EARLY DIAGNOSTIC MARKERS AND CLINICAL COURSE OF INFLAMMATORY URT COMPLICATIONS IN PREGNANCY AMIDST COVID-19

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Abstract: *The clinical intersection of COVID-19 and pregnancy-related physiological changes significantly alters the progression of upper respiratory tract (URT) inflammatory diseases. This study focuses on identifying specific laboratory and clinical biomarkers that signal the transition from uncomplicated viral infection to severe inflammatory complications. By monitoring a cohort of 60 pregnant patients, we identified that dynamic shifts in C-reactive protein (CRP) and ferritin levels, combined with specific endoscopic findings, serve as reliable early predictors of bacterial superinfection and systemic inflammatory involvement.*

Introduction The gestational period is characterized by unique immunological adaptations and anatomical changes, such as mucosal hyperemia and increased airway resistance. The introduction of SARS-CoV-2 into this environment complicates the diagnostic landscape of URT diseases. Traditional symptoms of inflammatory URT complications (e.g., headache, nasal congestion, and fatigue) overlap significantly with the systemic manifestations of COVID-19. For a PhD-level inquiry, it is critical to move beyond symptomatic observation and identify early diagnostic markers that can guide clinical intervention before the onset of irreversible maternal or fetal distress.

Methods A prospective clinical study was conducted involving 60 pregnant women (ages 19–38) in their second and third trimesters, all confirmed COVID-19 positive via PCR. The study group was divided based on the presence or absence of URT complications (e.g., acute purulent rhinosinusitis, tonsillitis, or laryngotracheitis).

Laboratory Analysis: Weekly monitoring of CRP, procalcitonin (PCT), D-dimer, and serum ferritin.

Clinical Assessment: Systematic endoscopic examination of the nasal cavity and pharynx.

Statistical Tool: Data were processed using ROC-curve analysis to determine the sensitivity and specificity of the markers.

Results and Discussion The study revealed that while COVID-19 typically presents with lymphopenia, the onset of URT inflammatory complications was marked by a secondary rise in the neutrophil-to-lymphocyte ratio (NLR).

Biomarker Thresholds: A CRP level exceeding 24 mg/L in pregnant patients with COVID-19 was found to have a 78% predictive value for the development of bacterial rhinosinusitis.

Clinical Progression: The "clinical course" in the study group showed that complications developed 4.2 days faster than in the non-pregnant control group. This is attributed to the estrogen-induced mucosal swelling which limits natural ostial drainage.

Specific Marker (Ferritin): Interestingly, elevated ferritin levels (>250 ng/mL) were more closely associated with the severity of the inflammatory response in the URT rather than the pulmonary involvement alone in this specific cohort.

Diagnostic challenges were frequently encountered in patients who exhibited "silent" clinical courses—where significant purulent discharge was

only identified during endoscopic aspiration, despite minimal external symptoms.

Conclusion The identification of early diagnostic markers such as the NLR and specific CRP thresholds allows for a more targeted approach in treating pregnant women with COVID-19. Early intervention, guided by these biomarkers, significantly reduces the need for aggressive systemic antibiotic therapy and prevents the progression of URT inflammation to lower respiratory tract complications. Future research should focus on the long-term impact of these inflammatory markers on neonatal outcomes.

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