



Review Article

Relevance of C- reactive protein (CRP) and other inflammatory markers as valuable tool in oral and systemic diseases

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ABSTRACT

Oral and systemic infections are posing crucial and overwhelming problems to the individuals. Inflammation has been found to play a vital role in the pathogenesis of various oral and systemic diseases such as gingivitis, periodontitis, cardiovascular diseases, atherosclerosis, cerebrovascular ischemia, preeclampsia etc. Hence it is essential to be aware of the existing disease, careful identification of the etiological factors and diagnosis, treatment and regular follow up.

Once inflammation is triggered, within few hours, a group of diverse proteins termed as acute phase proteins are synthesized by the liver and excreted into circulation as a host defense and adaptive response which is termed as acute phase response. These proteins serve as inflammatory markers and measurement of these help in identifying the status of the underlying infection.

Introduction

Acute phase proteins include various proteins such as CRP, hsCRP, fibrinogen, ferritin, serum amyloid protein A, alpha-1 antichymotrypsin, alpha -1 antitrypsin, haptoglobin, alpha – acid glycoprotein, ceruloplasmin and C3 and C4. CRP is the most widely used protein in clinical practice. Other proteins are being used mainly for research purposes. The limitations for their application in routine practice could be attributed to the complexity in estimation, varying ranges among the population and prolonged plasma half life.^(1,2) CRP has a wide range of advantages as it exhibits immediate intensified response and declines sharply reflecting the exact inflammatory status and the values remain unaffected by the other components in blood and collected samples can be stored and evaluated at a later date effectively.⁽³⁾ hsCRP (high sensitive CRP) is also an analyte in measuring inflammatory levels owing to its efficiency in detecting even traces of CRP, even below 0.3mg/dL, detecting low-grade inflammation.⁽⁴⁻⁶⁾ Various acute and chronic inflammatory conditions such as infections, rheumatoid arthritis, and cancers could cause release of interleukin-6 and other cytokines that can trigger the elevated levels of CRP and hs-CRP.⁽⁵⁾

The advantages of using hsCRP has been attributed to its accuracy of measurement, easy availability, its usage in various oral and systemic infections as periodontitis, cardiovascular diseases, stroke, myocardial infarction etc.⁽⁴⁻⁶⁾

In a study conducted in a private institution to assess the inflammatory status among preeclamptic pregnant women using CRP in the serum of these individuals, it was found that CRP level was elevated in individuals with moderate periodontitis when compared to those with mild periodontitis. It was also found that these individuals showed increase in dental caries when compared to the others with mild periodontitis. There are studies relating the association of increase in CRP with periodontitis, dental caries and preeclampsia. But there are no studies associating the existence of all these components together. Since hsCRP is capable of detecting even trace amounts of CRP, even less than 0.3mg/dL, it could be of much use in identifying the inflammatory status in preeclamptic patients. Preeclampsia is a life threatening disorder of pregnancy causing both foetal as well as maternal complication such as still birth, low birth weight, foeto maternal death etc. It could be triggered by inflammatory conditions as periodontitis and vice versa since preeclampsia could also stimulate periodontitis and the exact cause for this still remains unclear.

Conclusion:

Obstetrics care for women does not involve oral cavity examination including dental caries and periodontal examination. In addition to this, there are limited studies available regarding the association of dental caries and periodontitis in preeclamptic pregnant women. Hence it would be an eye opener as well as could help many individuals in enabling them to know about their disease

status at the earliest , whereby proper monitoring of the disease status could be done which could avoid many foetal and maternal complications. Repeat CRP or sequential CRP estimations are of diagnostic value rather than single CRP estimation. Neonatal sepsis is one important condition where fall in CRP levels (to the baseline) is indicative of successful response to therapy and good prognosis. More studies are required to compare CRP and hsCRP to arrive at a proper conclusion.

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