Evidence for the presence of inflammatory activity in patients with Complex Regional Pain Syndrome (CRPS): A systematic review and meta-analysis.


1. Introduction

Inflammation is thought to play a role in CRPS. A precise description of the inflammatory response in CRPS may assist in the identification of potential targets for therapy.

2. Aims

(a) To determine whether, in adults, CRPS is associated with a specific inflammatory profile;
(b) To determine whether the inflammatory profile is dependent on the duration of the condition.

3. Materials and Methods

We adhered to the PRISMA statement using standard systematic review and meta-analytic methods. Studies were included if they were published or in-press/accepted by 30 January 2012; measured biomarkers of inflammation in human CRPS subjects and controls; obtained samples from blood, cerebrospinal fluid (CSF), or fluid from experimentally induced blisters. Quality was assessed using an adapted STROBE statement.

4. Results

Studies: 2420 unique records were screened; 22 studies were included in the qualitative synthesis; 15 studies were included in the meta-analysis. Most studies did not meet 3 or more of our quality criteria.

Meta-analysis: Effect estimates, calculated from the absolute concentrations of inflammatory markers in individual studies, are represented in forest plots as standardized mean differences (SMD; Hedges’ adjusted g) and 95% confidence intervals (C.I.). Open boxes and horizontal bars indicate, respectively, the weighted effect size and 95% C.I. in an individual study. The filled diamonds indicate the effect size and its 95% C.I. as obtained from the meta-analysis of pooled studies. Point estimates to the right of the vertical line indicate that the respective factor is present in CRPS cases versus controls.

5. Conclusions

We found that (a) CRPS was associated with a predominantly pro-inflammatory state; and (b) inflammatory profiles differed between acute CRPS and chronic CRPS.

Acute CRPS was associated with increased levels of pro-inflammatory factors without an attendant anti-inflammatory response. Chronic CRPS was potentially associated with the presence of Th17 activity but there is currently inadequate evidence to definitively support this.

Citations: