CLINICAL AND LABORATORY CHARACTERISTICS OF PERIPHERAL BLOOD CELL ELEMENTS AND THE FUNCTIONAL STATE OF THE ENDOTHELIUM IN WOMEN WITH BACTERIAL VAGINOSIS

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Abstract: *This study looks at the clinical and laboratory characteristics of peripheral blood cell components, as well as the endothelial function in women who have been diagnosed with bacterial vaginosis (BV). The study examines changes in blood parameters and endothelial function to better understand the effects of BV on different biological systems. The findings show significant changes in blood cell counts and endothelial indicators, indicating a systemic response to BV. These findings could improve diagnostic and therapeutic techniques for women with this illness.*

Keywords: *Bacterial vaginosis, peripheral blood cells, endothelial function, women's health, clinical characteristics, laboratory characteristics, systemic response*

Bacterial vaginosis (BV) is a frequent illness among women of reproductive age that is caused by an imbalance in the vaginal microbiome. It is linked to a variety of negative health effects, including an increased risk of sexually transmitted infections, premature childbirth, and pelvic inflammatory disease. While BV predominantly impacts the vaginal environment, new research reveals systemic effects, such as changes in peripheral blood cells and endothelial function. Understanding these systemic effects is critical for designing thorough diagnostic and treatment plans. This study investigates the clinical and analytical aspects of peripheral blood cell elements, as well as the endothelial function in women with BV.

Methods: This study used a cross-sectional design and included 100 women aged 18 to 45 who were diagnosed with BV using Amsel's criteria and Nugent scoring. The control group included 50 healthy women of similar age and socioeconomic status. The following approaches were used:

1. Clinical Evaluation: A thorough gynecological examination and a complete medical history.

2. Peripheral Blood Analysis: A complete blood count (CBC) of white blood cells (WBC), red blood cells (RBC), hemoglobin (Hb), hematocrit (HCT), platelets, and differential WBC count.

3. Endothelial Function Tests: Biomarker measurements including nitric oxide (NO), endothelin-1 (ET-1), and C-reactive protein (CRP).

4. Statistical Analysis: The data were analyzed with SPSS software. Differences between groups were calculated using t-tests for continuous variables and chi-square tests for categorical variables. A p-value of <0.05 was judged statistically significant.

Results

Clinical Characteristics

A. Demographic Data

The mean age for the BV group was 30.4 ± 6.8 years, while the control group was 29.7 ± 7.2 years.

- BMI: There is no significant difference in body mass index (BMI) across the groups.

B. Symptomatology

- Common Symptoms: The BV group had considerably higher levels of vaginal discharge, foul odor, and itching than the controls.

Laboratory Characteristics

A. Peripheral Blood Cell Analysis

- WBC count increased in the BV group (9.8 ± 2.3 x 10^9/L) compared to the control group (6.5 ± 1.8 x 10^9/L), p<0.01.

- RBC Count and Hemoglobin Levels: Slight decrease in RBC count (BV: 4.2 ± 0.3 x 10^12/L, Control: 4.5 ± 0.4 x 10^12/L) and Hb levels (BV: 12.4 ± 1.2 g/dL, Control: 13.1 ± 1.0 g/dL), p <0.05.

- Platelets showed no significant difference between groups.

B. Endothelial Function Markers.

- Nitric oxide (NO) levels were lower in the BV group (18.5 ± 4.7 μmol/L vs. 25.3 ± 5.1 μmol/L), p<0.01.

- Endothelin-1 (ET-1) levels were significantly higher in the BV group (2.9 ± 0.8 pg/mL vs. 1.5 ± 0.6 pg/mL), p<0.01.

- BV group had higher levels of C-reactive Protein (CRP) (4.8 ± 1.2 mg/L vs. 2.1 ± 0.9 mg/L, p<0.05).

Discussion

The study found significant changes in peripheral blood cell components and endothelial function in women with BV, indicating a systemic inflammatory response.

Elevated WBC and CRP levels indicate a continuous inflammatory process, whilst decreased NO levels and an increase in ET-1 indicate endothelial dysfunction.

A. Implications in Diagnosis and Management

- Systemic Inflammation: These findings emphasize the need of taking systemic inflammation into account while managing BV. Elevated WBC and CRP levels could act as indicators of disease progression and therapy success.

- Endothelial Health: The observed endothelial dysfunction, as seen by altered NO and ET-1 levels, emphasizes the importance of cardiovascular risk assessment in

women with BV. This could help guide the development of comprehensive management regimens that target both the local and systemic impacts of BV.

B. Potential Mechanisms.

- Microbial Translocation: One probable mechanism for systemic effects is microbial translocation from the vaginal environment to the bloodstream, which causes an immune response.

- Cytokine Release: Another possible mechanism is the release of pro-inflammatory cytokines from the vaginal epithelium, which may alter peripheral blood cells and endothelial function.

Conclusion

This study shows that BV has a large systemic impact, altering both peripheral blood cell components and endothelial functionality. These findings underscore the importance of taking a comprehensive approach to BV diagnosis and management, taking into account both local and systemic consequences. Future study should look into the underlying processes and potential therapeutic interventions to reduce these systemic effects.

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