Serial Procalcitonin Levels Correlate with Microbial Etiology in Hospitalized Patients with Pneumonia

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Background. Brucellosis is still endemic in many developing countries and frequently leads to misdiagnosis and treatment delays. Indirect inflammatory markers such as mean platelet volume (MPV), platelet distribution width (PDW), red cell distribution width (RDW), neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) have been identified as markers of inflammation. The present study aimed to evaluate and compare the levels of these markers for pandemic purposes and to assess the correlation of C-reactive protein (CRP) with brucellosis in adults and children.

Methods. The study included 137 adults and 41 age- and gender-matched healthy controls, as well 71 children and 81 age- and gender-matched healthy controls. Hematological parameters and CRP were retrospectively recorded and compared between the adult and pediatric patients.

Results. The mean age of the adult patients (54% female) was 43.1 ± 15.4 years, whereas the mean age of the pediatric patients (50.2% male) was 9.5 ± 3.6 years. Significantly higher lymphocyte count, and lower neutrophil count, platelet count, RDW, MPV, NLR and PLR values were found in adult brucellosis patients compared with their healthy subjects, whereas higher lymphocyte count, PDW and lower neutrophil count, plateleti count, MPV, NLR and PLR values were observed in pediatric brucellosis patients compared with the control subjects. Significantly higher neutrophil count (p = 0.019) and NLR (p < 0.001) were found in adult patients compared with the pediatric patients. Positive correlation was found between CRP and NLR (R² = 0.052, P = 0.011), PLR (R² = 0.061, P = 0.006) in adult patients.

Conclusion. Based on our findings, we consider that the use of complementary indirect markers such as MPV, NLR, PLR and RDW together with the CRP test – which is used concomitantly with serological diagnostic tests in situations where brucellosis is suspected – might be helpful in the diagnosis and follow-up of brucellosis, as well as in the evaluation of complications and response to therapy, in both adult and pediatric brucellosis patients.

Disclosures. All authors: No reported disclosures.

1148. Impact of Procalcitonin (PCT)-Guided Antibiotic Therapy on Mortality in Critically Ill Patients: A Systematic Review and Meta-Analysis of 18 Randomized Controlled Trials
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Methods. Compared with controls, PCT-guided antibiotic treatment was associated with significant reduction in mortality (20.7% vs. 23.0%; risk ratio [RR] 0.90 [95% CI 0.81–0.99], I²=0%; Figure 1). Survival benefit was retained in the RCT subset with a lower risk of bias (score ≥ 3; RR 0.87 [95% CI 0.77–0.98], I²=0%; Figure 2) but not with higher risk of score ≤ 2; RR 0.98 [95% CI 0.80–1.20], I²=80%). Our analysis of the effect of PCT-guided antibiotic therapy on antibiotic duration displayed significant heterogeneity (I²=61.2%, P = 0.004), which precluded reporting on aggregate effect. Important limitations were: single previously conducted meta-analysis, lack of double blinding (all studies) and variable protocol non-adherence and timeframes examined for mortality.

Conclusion. In a meta-analysis of RCTs of critically ill patients with suspected or proven infection, PCT-guided antibiotic treatment was associated with a significant reduction in mortality. The observed survival benefit was weighted towards RCTs of lower risk of bias assessment. Compared with controls, PCT-guided antibiotic treatment was associated with a significant reduction in mortality (20.7% vs. 23.0%; risk ratio [RR] 0.90 [95% CI 0.81–0.99], I²=0%; Figure 1). Survival benefit was retained in the RCT subset with a lower risk of bias (score ≥ 3; RR 0.87 [95% CI 0.77–0.98], I²=0%; Figure 2) but not with higher risk of score ≤ 2; RR 0.98 [95% CI 0.80–1.20], I²=80%). Our analysis of the effect of PCT-guided antibiotic therapy on antibiotic duration displayed significant heterogeneity (I²=61.2%, P = 0.004), which precluded reporting on aggregate effect. Important limitations were: single previously conducted meta-analysis, lack of double blinding (all studies) and variable protocol non-adherence and timeframes examined for mortality.

1150. A Novel Host-protein Assay Accurately Distinguishes Bacterial From Viral Upper Respiratory Tract Infections
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Results. Out of 505 patients, the diagnosis of pneumonia was adjudicated in 317, and bacterial etiology determined in 62 cases. The predominant pathogens were Staphylococcus aureus (N = 18), Streptococcus pneumoniae (N = 6), Pseudomonas aeroginosa (N = 11) and Haemophilus influenzae (N = 5). Admission levels of PCT were lowest in Staphylococcus infections, highest in pneumococcal infections, though not reaching statistical significance. On hospital days two and three, pneumococcal procalcitonin levels were significantly higher than all other etiologies, but on day four, there was no statistically significant difference in PCT values for different microbial etiologies.

Conclusion. Serial procalcitonin levels during the early course of bacterial pneumonia reveal a difference between pneumococcal and other bacterial etiologies, and may have an adjunct role in guiding antibiotic choice and duration.

Disclosures. All authors: No reported disclosures.

1149. Serial Procalcitonin Levels Correlate with Microbial Etiology in Hospitalized Patients with Pneumonia
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Results. Of the 18 RCTs selected (n = 5,183 patients; Table), 17 assessed mortality and 16 assessed antibiotic duration. NLR; score ≥ 3 and 10 scored ≤ 2 out of 6 on the risk of bias assessment. Compared with controls, PCT-guided antibiotic treatment was associated with a significant reduction in mortality (20.7% vs. 23.0%; risk ratio [RR] 0.90 [95% CI 0.81–0.99], I²=0%; Figure 1). Survival benefit was retained in the RCT subset with a lower risk of bias (score ≥ 3; RR 0.87 [95% CI 0.77–0.98], I²=0%; Figure 2) but not with higher risk of score ≤ 2; RR 0.98 [95% CI 0.80–1.20], I²=80%). Our analysis of the effect of PCT-guided antibiotic therapy on antibiotic duration displayed significant heterogeneity (I²=61.2%, P = 0.004), which precluded reporting on aggregate effect. Important limitations were: single previously conducted meta-analysis, lack of double blinding (all studies) and variable protocol non-adherence and timeframes examined for mortality.

Conclusion. In a meta-analysis of RCTs of critically ill patients with suspected or proven infection, PCT-guided antibiotic treatment was associated with a significant reduction in mortality. The observed survival benefit was weighted towards RCTs of relatively higher quality. However, the plausibility of this finding, as well as the impact of protocol non-adherence on outcome needs further study. Funded by Intramural NIH and NCI Contract HHSN26120080001E

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