FAQ: Is there a role for procalcitonin testing in COVID-19 infection?

Procalcitonin (PCT) has been extensively studied for its potential to aid in the diagnosis of infection, differentiate bacterial from viral or fungal infections or noninfectious inflammatory syndromes, and guide antibiotic therapy. Recently, clinicians and researchers have hypothesized that PCT may be used as a surrogate diagnostic test or marker for COVID-19. While PCT is often used to differentiate viral vs bacterial infections, it is not specific to a certain virus and therefore cannot be used to discriminate between infections caused by COVID-19 vs other viruses. This FAQ reviews the role of PCT in the diagnosis and management of patients with COVID-19.

A recent meta-analysis by Lippi et al. included four separate case series of patients with COVID-19 published before March 3rd, 2020.¹ The aim of this meta-analysis was to investigate whether or not there is a role for PCT in differentiating patients with severe vs non-severe COVID-19 infection. Individual and pooled odds ratios (OR) using a relative 95% confidence interval were calculated, and PCT levels were evaluated as a dichotomous variable with numbers above or below a locally defined reference range that was typically ≥ 0.50 ng/mL. Although the number of patients with elevated PCT levels above the reference range was limited, the pooled odds ratio indicated that increased PCT levels were associated with a nearly 5-fold higher risk of severe infection (OR, 4.76; 95% CI, 2.74-8.29). Therefore, the authors suggested that obtaining serial procalcitonin levels may play a role in recognizing progression towards a more severe form of disease. Of note, authors of one of the studies included in the meta-analysis noted the increase PCT levels in patients with severe disease was likely attributed to bacterial coinfection.² Given the fact that this analysis was performed on a very few number of studies available to date and no “cutoff” values were identified, additional data are needed to confirm whether or not elevated PCT levels in patients with severe COVID-19 infections may be useful for identifying underlying bacterial co-infections.

Important factors to consider if procalcitonin testing is available at your facility:

1. Procalcitonin is not a substitute for a diagnostic test to detect SARS-CoV-2
2. To date, there are no data supporting the use of procalcitonin in the diagnosis or early management of COVID-19
3. The results of this meta-analysis suggest serial PCT levels might aid in the early recognition of patients that will progress to severe illness; however, more data are needed to confirm this finding
4. PCT results should never replace or supersede clinical judgement or other diagnostics with superior supporting data
5. Treatment of COVID-19 remains largely supportive and therefore should be based on clinical symptoms and not based on any non-specific lab value

See “Appendix A” for additional data from individual studies included in meta-analysis.

References:

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