Does post-operative C-reactive protein predict length of stay in total hip arthroplasty?

Edmund Farrar
Frimley Park Hospital, UK

Abstract

Statement of the Problem: C-reactive protein (CRP) is an inflammatory biomarker that is released in response to inflammation, infection or trauma. Its role in the post-operative phase of elective orthopaedic surgery is unclear. Current guidance recommends a number of pre-operative investigations. However, whilst blood tests are routinely requested in the post-operative surgical plan, there is no guidance outlining which of these are relevant. We aimed to assess whether CRP is a useful and cost effective post-op blood test in elective total hip arthroplasty.

Methodology & Theoretical Orientation: A retrospective review of patients undergoing elective total hip arthroplasty over six months, including comparison of day 1 post-operative CRP and length of stay. We also considered associated cost. Correlation between Day 1 post-operative CRP and length of stay was analysed using a Spearman r coefficient.

Findings: A hundred and thirteen patients were identified with median age 70 and median length of stay three days (range 0-28 days). There was no significant correlation between day one CRP and length of stay ($R = 0.1801$, $p = 0.0563$). However, there was statistical significance between day one post-operative CRP and age ($R=0.2098$, $p=0.029$), and age and length of stay ($R=0.5098$, $p<0.0001$). At a unit CRP cost of £1.69 and extrapolating on the number of total hip replacements undertaken over 6 months, over a year long period a routine day one post-op CRP for all patients undergoing elective total hip replacement would cost our centre £743.60.

Conclusions & Significance: We have demonstrated no direct relationship between day one post-operative CRP in elective total hip arthroplasty and length of stay. We therefore argue that this test in isolation is not a useful parameter. It may have a role in monitoring systemic inflammatory response in frailer patients and we suggest further work to evaluate this.

Biography

Edmund Farrar is an RAF doctor with a passion for surgery, technological innovation and artificial intelligence. He trained at the Hull York Medical School and joined the RAF in my final year, going on to undertake my foundation training with the Defence Deanery at the Queen Elizabeth Hospital in Birmingham. It was during this time that I developed an interest in surgery, and in particular, plastic surgery. In September 2017, I then went on to complete Initial Officer Training at RAF Cranwell, providing the basis for my leadership experience. The remainder of this year was spent as a General Duties Medical Officer, providing primary care and medical capability at RAF Cosford, a large phase 2 engineering training establishment

He started core surgical training at Frimley Park Hospital in August 2018, and have since done rotations in Vascular Surgery and Trauma & Orthopaedic Surgery. He go on to start a year of Plastic Surgery at the Queen Victoria in August 2019.