ICU
MANAGEMENT & PRACTICE

Reappraisal of Biomarkers in Sepsis Management

Sepsis biomarkers have an important role in the diagnosis, prognosis, and treatment of sepsis management. If timely and accurate information about biomarkers becomes available, the physician can not only make better therapeutic choices but also monitor the efficacy of the intervention in progress and adjust it accordingly.

In a previous review published in 2010, researchers found 3370 references on 178 sepsis biomarkers concluding that none of the 178 sepsis biomarkers had sufficient specificity/sensitivity to be utilised in routine patient management.

This current study reviews the progress made since 2010 and re-evaluates the use of such research in sepsis management. In this review (2009-2019), researchers evaluate the progress made since 2010.

Using the terms “Biomarker” and “Sepsis,” the PubMed database was researched from 2009 until September 2019. All clinical and experimental studies were included without any other restrictions. There were no restrictions related to age or language either. All new 81 biomarkers identified in this review were included in the previous list of 178.

The methodology employed in each study was identified such as

1. Type of study (mono versus multicenter, prospective versus retrospective, experimental versus clinical)
2. Study population (ICU, emergency or other)
3. Number of study participants
4. Purpose of the study
5. Clinical function of biomarker being studied. (diagnostic, prognostic, therapeutic)

Results

Based on the search criteria, 5367 studies were included in the second review. It was observed that while the number of studies published on sepsis biomarkers has increased, the number of studies discussing new biomarkers has actually decreased since 2010.

With the exception of C-reactive protein (CRP) or procalcitonin (PCT), only 26 biomarkers have been evaluated in studies that had more than 300 participants. About 40 biomarkers have been equated, and nine have been deemed superior to CRP and/or PCT for their diagnostic value.

Most biomarkers have been assessed in less than five studies. About 31% or 81 were evaluated in just one study. Only about 44 biomarkers were found to have a role in answering specific clinical questions.

The most studied biomarkers in the order of frequency were CRP and PCT, closely followed by interleukin (IL)-6 (31 studies), presepsin (25 studies), and CD64 (21 studies). About 84% (n=216) biomarkers have been evaluated in <5 studies, and 31% (81) in only 1 study.

The literature search suggests that there is a dearth of rigorous, large, repeated studies that can explain the precise role of sepsis biomarkers in answering specific clinical questions. For example, in most studies, biomarkers have been studied in isolation and conclusions drawn. This limits the use of study results in real life as biomarkers do not function independently of each other.

Producing more studies without a recognised purpose will be an exercise in futility. In the absence of such studies, the true potential of biomarkers in clinical practice cannot be realised.

Source: Critical Care

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