Paper Session: RCT and Other
Prospective Studies II

Predictors of Medical Serious Adverse Events in Hip Fracture Patients: A Subanalysis of the HEALTH Trial

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Purpose: Patients with hip fractures over the age of 50 years are often frail with multiple comorbidities, and at risk of serious medical adverse events (SAEs). This study investigated this patient population in a 1441-patient multicenter randomized controlled trial comparing total hip arthroplasty (THA) with hemiarthroplasty (HA) in patients 50 years of age or older with displaced femoral neck fractures. The primary objective of this secondary analysis was to determine the incidence of SAEs in patients who had arthroplasty following a femoral neck fracture. Secondary objectives included determining the timing of the medical SAEs and which baseline and surgical factors were associated with SAEs within 24 months of hip fracture in the HEALTH trial.

Methods: A preplanned subanalysis of the HEALTH trial data was performed with a multivariable Cox regression. SAEs included were neurological, respiratory, cardiac, renal, vascular, multi-organ failure, sepsis, anemia and other blood issues, dehydration, gastrointestinal (GI) bleeds, ulcers, and other GI problems, along with prolonged hospitalization. Prognostic factors were selected based on the biological rationale, previous literature, and expert opinion and were included as the independent variables.

Results: 1441 patients were included in this analysis. 370 patients suffered from a SAE. The most common SAE was cardiac (38.4%, n = 105), followed by respiratory (20.8%, n = 77) and neurological (14.1%, n = 77). 50.8% of SAEs occurred within the 0-90-day period with 35.4% occurring within the first 30 days. Body mass index (BMI) between 18.5 and 29.9 as compared to a BMI ≥30 (hazard ratio [HR] 1.47, 95% confidence interval [CI] 1.02-2.14; P = 0.04), receiving a THA as compared to receiving a bipolar HA (HR 1.36, 95% CI 1.03-1.81; P = 0.03), and not using preoperative traction (HR 1.89, 95% CI 1.18-3.03; P <0.01) were associated with a higher risk of a medical SAE within 24 months of femoral neck fracture. Age (P = 0.09), use of femoral cement (P = 0.59), and use of canal pressurization (P = 0.37) were not associated with a medical SAE.

Conclusion: THA is associated with more SAEs in the immediate postoperative period and care should be taken in selecting patients for this treatment compared to a HA. The use of femoral cement with hip arthroplasty has previously been shown to reduce risk of reoperation and is not associated with increased risk of medical SAEs. A higher BMI may be protective in hip fracture patients while age alone does not predict serious medical events. Preoperative traction lowers SAEs, but as this was not widely used in the HEALTH study, it could be due to an institution effect.