

# Early Outcomes following Proton Therapy for Prostate Cancer in Men 55 Years Old and Younger

B.S. Hoppe , R. Henderson, R.C. Nichols, R.B. Marcus, W.M. Mendenhall, J. Costa, C. Williams, Z. Su, Z. Li, N.P. Mendenhall

## Purpose/Objective(s)

Controversy exists over the optimal management of young men with prostate cancer. We report early outcomes in men  $\leq$  55 years old treated with proton therapy.

## Materials/Methods

From August 15, 2006, to September 1, 2009, 98 men  $\leq$  55 years old with low- (N = 57), intermediate- (N = 29), and high- (N = 12) risk prostate cancer were enrolled on University of Florida IRB-approved protocols and received proton therapy to between 78 and 82 CGE at 2 CGE per fraction or 70 to 72.5 CGE at 2.5 CGE per fraction. Androgen deprivation (AD) was given to 14 patients. Before treatment and every 6 months after, patients had a PSA evaluation and completed international index of erectile function (IIEF) and international prostate symptom score (IPSS) questionnaires. Physician toxicity assessments (CTCAE, v3.0) were performed at the same intervals and weekly during treatment. The median follow-up was 18 months.

## Results

The median pretreatment, 6-month, 12-month, and 18-month PSAs were 5.0 (range, 0.7 to 124), 1.5 (range, 0 to 10), 1.3 (range, 0 to 7.6), and 1.2 (range, 0 to 4.2). One biochemical failure occurred at 18 months in a patient with Gleason 8 T2c disease with pretreatment PSA of 124. One patient on an alpha blocker prior to proton therapy required a transurethral resection of the prostate (TURP) 3 months after treatment. No other patient required a catheter or developed other Grade 3 side effects. Genitourinary (GU) symptoms requiring prescription medications (Grade 2) occurred in 14% of men before treatment, an additional 25% during treatment, and 16%, 14%, and 21% at 6, 12, and 18 months after proton therapy. Temporary urinary urge incontinence requiring a pad (Grade 2) occurred in 3 patients during follow-up but resolved with antibiotics (N=2) or anti-cholinergics (N=1). Gastrointestinal (GI) symptoms requiring prescription medications occurred in 10% of patients during treatment and 5%, 10%, and 3% at 6, 12, and 18 months. No Grade 2 or higher rectal incontinence occurred. The median IIEF

score in non-AD men was 24 (range, 12 to 25) before treatment and then 22 (range, 9 to 25), 21 (range, 5 to 25), and 18 (range, 5 to 25) at 6, 12, and 18 months after proton therapy. At 6, 12, and 18 months, 90%, 95%, and 94% of men remained sexually active. Patient dissatisfaction rates at 6, 12, and 18 months were 1%, 0%, and 5%, respectively.

## Conclusions

Young men treated with proton therapy for prostate cancer have few significant side effects in the first 18 months after treatment. Although erectile dysfunction after treatment can occur, complete impotence was rare and few were dissatisfied with their treatment choice. More follow-up is needed to confirm these findings.