	2.91 \pm 1.6
PLR	147.3 \pm 51.7
SII	694.6 \pm 319.1
SIRI	1.4 \pm 0.9
PIV	346.8 \pm 137.2
LMR	4.1 \pm 1.43
dNLR	2.0 \pm 1.6

NLR: Neutrophil-to-lymphocyte ratio, PLR: Platelet-to-lymphocyte ratio, LMR: Lymphocyte-to-monocyte ratio, dNLR: Derived NLR ratio (neutrophil count divided by the result of leucocyte count minus neutrophil count), SII: Systemic inflammatory index (neutrophil x platelet / lymphocyte), SIRI: Systemic inflammatory response

index (neutrophil x monocyte / lymphocyte count) and PIV: Pan-immune inflammation value (neutrophil x platelet x monocyte / lymphocyte count).

Conclusion

Increased SII, NLR and PLR, as well as decreased lymphocytes, are observed in endometrial cancer in this paper. This study highlights the potential role of systemic inflammatory indexes in patients with endometrial cancer. Further research into the clinical application of these indexes may contribute to better guiding the diagnosis and treatment processes for patients. Larger sample sizes and long-term follow-up studies will be beneficial in providing further insights into these findings.

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