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JOURNAL ARTICLE

Oxidative stress in prostatic fluid of patients with chronic pelvic pain syndrome: correlation with gram positive bacterial growth and treatment response

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The etiology of chronic pelvic pain syndrome (CPPS)/chronic prostatitis category III remains unknown. Whereas a subset of men respond to antimicrobial therapy, gram positive bacteria isolated from expressed prostatic secretions (EPS) are often considered to be commensal rather than pathogenic. We wished to study oxidative stress as a marker of tissue injury and response in EPS of men with CPPS to determine whether infection with gram positive bacteria is associated with increased oxidative stress. A total of 300 EPS specimens from 100 men with CPPS were collected for microscopy, culture, and biochemical and molecular assays. Oxidant injury was measured by 8-isoprostane F2alpha (IsoP) levels and total antioxidant capacity as Trolox equivalents. Total RNA from EPS was used for gene expression of heme oxygenase-1 (HO-1) and granzyme B. The only bacteria found in EPS were gram positive. For our analysis, these men were classified as having chronic bacterial prostatitis (category II). IsoP levels (pg/mL) were highest in men with category II prostatitis (7315 +/- 1428) followed by nonbacterial prostatitis (category IIIa, 2043 +/- 561), prostatodynia (category IIIb, 319 +/- 81), and asymptomatic controls (298 +/- 99). IsoP levels decreased significantly after successful treatment with antibiotics or an antioxidant supplement (Prosta-Q). Antioxidant capacity was detected in 11 out of 18, 4 out of 16, and 1 out of 16 men tested with category II, IIIa, and IIIb prostatitis, respectively. No correlation was observed between IsoP levels and the number of white blood cells in EPS. HO-1 and granzyme B expression was highest in men with category II prostatitis than in men with either category III prostatitis or asymptomatic controls. On the basis of elevated oxidative stress, clinical response to antibiotics, and post-treatment reduction in oxidative stress, we conclude that gram positive bacteria in some men with CPPS may be pathogens. It is speculated that oxidative stress may be a key pathway in some men with CPPS that can be targeted with antioxidant therapy.

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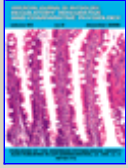
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