Factors Associated with a Lurch Gait Pattern Among Patients awaiting Hip Replacement

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ABSTRACT

INTRODUCTION:

The painful gait pattern observed among individuals with hip osteoarthritis (OA) is characterized by deviations in the medial-lateral and superior-inferior planes. Lurch is the ratio of the relative power produced in the medial-lateral direction to that produced in the superior-inferior direction. Previous research has shown that hip OA patients exhibit larger lurch values than healthy individuals. The goal of the present study was to investigate various patient parameters and their relation with lurch and to determine if lurch is useful for prioritizing patients for surgery.

METHODS:

33 patients (17 female; mean age = 58 years) with hip OA were recruited immediately following consultation. Lurch was measured with a Walkabout Portable Gait Monitor (WPGM); a tri-axial accelerometry device. The independent variables were comprised of demographic measures (age, sex, race, smoking status, assistive device use, CSHA Frailty Scale), subjective questionnaires (WOMAC, SF-36, Oxford-12, PCS, SCQ), anthropometric measures (height, weight, BMI, waist and hip circumference) and an objective measure (timed up-and-go test).

RESULTS SECTION:

Lurch was significantly associated with timed up-and-go (r = .76, p < .01), CSHA Frailty Scale score (r = .49, p < .01), age (r = .44, p < .01), assistive device use (r = .39, p < .05), and height (r = -.39, p < .05). Multivariate linear regression revealed timed up-and-go as the only significant predictor of lurch (β = 1.129, p = .005). 81.8% of the sample was identified as overweight or obese based on BMI. 78.2% of the sample had a waist:hip ratio (WHR) which placed them at risk for cardiovascular disease, while 93.9% of the sample reported at least one co-morbid condition.

DISCUSSION:

Lurch appears to be a robust objective measure of physical impairment as it is unaffected by BMI and co-morbidities. Based on our results, lurch may be associated with demographic and functional measures among individuals with advanced hip OA. Future research is advocated. Although our results suggest that excess weight, a high W:H ratio, and the presence of co-morbid health conditions may not affect lurch, they are quite prevalent among this patient cohort.