

Inflammatory biomarker kinetics and clinical course of pregnant women with severe urosepsis requiring intensive care admission

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Abstract

Background: Maternal urosepsis is a major cause of maternal morbidity, mortality, and intensive care unit (ICU) admission. Urinary tract infection is the most frequent bacterial infection during pregnancy and a leading source of severe maternal sepsis. Although inflammatory biomarkers are widely used in sepsis management, evidence on their serial changes in severe obstetric urosepsis is limited. Procalcitonin may better reflect therapeutic response than conventional hematological parameters.

Objective: This study aimed to characterize the clinical course, microbiological profile, intensive care management, and longitudinal inflammatory biomarker kinetics in pregnant women with severe urosepsis requiring ICU admission.

Methods: A retrospective observational case series was conducted, including eight consecutive pregnant women directly admitted to the ICU of a tertiary referral hospital with severe urosepsis. Demographic, clinical, microbiological, laboratory, therapeutic, and outcome data were extracted from medical records. Serial inflammatory biomarkers measured at ICU admission and hospital discharge were compared to evaluate longitudinal changes during hospitalization.

Results: Eight pregnant women with severe urosepsis

were included. The median maternal age was 19.5 years (interquartile range [IQR] 18.0–23.0), and the mean gestational age at ICU admission was 27.6±6.1 weeks. Septic shock was present in five patients (62.5%), and extended-spectrum β -lactamase (ESBL)-producing pathogens were identified in two of the six patients with positive urine cultures (33.3%). All patients received prompt broad-spectrum antimicrobial therapy, and maternal survival was 100%. Serum procalcitonin demonstrated a significant decline during hospitalization (28.62±27.07 vs. 2.16±1.92 ng/ml; $p=0.016$), whereas leukocyte and platelet counts showed no significant changes. Individual paired analyses revealed a remarkably consistent decline in procalcitonin across nearly all patients, while conventional hematological parameters exhibited substantially greater interindividual variability. Overall, serial procalcitonin measurements more closely paralleled clinical recovery than leukocyte or platelet counts.

Conclusions: Pregnant women with severe urosepsis admitted to the ICU had favorable maternal outcomes with early multidisciplinary management and prompt broad-spectrum antimicrobial therapy. Serial procalcitonin showed the most consistent recovery kinetics, suggesting its potential as a complementary biomarker for monitoring treatment response, although further prospective multicenter studies are needed to confirm these findings.

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Introduction

Maternal sepsis remains one of the leading causes of preventable maternal morbidity and mortality worldwide despite substantial advances in obstetric and critical care. According to the World Health Organization, sepsis accounts for approximately 10% of maternal deaths globally. It is associated with prolonged hospitalization, intensive care unit (ICU) admission, multiorgan dysfunction, and adverse perinatal outcomes. (1) Early recognition and prompt initiation of antimicrobial therapy have significantly improved survival; however, maternal sepsis continues to represent a major challenge because the physiological adaptations of pregnancy may mask the initial manifestations of systemic infection, delaying diagnosis and treatment. (2) Consequently, identifying reliable clinical and laboratory indicators of disease severity and therapeutic response remains a priority in the management of critically ill obstetric patients.

Urinary tract infection is the most frequent bacterial infection during pregnancy and represents the leading source of maternal sepsis in many obstetric populations. Although most infections are successfully managed with antimicrobial therapy, a small proportion progresses to severe urosepsis and septic shock requiring ICU admission. (3) This progression may occur despite prenatal care and previous antibiotic treatment, particularly in the presence of antimicrobial resistance, delayed diagnosis, or inadequate microbiological follow-up. While current clinical guidelines emphasize the screening and treatment of asymptomatic bacteriuria to prevent pyelonephritis, considerably less evidence is available regarding the clinical evolution, microbiological characteristics, and longitudinal behavior of inflammatory biomarkers in pregnant women who develop severe urosepsis requiring critical care. (4)

Although inflammatory biomarkers such as leukocyte count, C-reactive protein, and procalcitonin are routinely incorporated into the diagnostic and therapeutic assessment of septic patients, their interpretation during pregnancy remains challenging because physiological gestational adaptations substantially modify the maternal immune response and hematological profile. Leukocytosis is common even in uncomplicated pregnancies, whereas the diagnostic and prognostic value of procalcitonin in obstetric sepsis remains less clearly established. (5,6) Consequently, clinicians often face uncertainty when interpreting laboratory trends during the management of critically ill pregnant patients, particularly regarding which biomarkers most accurately reflect infection resolution and therapeutic response.

Current evidence regarding the longitudinal evolution of inflammatory biomarkers in severe maternal urosepsis requiring intensive care remains scarce and is largely limited to isolated case reports or

small retrospective series. Most available studies have focused on diagnostic strategies or obstetric outcomes rather than the temporal evolution of inflammatory biomarkers during critical illness and their relationship with clinical recovery. (7) Consequently, little is known about which laboratory parameters most accurately reflect therapeutic response in critically ill obstetric patients. We hypothesized that serial inflammatory biomarker measurements, particularly procalcitonin, would provide a more consistent reflection of treatment response than conventional leukocyte counts in pregnant women with severe urosepsis. (8)

Therefore, the aim of the present study was to characterize the clinical course, microbiological profile, antimicrobial management, maternal outcomes, and longitudinal inflammatory biomarker kinetics in pregnant women with severe urosepsis requiring intensive care unit admission, with particular emphasis on the longitudinal kinetics of procalcitonin and leukocyte counts during hospitalization.

Materials and methods

Study design and setting

This retrospective observational case series was conducted at the adult Intensive Care Unit of the Fray Antonio Alcalde Old Civil Hospital of Guadalajara, a tertiary referral teaching hospital in Guadalajara, Jalisco, Mexico. Consecutive pregnant women who were directly admitted to the ICU with a diagnosis of severe urosepsis between January and December 2025 were identified through institutional medical records. Direct ICU admission ensured that the initial clinical evaluation, laboratory assessment, and therapeutic management were performed under a standardized critical care protocol from the time of admission. The study was designed to characterize the clinical course, microbiological findings, antimicrobial management, and longitudinal inflammatory biomarker kinetics during hospitalization. The manuscript was prepared in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for observational studies.

Study population

Pregnant women admitted directly to the adult Intensive Care Unit with a diagnosis of severe urosepsis during the study period were eligible for inclusion. All patients were identified through a review of institutional medical records and were included consecutively to minimize selection bias. The diagnosis of urosepsis was established based on the presence of clinical manifestations consistent with urinary tract infection accompanied by systemic signs of infection requiring intensive care management. Patients with alternative sources of infection or incomplete clinical records were excluded from the

analysis. Only the first ICU admission for each patient was considered.

Clinical management

All patients received multidisciplinary management by intensivists, obstetricians, and infectious disease specialists according to institutional protocols. Empirical broad-spectrum intravenous antimicrobial therapy was initiated promptly after clinical evaluation and subsequently adjusted according to microbiological findings and antimicrobial susceptibility results when available. Hemodynamic stabilization, fluid resuscitation, vasopressor support, respiratory support, and obstetric interventions were performed according to the individual clinical condition of each patient and current standards of critical care practice. Decisions regarding pregnancy continuation or delivery were made by the multidisciplinary team based on maternal and fetal status.

Clinical and laboratory data collection

Demographic, obstetric, clinical, microbiological, laboratory, therapeutic, and outcome data were extracted from electronic medical records using a standardized data collection form. Variables included maternal age, gestational age at admission, microbiological culture results, antimicrobial therapy, inflammatory biomarkers, hematological parameters, and maternal outcomes. Laboratory values were recorded at ICU admission and hospital discharge to evaluate longitudinal biomarker kinetics during hospitalization. Particular emphasis was placed on the serial evaluation of inflammatory biomarkers, including leukocyte count and procalcitonin, as indicators of treatment response during hospitalization.

Outcome measures

The primary objective of the study was to characterize the longitudinal kinetics of inflammatory biomarkers during hospitalization, with special emphasis on leukocyte count and procalcitonin. Secondary objectives included describing the microbiological profile, antimicrobial management, clinical course, and maternal outcomes of pregnant women admitted to the ICU with severe urosepsis.

Statistical analysis

Continuous variables were assessed for normality using the Shapiro-Wilk test and were presented as mean $\pm$ standard deviation (SD) or median with interquartile range (IQR), as appropriate. Categorical variables are expressed as frequencies and percentages. Comparisons between admission and discharge laboratory parameters were performed using paired Student's t-test or Wilcoxon signed-rank test according to data distribution. Exploratory receiver operating characteristic (ROC) curve analyses were

performed to evaluate the discriminatory performance of selected inflammatory biomarkers.

Correlations between continuous variables were assessed using Pearson's or Spearman's correlation coefficients, as appropriate. Owing to the descriptive nature of this case series and the limited sample size, all statistical analyses were considered exploratory. Statistical significance was defined as a two-sided p -value <0.05 . Statistical analyses were performed using GraphPad Software version 11.0.2, San Diego, CA, USA.

Ethics considerations

The study protocol was reviewed and approved by the Institutional Research and Ethics Committee of the Fray Antonio Alcalde Old Civil Hospital of Guadalajara. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and applicable national regulations governing biomedical research involving human subjects. Because of the retrospective observational design and the exclusive use of anonymized clinical records, the requirement for written informed consent was waived by the Institutional Ethics Committee. All patient information was handled confidentially and de-identified before analysis to protect participant privacy.

Results

Eight consecutive pregnant women with severe urosepsis requiring direct admission to the ICU were included in the study. Baseline demographic, clinical, microbiological, and therapeutic characteristics are summarized in **Table 1**. The median maternal age was 19.5 years (IQR 18.0–23.0 years), and the mean gestational age at ICU admission was 27.6 $\pm$ 6.1 weeks. Fever was present in all patients at presentation.

Microbiological evaluation identified positive urine cultures in six patients (75.0%), whereas two patients (25.0%) had negative urine cultures despite clinical findings consistent with severe urosepsis. Extended-spectrum β -lactamase (ESBL)-producing pathogens were identified in two cases. All patients received prompt broad-spectrum antimicrobial therapy following ICU admission, with carbapenems administered in every patient according to institutional management protocols (**Table 1**).

During hospitalization, all patients received multidisciplinary management in the ICU. Carbapenem therapy was administered to all patients, whereas additional antimicrobial agents were required in four patients according to microbiological findings and clinical evolution. Vasopressor support was required in five patients (62.5%), reflecting the severity of illness at presentation. The mean hospital stay was 9.4 $\pm$ 1.8 days, and only one patient required hospital readmission. Maternal survival was 100%,

with no maternal deaths recorded during hospitalization. Two patients underwent cesarean delivery during the admission because of obstetric indications, whereas pregnancy continued after discharge in the remaining six patients (Table 2).

Longitudinal laboratory evaluation demonstrated a progressive resolution of the inflammatory response during hospitalization (Table 3, Figure 1). Among all biomarkers analyzed, procalcitonin showed the most pronounced change, decreasing from 28.62 ± 27.07 ng/ml at ICU admission to 2.16 ± 1.92 ng/ml at hospital discharge ($p=0.016$). In contrast, leukocyte count decreased from $15.99 \pm 7.85 \times 10^9/l$ to $11.41 \pm 7.26 \times 10^9/l$, although this reduction did not reach statistical significance ($p=0.312$). Likewise, hemoglobin and platelet counts remained relatively stable throughout hospitalization, with no significant differences between admission and discharge (Table 3). Serum creatinine (Figure 1) also decreased during hospitalization, although the change did not reach statistical significance ($p=0.062$).

Individual paired analyses demonstrated a consistent decline in procalcitonin concentrations across nearly all patients, whereas changes in leukocyte and platelet counts showed greater interindividual variability (Figure 1). The longitudinal trajectories illustrated that procalcitonin exhibited the most homogeneous response to treatment, suggesting that it more accurately reflected clinical recovery than conventional hematological parameters in this cohort.

Discussion

The present study provides a comprehensive characterization of the clinical course, microbiological profile, intensive care management, and longitudinal inflammatory biomarker kinetics of pregnant women with severe urosepsis requiring ICU admission. Despite the severity of illness, all patients survived following early multidisciplinary management and prompt administration of broad-spectrum antimicrobial therapy. The principal finding of this study was that serum procalcitonin demonstrated a consistent and significant decline during hospitalization, whereas conventional hematological parameters, particularly leukocyte count and platelet count, exhibited greater interindividual variability and were less reflective of clinical recovery. These findings suggest that procalcitonin may represent a more reliable biomarker for monitoring therapeutic response in critically ill pregnant women with severe urosepsis.

Maternal sepsis remains one of the leading causes of intensive care unit admission during pregnancy, with urinary tract infections representing one of the most frequent sources of severe bacterial infection in obstetric patients. Previous investigations have

largely focused on maternal mortality, obstetric outcomes, antimicrobial therapy, or the diagnostic performance of inflammatory biomarkers rather than their longitudinal evolution during treatment. The recent systematic review and meta-analysis by Prabhu et al. highlighted the potential utility of procalcitonin for identifying infection during pregnancy but also emphasized the limited evidence regarding its interpretation in obstetric patients and the lack of studies evaluating serial procalcitonin measurements throughout the course of infection. (9) Accordingly, although procalcitonin has been proposed as a promising biomarker in obstetric infections, its role beyond the initial diagnosis remains poorly defined. Similarly, Walker et al. demonstrated that procalcitonin may assist in the clinical assessment of suspected obstetric infection; however, their investigation primarily evaluated its diagnostic performance at presentation rather than its longitudinal behavior following the initiation of antimicrobial therapy. (10) In contrast, our study characterized serial procalcitonin concentrations from ICU admission to hospital discharge, demonstrating a homogeneous decline across nearly all patients despite substantial heterogeneity in microbiological isolates and clinical severity. These findings are consistent with the recommendations of Póvoa et al., who emphasized that biomarker kinetics provide substantially greater clinical information than isolated measurements and may more accurately reflect the response to antimicrobial therapy in septic patients. (11) Importantly, our results extend this concept to the specific setting of severe obstetric urosepsis, where conventional hematological parameters such as leukocyte and platelet counts exhibited greater interindividual variability and were less reflective of clinical recovery than procalcitonin. Likewise, Schupp et al. reported that serial changes in procalcitonin better mirrored the clinical course of sepsis than single baseline values, reinforcing the importance of repeated measurements for monitoring therapeutic response. (12) Finally, Agarwal et al. observed that repeated procalcitonin assessment in pregnancy-associated sepsis was associated with clinical outcome and suggested that serial measurements may provide greater prognostic value than isolated determinations. (13) Taken together, these findings support the growing concept that the principal clinical value of procalcitonin in obstetric sepsis may reside not only in its diagnostic performance but, more importantly, in its use as a dynamic biomarker for monitoring recovery and therapeutic response. Importantly, unlike previous obstetric studies that evaluated procalcitonin primarily as a diagnostic biomarker, our findings suggest that its greatest clinical utility may lie in its longitudinal assessment, where the consistent decline observed across nearly all patients closely

paralleled clinical recovery despite differences in pathogen distribution and disease severity.

In contrast to procalcitonin, leukocyte and platelet counts showed considerable interindividual variability and did not change significantly between ICU admission and hospital discharge. The limited discriminatory value of leukocyte count is biologically plausible because pregnancy is accompanied by substantial physiological leukocytosis, primarily driven by an increase in circulating neutrophils. Dockree et al., in a large longitudinal study including more than 80,000 measurements, reported that the upper reference limit for total leukocyte count increases by approximately 36% during pregnancy and may reach $15.0 \times 10^9/l$ in otherwise healthy women, thereby reducing the specificity of leukocytosis as an indicator of persistent infection or therapeutic response. (14) In addition, gestational age, labor, corticosteroid exposure, physiological stress, and the inflammatory response to critical illness may further modify leukocyte concentrations independently of bacterial burden. This interpretation is supported by a systematic review of biomarkers in maternal infection, which concluded that conventional inflammatory markers, including leukocyte count, have important diagnostic limitations in obstetric populations and should not be interpreted in isolation. (15) Similarly, Asadi et al. found that maternal leukocyte count had low accuracy for predicting chorioamnionitis in women with preterm prelabor rupture of membranes, whereas changes in other inflammatory biomarkers provided comparatively greater clinical information. (16)

Platelet counts may be equally difficult to interpret because they are influenced not only by infection severity and sepsis-associated consumption, but also by pregnancy-related hemodilution, gestational thrombocytopenia, endothelial activation, and obstetric complications. Therefore, the absence of a uniform platelet response in our cohort does not necessarily indicate a lack of clinical improvement, but rather reflects the multifactorial regulation of hematological parameters during pregnancy and critical illness. Collectively, these findings suggest that conventional blood counts remain important components of the overall clinical assessment but may be less suitable than serial procalcitonin measurements for monitoring the resolution of severe bacterial infection in critically ill pregnant women.

The microbiological findings of the present study further emphasize the complexity of managing severe urosepsis during pregnancy. Although *Escherichia coli* remains the predominant uropathogen in obstetric urinary tract infections, the increasing emergence of ESBL-producing Enterobacterales has become a major therapeutic challenge, limiting the effectiveness of conventional empirical

antimicrobial regimens and increasing the risk of treatment failure in severe infections. (3,17)

Recent evidence indicates that antimicrobial resistance among community-acquired urinary pathogens affecting pregnant women has increased worldwide, highlighting the importance of selecting empirical antimicrobial therapy according to local resistance patterns while awaiting microbiological susceptibility results. (17) In our cohort, ESBL-producing isolates were identified in 33.3% of culture-positive cases, reflecting this growing global concern and supporting the early use of carbapenems in critically ill obstetric patients. These findings are in agreement with current international recommendations, which strongly advocate the administration of appropriate broad-spectrum antimicrobial therapy as soon as sepsis is recognized, ideally within the first hour, because delays in effective treatment are consistently associated with increased organ dysfunction, prolonged hospitalization, and mortality. (18,19) Notably, despite the presence of septic shock in 62.5% of patients and ESBL-producing pathogens in one-third of culture-positive cases, all women in our cohort survived without major maternal complications. Although definitive conclusions cannot be drawn from a small retrospective case series, these favorable outcomes suggest that early recognition, immediate ICU admission, aggressive hemodynamic resuscitation, multidisciplinary management, and prompt initiation of appropriate empirical antimicrobial therapy may have a greater influence on maternal prognosis than microbiological characteristics alone. Rather than the isolated identification of the causative organism, the rapid implementation of evidence-based sepsis management appears to be the principal determinant of successful outcomes in critically ill obstetric patients. Consequently, continuous surveillance of local antimicrobial resistance patterns should remain an essential component of empirical treatment strategies for severe obstetric urosepsis while preserving the priority of early therapeutic intervention.

One of the most clinically relevant findings of the present study is that serial procalcitonin measurements appeared to more closely reflect clinical recovery than conventional laboratory parameters in pregnant women with severe urosepsis. Current management of maternal sepsis relies primarily on repeated clinical assessment, source control, microbiological cultures, and standard laboratory investigations, while no single biomarker has been universally recommended to guide treatment response in obstetric patients. (18,19) Our findings suggest that procalcitonin may represent a valuable complementary tool within this multimodal approach, particularly because its longitudinal decline was remarkably consistent across patients despite differences in disease severity, microbiological isolates, and

hematological responses. This observation is consistent with studies in the general critically ill population showing that serial rather than isolated procalcitonin measurements are associated with improved assessment of infection resolution and may support antimicrobial stewardship by identifying patients in whom antimicrobial therapy can be safely de-escalated. (11,12) Although our study was not designed to evaluate procalcitonin-guided therapeutic algorithms or antibiotic duration, the homogeneous biomarker kinetics observed in our cohorts suggest that serial procalcitonin assessment deserves further investigation as an adjunctive monitoring strategy in critically ill obstetric patients. Prospective multicenter studies are warranted to determine whether incorporating procalcitonin kinetics into routine clinical assessment could improve therapeutic decision-making, optimize antimicrobial use, and ultimately improve maternal and perinatal outcomes.

The present study has several notable strengths. To our knowledge, this is one of the first studies to specifically characterize the longitudinal evolution of inflammatory biomarkers from ICU admission to hospital discharge in a homogeneous cohort of pregnant women with severe urosepsis requiring intensive care. Unlike previous investigations that primarily focused on the diagnostic performance of inflammatory biomarkers or maternal outcomes, our study evaluated the temporal kinetics of laboratory parameters during clinical recovery, providing a more comprehensive understanding of the inflammatory response following initiation of treatment. In addition, all patients were managed at a single tertiary referral center using standardized multidisciplinary protocols, thereby reducing variability in clinical management and allowing a consistent assessment of biomarker trends throughout hospitalization. Nevertheless, several limitations should be acknowledged. The retrospective design, single-center setting, and relatively small sample size limit the generalizability of our findings and preclude establishing causal relationships. Furthermore, the absence of a control group and the lack of systematic measurements of additional inflammatory biomarkers, such as C-reactive protein, interleukin-6, and presepsin, prevented direct comparisons

between different monitoring strategies. Likewise, maternal and neonatal outcomes beyond hospital discharge were not available, limiting evaluation of the long-term prognostic significance of serial biomarker assessment. These limitations are common among studies of obstetric sepsis, reflecting the relative rarity of severe maternal sepsis requiring intensive care and the inherent challenges of conducting prospective investigations in this critically ill population. (19) Despite these limitations, our findings provide novel evidence regarding the longitudinal kinetics of inflammatory biomarkers in pregnant women with severe urosepsis and support the hypothesis that serial procalcitonin measurements may represent a valuable adjunct to clinical assessment during recovery. Collectively, these findings provide preliminary evidence supporting the incorporation of serial procalcitonin assessment into the longitudinal evaluation of critically ill pregnant women with severe urosepsis and establish a rationale for future prospective multicenter validation studies.

Conclusions

This study provides one of the first detailed characterizations of the clinical course, microbiological profile, intensive care management, and longitudinal inflammatory biomarker kinetics in pregnant women with severe urosepsis requiring ICU admission. Among the biomarkers evaluated, serial procalcitonin measurements demonstrated the most consistent and significant decline during hospitalization, whereas conventional hematological parameters showed greater interindividual variability and were less reflective of clinical recovery. These findings suggest that longitudinal procalcitonin assessment may represent a valuable adjunct to clinical evaluation for monitoring therapeutic response in critically ill obstetric patients. Although the results should be interpreted in light of the retrospective single-center design and small sample size, they provide preliminary evidence supporting the potential role of procalcitonin kinetics in the longitudinal management of severe obstetric urosepsis and establish a rationale for future prospective multicenter studies.

Table 1. Baseline demographic, clinical, microbiological, and therapeutic characteristics of pregnant women with severe urosepsis requiring ICU admission (n=8)

Variable	Value
Demographic and obstetric characteristics	
- Maternal age (years)	19.5 (18.0–23.0)
- Gestational age at ICU admission (weeks)	27.6±6.1
Clinical presentation	
- Fever, n (%)	8 (100)
- Severe sepsis, n (%)	3 (37.5)
- Septic shock, n (%)	5 (62.5)
Microbiological findings at admission	
- Positive urine culture, n (%)	6 (75.0)
- Negative urine culture, n (%)	2 (25.0)
- ESBL-producing pathogens, n (%)	2 (25.0)
- Positive blood culture, n (%)	1 (12.5)

Legend: ICU=intensive care unit; ESBL=extended-spectrum β -lactamase.

Table 2. Intensive care management, microbiological findings, and maternal-fetal outcomes of pregnant women with severe urosepsis (n=8)

Variable	Value
Intensive care management	
- Carbapenem therapy, n (%)	8 (100)
- Additional antimicrobial therapy, n (%)	4 (50.0)
- Vasopressor support, n (%)	5 (62.5)
- Adjunctive corticosteroid therapy, n (%)	2 (25.0)
Length of hospital stay (days), mean±SD	9.4±1.8
Hospital readmission, n (%)	1 (12.5)
Microbiological findings	
- Positive urine culture, n (%)	6 (75.0)
- Negative urine culture, n (%)	2 (25.0)
- ESBL-producing pathogens, n (%)	2 (25.0)
- Positive blood culture, n (%)	1 (12.5)
Maternal outcomes	
- Maternal survival, n (%)	8 (100)
- Maternal mortality, n (%)	0 (0)
- Septic shock, n (%)	5 (62.5)
- Cesarean delivery during hospitalization, n (%)	2 (25.0)
- Pregnancy continued after discharge, n (%)	6 (75.0)
Fetal outcomes	
- Live birth during hospitalization, n (%)	2 (25.0)
- Fetal death, n (%)	0 (0)

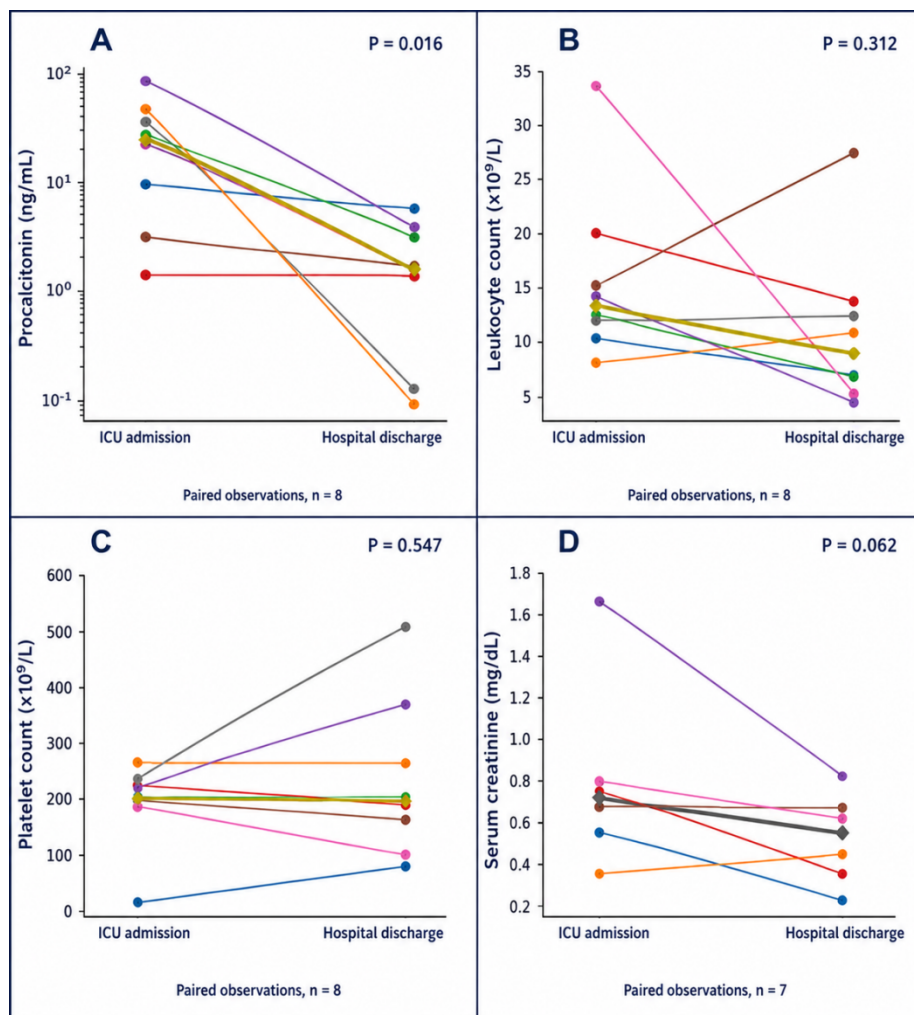
Legend: SD=standard deviation; ESBL=extended-spectrum β -lactamase.

Table 3. Changes in hematologic and inflammatory parameters between ICU admission and hospital discharge (n=8)

Variable	ICU admission	Hospital discharge	p-value
Hematologic parameters			
- Hemoglobin (g/dl), mean±SD	9.58±1.90	10.02±1.08	0.567
- Platelet count ($\times 10^9/l$), mean±SD	190.9±73.8	239.1±135.9	0.547
- Leukocyte count ($\times 10^9/l$), mean±SD	15.99±7.85	11.41±7.26	0.312
Inflammatory biomarker			
- Procalcitonin (ng/ml), mean±SD	28.62±27.07	2.16±1.92	0.016

Legend: ICU=intensive care unit; SD=standard deviation.

Figure 1. Longitudinal inflammatory biomarker kinetics and laboratory changes during hospitalization in pregnant women with severe urosepsis



Legend: Individual paired measurements obtained at intensive care unit (ICU) admission and hospital discharge are shown for each patient. (A) Serum procalcitonin concentrations (logarithmic scale), (B) leukocyte count, (C) platelet count, and (D) serum creatinine. Each colored line represents one patient, illustrating the temporal evolution of laboratory parameters during hospitalization. Statistical comparisons between paired observations were performed using the Wilcoxon signed-rank test. Among the biomarkers evaluated, only serum procalcitonin demonstrated a statistically significant reduction during hospitalization ($p=0.016$), whereas leukocyte count ($p=0.312$), platelet count ($p=0.547$), and serum creatinine ($p=0.062$) did not show significant changes. The number of paired observations was eight for procalcitonin, leukocyte count, and platelet count, and seven for serum creatinine because one patient had missing discharge values.

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