

## The correlation between c-reactive protein (CRP) levels and cognitive disorders

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### Abstract

**Background and Aim:** inflammation is recognized as a significant risk factor for cognitive decline, impacting quality of life. This inflammation can be triggered by events such as stroke, surgery, and can also manifest chronically in older individuals, potentially leading to neurodegenerative processes. During inflammation, levels of inflammatory cytokines and CRP in the blood rise. CRP, as an inflammatory biomarker, can disrupt the blood-brain barrier, leading to neuroinflammation and neurodegeneration. Understanding the relationship between blood CRP levels and cognitive impairment could serve as a predictive measure for future dementia risk.

**Methods:** This study utilized PubMed and Science Direct databases to explore the connection between cognitive impairment, inflammation, postoperative cognitive impairment, and CRP.

**Results:** Elevated CRP levels as an inflammatory biomarker during inflammation have been linked to cognitive impairment and heightened symptom severity. However, the role of CRP in postoperative cognitive dysfunction (POCD) is brought into question as cognitive impairment does not necessarily result from the inflammatory response triggered by initial surgery. In instances like stroke and infection, inflammatory biomarkers do increase. Yet, cognitive impairment is not solely induced by the elevated inflammatory markers post-stroke; infection is required to instigate this impairment, highlighting the lack of specificity of increased CRP as a predictor of cognitive impairment. Notably, among inflammatory biomarkers, IL-6 shows the strongest association with cognitive impairment.

**Conclusion:** Determining whether CRP levels can serve as a clinical predictor for cognitive disorders necessitates a comprehensive understanding of the underlying pathological processes. While the role of CRP in cognitive disorders resulting from stroke and POCD is not definitive, its potential impact cannot be disregarded. Further research may reveal CRP as a useful predictor of cognitive impairment and a marker for treatment response in managing cognitive decline.

**Keywords:** Cognitive impairment; Inflammation; Postoperative cognitive impairment; CRP