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Baseline and post-exercise high-sensitivity c-reactive protein levels in endurance cyclists : The Indonesian North Coast and Tour de Borobudur 2017 study (Article) (Open Access)

Azam, M.[a,b], Lestari, S.[a], Rahayu, S.R.[a], Fibriana, A.I.[a], Setianto, B.[c], Widyastiti, N.S.[d], Suhartono[e], Susanto, H.[f], Kartasurya, M.I.[g], Bahrudin, U.[h], Eijsvogels, T.[i]

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Abstract

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BACKGROUND: Inflammation plays an important role in the atherosclerotic process. High-sensitivity C-reactive-protein (hs-CRP) is commonly used as inflammatory biomarker. It is well known that regular physical activity lowers hs-CRP levels , while prolonged exercise induces hs-CRP elevations. However, the relationship of training and exercise characteristics with hs-CRP levels remains not well elucidated. We evaluated baseline and post-exercise hs-CRP levels and its association with training and exercise characteristics. METHODS: Eighty-eight male endurance cyclists were involved. Demographic data, health condition and training characteristics were collected. Baseline and postexercise blood-samples were collected to determine hs- CRP concentrations. A hs-CRP cut-off point of 3 mg/L was used. Blood-cell count and biochemical parameters were measured at baseline . Heart rate (HR) was measured during exercise. RESULTS: Cyclists performed 7.3 hours (interquartilerange (IQR) = 5.4-7.5) of endurance exercise at intensity of 81.8 % (IQR = 74.9-85.8). Cyclists with baseline hs- CRP ≥ 3 mg/L reported higher body mass, body mass index (BMI), waist-circumference and total-cholesterol. An increase in hs-CRP was following endurance exercise. Cyclists with any elevation of hs-CRP reported a higher BMI, HR during exercise and exercise intensity. Binary logistic regression analysis showed BMI (OR = 1.24, 95% CI = 1.04-1.48) and cycling distance (OR = 0.22, 95% CI = 0.06-0.76) were associated with post-exercise hs-CRP elevations. CONCLUSION: Body mass, BMI, waist-circumference, total- and HDL-cholesterol are associated with baseline hs- CRP, whereas BMI and cycling distance were associated with hs-CRP elevations. These findings suggest that anthropometry parameters and lipid levels attributed to baseline hs-CRP, while anthropometry parameters and cycling intensity attributed to post-exercise hs-CRP elevations.

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We would like to thank all authors, reviewers and editors, who have been supporting InaBJ to get this important achievement. We will keep giving our best efforts to improve the quality of our journal.

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Lucky Hartati Moehario, Thomas Robertus, Anis Karuniawati, Rudyanto Sedono, Delly Chipta Lestari, Andi Yasmon

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Baseline and Post-exercise High-Sensitivity C-Reactive Protein Levels in Endurance Cyclists: The Indonesian North Coast and Tour de Borobudur 2017 Study

Mahalul Azam, Susanti Lestari, Sri Ratna Rahayu, Arulita Ika Fibriana, Budhi Setianto, Nyoman Suci Widyastiti, Suhartono Suhartono, Hardhono Susanto, Martha Irene Kartasurya, Udin Bahrudin, Thijs Eijsvogels

Abstract

BACKGROUND: Inflammation plays an important role in the atherosclerotic process. High-sensitivity C-reactive-protein (hs-CRP) is commonly used as inflammatory biomarker. It is well known that regular physical activity lowers hs-CRP levels, while prolonged exercise induces hs-CRP elevations. However, the relationship of training and exercise characteristics with hs-CRP levels remains not well elucidated. We evaluated baseline and post-exercise hs-CRP levels and its association with training and exercise characteristics.

METHODS: Eighty-eight male endurance cyclists were involved. Demographic data, health condition and training characteristics were collected. Baseline and postexercise blood-samples were collected to determine hsCRP concentrations. A hs-CRP cut-off point of 3 mg/L was used. Blood-cell count and biochemical parameters were measured at baseline. Heart rate (HR) was measured during exercise.

RESULTS: Cyclists performed 7.3 hours (interquartilerange (IQR) = 5.4-7.5) of endurance exercise at intensity of 81.8 % (IQR = 74.9-85.8). Cyclists with baseline hsCRP ≥ 3 mg/L reported higher body mass, body mass index (BMI), waist-circumference and total-cholesterol. An increase in hs-CRP was following endurance exercise. Cyclists with any elevation of hs-CRP reported a higher BMI, HR during exercise and exercise intensity. Binary logistic regression analysis showed BMI (OR = 1.24, 95% CI = 1.04-1.48) and cycling distance (OR = 0.22, 95% CI = 0.06-0.76) were associated with post-exercise hs-CRP elevations.

CONCLUSION: Body mass, BMI, waist-circumference, total- and HDL-cholesterol are associated with baseline hsCRP, whereas BMI and cycling distance were associated with hs-CRP elevations. These findings suggest that anthropometry parameters and lipid levels attributed to baseline hs-CRP, while anthropometry parameters and cycling intensity attributed to post-exercise hs-CRP elevations.

KEYWORDS: C-reactive-protein, exercise, endurancecycling, inflammation, acute-phase-response

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