Category :**Sepsis: biomarkers**

A141 - ***Dexamethasone and tocilizumab treatment nullifies the value of c-reactive protein and procalcitonin to detect secondary bacterial infections in covid-19 patients***

EJ Kooistra [1] ; M Van Berkel [2] ; NF Van Kempen [3] ; CR Van Latum [3] ; N Bruse [3] ; T Frenzel [3] ; MJ Van den Berg [3] ; JA Schouten [3] ; M Kox [3] ; P Pickkers [3]

[1]Radboud University Medical Center, Intensive Care, Nijmegen, Netherlands, [2]Radboud University Medical Center, Department of Laboratory Medicine, Radboud university medical center, 6500HB Nijmegen, The Netherlands., Nijmegen, Netherlands, [3]Radboud University Medical Center, Department of Intensive Care Medicine, Radboud university medical center, 6500HB Nijmegen, The Netherlands, Nijmegen, Netherlands

Introduction:

Procalcitonin (PCT) and C-reactive protein (CRP) were shown to have value for the detection of secondary infections in critically ill COVID-19 patients. Since the use of immunomodulatory therapy, the value of these biomarkers is unclear. We investigated PCT and CRP kinetics in critically ill COVID-19 patients treated with dexamethasone (DEXA) with or without tocilizumab (TOCI), and assessed the value of these biomarkers to detect secondary infections.

Methods:

Patients were divided into three groups: no DEXA/no TOCI (D-T-, n=66), DEXA/no TOCI (D+T-, n=44), and DEXA+TOCI (D+T+, n=23). Serial PCT and CRP data were analyzed in the days before and after cessation of DEXA treatment. Furthermore, changes in PCT and CRP kinetics upon occurrence of a secondary infection and accuracy of these biomarkers for the detection of a secondary infection were assessed.

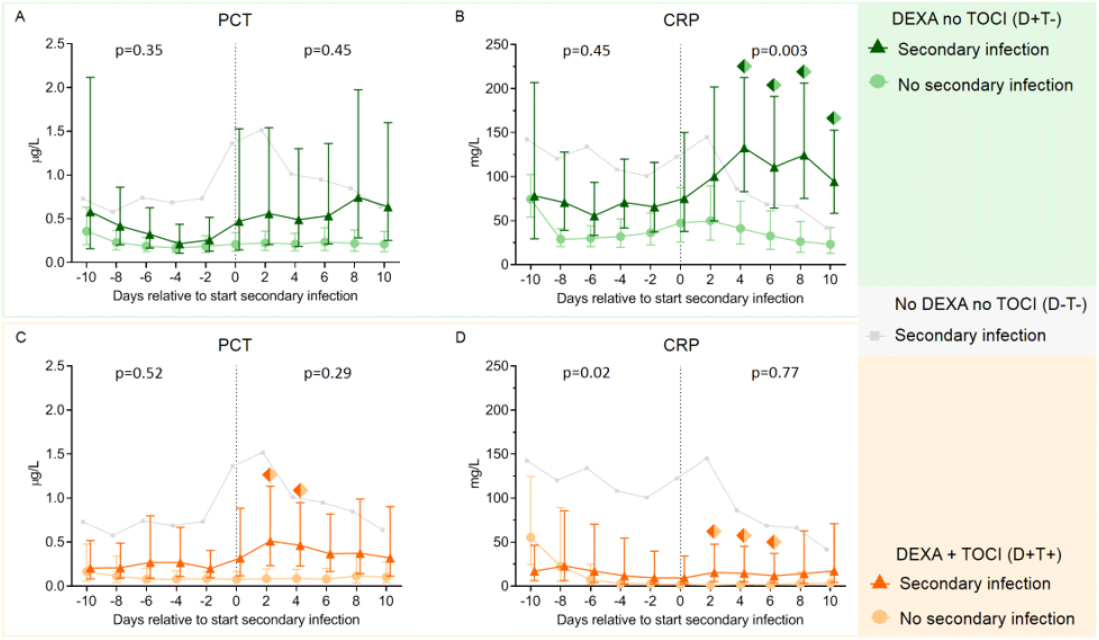
Results:

Following cessation of DEXA, there was a rebound in PCT and CRP, in particular in the D+T- group. Within both the D+T- and D+T+ groups, no significant increase in PCT was observed upon occurrence of a secondary infection compared to patients that did not develop an infection (p=0.45 and p=0.29, respectively). Although CRP increased in patients of the D+T- group who developed a secondary infection compared to those who did not (p=0.003), this rise was only apparent from day 2 post-infection onwards. CRP remained completely suppressed in the D+T+ group irrespective of the occurrence of a secondary infection. Receiver operating curve analysis of PCT and CRP levels yielded area under the curves of 0.57 and 0.59, respectively, much lower than those obtained in patients not treated with DEXA/TOCI (0.80 and 0.76, respectively).

Conclusion:

Cessation of dexamethasone treatment in critically ill COVID-19 patients results in a rebound increase in PCT and CRP levels. Immunomodulatory treatment with dexamethasone and tocilizumab nullifies the value of PCT and CRP for detection of secondary infections.

Image :



*Levels of a) procalcitonin (PCT) and b) C-reactive protein (CRP) over time within 10 days prior to and 10 days following the day of secondary infection in the D+T- group, and levels of c) PCT and d) CRP over time in the D+T+ group. Day of secondary infection was designated day 0 (alignment day). Data of the no secondary infection groups were aligned on the median alignment day, which was day 12 following ICU admission. The light grey line reflects previously reported data of D-T- patients as reference. Data are presented as geometric mean with 95% confidence intervals. P-values were calculated using mixed-models analyses (time*group interaction factor). P-values in left and right parts of each panel reflect between-group differences in kinetics from day -10 until day 0 and from day 0 until day 10, respectively. Colored diamonds reflect p-values of <0.05 on the individual timepoints, calculated using Sidak's post-hoc multiple comparisons tests.*