INPLASY PROTOCOL

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No conflict of interest exits in the submission of this manuscript, and manuscript is approved by all authors for publication.

Association between C-reactive protein levels and prognosis in prostate cancer: A meta-analysis involving 13,555 subjects

Zhou, KC[1]; Lu, Y[2]; Liu, K[3]; Song, YX[4]; Yang, YJ[5]; Wang, X[6]; Liu, XQ[7].

Review question / Objective: Whether C reactive protein (CRP) levels has an effect on the prognosis of prostate cancer patients?
Condition being studied: Prostate cancer.
Information sources: We performed a systematic search of Embase and PubMed and Cochrane Library databases. And we also have done a manual search of all retrieved reference to get the original text and reviewed them.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 June 2020 and was last updated on 17 June 2020 (registration number INPLASY202060061).

INTRODUCTION

Review question / Objective: Whether C reactive protein (CRP) levels has an effect on the prognosis of prostate cancer patients?

Rationale: In the last decade, CRP was confirmed to be associated with prostate cancer. Some studies suggested that the elevation of CRP level was associated with worse survival of PCa patients (Beer et al., 2008; Thurner et al., 2015). Some other studies had different views, believed that

there was no significant correlation between the level of CRP and the prognosis of PCa patients (Elsberger, Lankston, McMillan, Underwood, & Edwards, 2011.

Condition being studied: Prostate cancer.

METHODS

Search strategy: We performed a systematic search of Embase and PubMed and Cochrane Library databases for studies which evaluated the relationship between C-reactive protein levels and survival of prostate cancer up to Oct, 2019. The search strategy were same as Pubmed: (((C Reactive Protein[Title/Abstract]) OR CRP[Title/Abstract])) AND ((((((Prostate Neoplasm[Title/Abstract]) OR Prostatic Neoplasm[Title/Abstract]) OR Prostate Cancer[Title/Abstract]) OR Prostatic Cancer[Title/Abstract]) OR Cancer of Prostate[Title/Abstract]) OR PCa[Title/Abstract]).

Participant or population: All patients diagnosed with prostate cancer.

Intervention: This review explored the relationship between the C reactive protein (CRP) levels and prognosis in prostate cancer (PCa).

Comparator: Prostate cancer patients without elevated C reactive protein (CRP) level.

Study designs to be included: Prospective or retrospective study design.

Eligibility criteria: (1) The studies were associated with the theme: the association between C-reactive protein levels and prognosis in prostate cancer; (2) Prospective or retrospective study design; (3) There were available hazard ratio (HR) and 95% confidence interval (CI) data or survival curves for CRP.

Information sources: We performed a systematic search of Embase and PubMed and Cochrane Library databases. And we also have done a manual search of all retrieved reference to get the original text and reviewed them.

Main outcome(s): Mean levels of serum CRP.

Additional outcome(s): None.

Data management: i.Conception and design: Kechong Zhou and Yi Lu. ii.Administrative support: Kechong Zhou and Yi Lu.iii.Provision of study materials or patients: Kechong Zhou and Yi Lu. iv.Collection and assembly of data: Kechong Zhou, Yi Lu, Yongjiao Yang and Xiao Wang. v.Data analysis and interpretation: Kechong Zhou, Yuxuan Song, Yi Lu, Kang Liu and Xiaoqiang Liu.

Quality assessment / Risk of bias analysis: The publication bias was assessed by Egger's test and Begg's funnel plot (Hayashino, Noguchi, & Fukui, 2005).

Strategy of data synthesis: The abstracted data were analyzed with Stata 12.0 software. HR with 95% CIs were measured to evaluate the relativity between C-reactive protein levels and the survival of prostate cancer. The chi-square based on Q statistic was performed to check the heterogeneity among the studies, and result was recognized as significant at $P < 0.05$. When the I2 < 50%, indicated that there was no significant heterogeneity and the fixed-effects model (Mantel–Haenszel method) would be used (DerSimonian & Laird, 2015). And we performed the random-effects model (DerSimonian and Laird method) when the heterogeneity of the data could not be explained ($p < 0.05$, I2 > 50%) (MANTEL & HAENSZEL, 1959). We also made the subgroup analysis by the staging of the disease.

Subgroup analysis: First, we performed a subgroup analysis by different survival outcomes. Otherwise, the subgroup analysis by the staging of the disease also were performed.

Sensibility analysis: We performed a sensitivity analysis to evaluate the effect of a single study on the total results, which

showed that there were not any study impacted the pooled HRs significantly.

Language: There is no language limit.

Country(ies) involved: China.

Other relevant information: None.

Keywords: 'Prostate Cancer', 'PCa', 'CRP', 'C reactive protein'.

Dissemination plans: We suggested that the level of C reactive protein could be a prognosis indicator of prostate cancer. We found that elevated CRP level was both related to worse OS, CSS and PFS of PCa patients, no matter stage the patients were. Further studies were anticipated to be done.

Contributions of each author:
Author 1 - Kechong Zhou - Kechong Zhou participated in the following work: Conception and design, data analysis and interpretation, manuscript writing and final approval of manuscript.
Author 2 - Yi Lu - Yi Lu participated in the following work: Conception and design, provision of study materials or patients, collection and assembly of data and final approval of manuscript.
Author 3 - Kang Liu - Kang Liu participated in the following work: Data analysis and interpretation and final approval of manuscript.
Author 4 - Yuxuan Song - Yuxuan Song participated in the following work: Provision of study materials or patients, data analysis and interpretation and final approval of manuscript.
Author 5 - Yongjiao Yang - Yongjiao Yang participated in the following work: Collection and assembly of data and final approval of manuscript.
Author 6 - Xiao Wang - Xiao Wang participated in the following work: Collection and assembly of data and final approval of manuscript.
Author 7 - Xiaoqiang Liu - Xiaoqiang Liu participated in the following work: Administrative support, data analysis and interpretation and final approval of manuscript.