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Interpretation of serum C-reactive protein (CRP) levels for cardiovascular disease risk is complicated by race, pulmonary disease, body mass index, gender, and osteoarthritis [1](#)

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Summary

Objective

High-sensitivity C-reactive protein (hsCRP) in serum is used as a marker of risk for cardiovascular disease (CVD); however CRP is a non-specific acute phase reactant. We evaluated the association between hsCRP concentrations and the most common form of arthritis, osteoarthritis (OA), and assessed the applicability of hsCRP for CVD risk prediction.

Methods

Participants ($n = 662$) were selected from the population-based Johnston County Osteoarthritis Project, using stratified simple random sampling to achieve balance according to radiographic knee OA status, ethnic group, gender, and age group. The presence and severity of knee and hip OA were determined radiographically. CVD risk was estimated by hsCRP concentration and independently with the Framingham risk algorithm.

Results

Serum natural log-transformed hsCRP (ln hsCRP) was higher in African-Americans ($P < 0.0001$) and women ($P < 0.0001$), was higher in participants who had chronic pulmonary disease ($P = 0.01$), hypertension ($P < 0.0001$), or used pain medications ($P = 0.004$), and correlated with body mass index (BMI) ($r = 0.40$, $P < 0.0001$) and waist circumference ($r = 0.33$, $P < 0.0001$), but not with age, CVD, or current smoking. Ln hsCRP was strongly positively associated with all definitions of radiographic OA (rOA; $P < 0.0001$), but this association was not independent of BMI. Although 183 participants reported no CVD and were classified as low risk by the Framingham CVD score, 61% of them were classified as moderate or high risk for CVD using hsCRP; this proportion designated high risk for CVD on the basis of hsCRP consisted primarily of women ($P < 0.05$) and individuals with OA ($P < 0.01$).

Conclusions

The pathogenic significance of hsCRP elevations in this subgroup is unclear. Serum hsCRP for predicting risk of CVD is confounded by obesity, ethnicity, gender and comorbidities.



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Key words

C-reactive protein; Osteoarthritis; Cardiovascular disease risk

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