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Abdominal adiposity is the main determinant of the C-reactive response to injury

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Abstract

Background: Obesity and serum C-reactive protein (CRP) (a sensitive marker of inflammatory activity) are associated with most chronic diseases. Abdominal adiposity along with age is the strongest determinant of baseline CRP levels in healthy subjects. The mechanism of the association of serum CRP with disease is uncertain. We hypothesized that baseline serum CRP is a marker of inflammatory responsiveness to injury and that abdominal adiposity is the main determinant of this responsiveness. We tested this hypothesis by studying the effect of abdominal adiposity, age and other environmental risk factors for chronic disease on the CRP response to a standardised surgical insult.

Method and Results: 102 male subjects aged 24-94 underwent unilateral hernia repair by a single operator. CRP was measured at 0, 6, 24 and 48 hrs. Response was defined as the peak CRP adjusted for baseline CRP. Age and waist:hip ratio(WHR) were associated both with basal CRP and CRP response with similar effect sizes after adjustment for a wide-range of covariates. The adjusted proportional difference in CRP response per 10% increase in WHR was 1.50(1.17-1.91) p=0.0014 and 1.15(1.00-1.31) p=0.05 per decade increase in age. There was no evidence of important effects of other environmental cardiovascular risk factors on CRP response.

Conclusion: The finding that age and waist: hip ratio influence baseline and post-operative CRP levels to a similar extent suggests that baseline CRP is a measure of inflammatory responsiveness to casual stimuli and that higher age and obesity modulate the generic excitability of the inflammatory system leading to both higher baseline CRP and higher CRP response to surgery. The mechanism for the association of baseline CRP and waist: hip ratio to chronic disease outcomes could be through this increase in inflammatory system excitability.

Biography

Michael Mendall qualified from Cambridge and London Universities. He undertook his research at St George's Medical School London and was awarded an MD (London) in 1995. He is Consultant Gastroenterologist and Head of Service for Medical Specialties at Croydon University Hospital and Honorary Senior Lecturer at St George's Medical School. He has published more than 75 papers in reputed journals including a number with more than 500 citations. He has been R&D director at CUH and was lead for the London GI Specialty Research Group.