

Use of serum procalcitonin to differentiate acute antepartum pyelonephritis from asymptomatic bacteriuria and acute cystitis during pregnancy: A multicentre prospective observational study

Shang-Yu Huang¹, Ching-Hua Hsiao¹, Xueqin Zhang¹, Kang Lin², Jianying Yan¹, and Po-Jen Cheng³

¹Affiliation not available

²National Cheng Kung University Hospital

³Chang Gung Memorial Hospital

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Abstract

Objective: To examine whether serum procalcitonin (PCT) is useful for differentiating acute pyelonephritis (APN) from asymptomatic bacteriuria and acute cystitis during pregnancy **Design:** A multicentre prospective observational study **Setting:** Eleven maternity hospitals in Taiwan **Population:** Two hundred and seventy pregnant women with asymptomatic bacteriuria, 243 pregnant women with acute cystitis, 186 pregnant women with APN, and 270 healthy pregnant controls **Method:** To compare serum white blood cell (WBC) counts, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) level, and PCT level among pregnant women with asymptomatic bacteriuria, acute cystitis, and APN and healthy pregnant women (controls) **Main outcome measures:** Utility of WBC count, ESR, CRP, and PCT biomarkers for the prediction of APN during pregnancy **Results:** Area under the curve (AUC) values of PCT, CRP, ESR, and WBC count for predicting asymptomatic bacteriuria were 0.576, 0.628, 0.542, and 0.532, respectively; those for predicting acute cystitis were 0.766, 0.735, 0.681, and 0.597, respectively; and those for predicting acute pyelonephritis 0.859, 0.763, 0.711, and 0.732, respectively. Compared with the other inflammatory markers used to predict APN, PCT exhibited the highest AUC (0.859 [95% confidence interval (CI) 0.711–0.935]). A cutoff value of >0.25 ng/mL had a sensitivity of 87% and a specificity of 79%. **Conclusion:** Serum PCT can be a valuable addition to existing methods of differentiating asymptomatic bacteriuria, acute cystitis, and APN during pregnancy and can facilitate the early identification of APN during pregnancy.

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