Introduction

Increased scrutiny of the allocation of health care dollars makes the identification of factors influencing treatment outcomes important. Few studies have examined the relationship between ethnicity and the efficacy of chronic pain management interventions (as opposed to acute pain syndromes). Radiofrequency application (RFA) is a common treatment modality for pain due to zygapophyseal joint (z joint) disease. This survey reviewed the efficacy of RFA in African American (AA) and non-Hispanic Caucasian patients.

Methods

This study is a retrospective chart review of patients who underwent RFA to the L3, L4 medial branch nerves, dorsal ramus of L4, and the accessory nerve from the S1 dorsal ramus to the L5-S1 z joint. To qualify for RFA, all patients had a 50% reduction in low back pain visual analog scale (VAS) pain scores after neural blockade of the previously mentioned nerves using 0.2 mL of 2% lidocaine at each level. Patients were followed at the Medical College of Georgia Pain Clinic 4-6 weeks after RFA treatment. A random sample of charts was selected from all AA and Caucasian patients treated during 2009, with 40 Caucasian and 40 AA patients selected for each group. Comparisons between ethnic groups were made using Chi square analysis for categorical data and two sample T-tests for continuous data.

Using SAS (Version 9.2), changes in VAS pain scores from pre- to post-RFA were examined using analysis of covariance (ANCOVA); changes were adjusted for the baseline VAS prior to making ethnic comparisons. Additional covariates such as age, gender, smoking, insurance, psychiatric history, marital status, low back surgery, type 2 diabetes, education, body mass index, and opioid consumption were included in the analysis. After controlling for baseline RFA VAS and ethnicity, ANCOVA was used to determine significant differences in the efficacy of RFA treatment caused by the aforementioned covariates.

Results

Both AA and Caucasian patients showed statistically significant improvements in post-RFA VAS scores (p<0.0001) based on paired T-test analysis. Caucasians showed significantly greater benefit with a post-RFA VAS score decrease of 47% (4.7 units), while AA patients experienced a 13.8% (1.38 units) post-RFA VAS decrease in score (ANCOVA p<0.0001). Other covariates found to be associated with a poorer response to RFA included previous low back surgery (p=0.015) and prior psychiatric history (p=0.039).

Conclusions

Based upon these observations, ethnicity appears to have a statistically significant effect on RFA treatment for back pain due to z joint disease. In no manner should these results be interpreted as an indication to withhold treatment to patients based on ethnicity. However, these results could suggest that the use of VAS may not be uniformly valid across ethnic groups. These findings underscore the need for continued research on this subject, specifically targeting the measurement of pain ratings and the relationship to functional status. Pain duration was not examined, therefore, the degree of central sensitization could not be objectively compared between the 2 groups. Early RFA intervention before the phenomenon of central sensitization can occur may increase the efficacy of the RFA treatment. Levels of health insurance coverage and thus early access to care are lower among minority populations. Of the 45 million uninsured Americans, African Americans account for 32%. Further research is needed to develop a more comprehensive understanding of these outcome disparities and to develop a cross-cultural strategy to improve treatment results.

References