Abstract

Title: Evaluation of the usefulness of C-reactive protein as a marker of urinary tract infection, and its response to treatment in persons with spinal cord injury.

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Objective:

1. To evaluate if C-reactive protein can be used as a surrogate marker of urinary tract infection in persons with spinal cord injury.

2. To assess if C-reactive protein can be an indicator of response to treatment.

Design: Observational study.

Setting: Department of Physical medicine and Rehabilitation, CMC, Vellore

Participants: Persons with spinal cord injury, admitted in Department of PMR, CMC Vellore between April 2016 and June 2017.

Interventions: Not applicable.

Main Outcome Measures: Serial levels of C-reactive protein.

Method: Persons with SCI fulfilling the inclusion criteria were followed up during their stay as inpatients in the Department of PMR. At clinical suspicion of UTI, blood samples for CRP and total WBC counts were sent and antibiotics as per urine culture -sensitivity were started. CRP and total WBC counts were repeated after 72 hours and again after one week of starting antibiotics i.e. on day zero, day three and day seven. Data was collected and analyzed.
**Results:** C-reactive protein values and total WBC counts were elevated on day zero for all the patients, but on day three the levels of CRP and total WBC counts differed in patients with fever and patients without fever. On day three, CRP levels decreased, but still remained elevated above the normal range with mean and SD of 58.87 (49.94). The fall in CRP levels on day three and day seven when compared to day zero was significant (p = <0.001). Total WBC counts on day three, showed a fall in their levels, with mean and SD being 7423.81 (2093.30) and had reached its normal range even in patients with fever. CRP values, on day seven decreased further and almost reached the normal range with mean and SD being 16.46 (11.64). Total WBC counts on day seven had reached the normal range with mean and SD of 7500 (1815.72).

The p-values (Pearson’s co-relation test) on day zero, day three and day seven were 0.052, 0.056 and 0.561 respectively.

**Conclusions:** CRP can be used as a surrogate marker for detecting urinary tract infection in spinal cord injury patients in addition to clinical symptoms and after excluding all other causes of inflammation and infection.

C-reactive protein is a good marker to assess response to treatment as it falls in a linear fashion with the appropriate treatment.

Co-relation between CRP and total WBC counts was not significant owing to the small sample size.

**Key words:** Spinal cord injury (SCI), Urinary tract infection (UTI), C-reactive protein (CRP), Total WBC counts (TWBC)