Majority of prostate cancer patients surveyed five years after treatment with vessel-sparing radiation therapy report preserved sexual function

San Francisco, September 15, 2014—A comparison of five-year sexual function outcomes, as reported by patients treated with external beam radiotherapy (EBRT) versus combination EBRT plus brachytherapy, indicates that the utilization of vessel-sparing radiation therapy makes cure possible without compromising long-term sexual function, according to research presented today at the American Society for Radiation Oncology’s (ASTRO’s) 56th Annual Meeting.

The study examined the patient-reported outcomes of 91 men with prostate cancer who received MRI-guided, vessel-sparing radiation at University of Michigan Providence Cancer Institute. The vessel-sparing radiation technique limits the amount of radiation to critical erectile tissues using MRI scans to identify the blood vessels responsible for erections. When radiation dose is limited to these critical structures, the risk of erectile dysfunction is lowered.

Of the 91 patients studied, all patients received EBRT. Forty-two of the patients received only EBRT (>77.8Gy), and 49 patients received EBRT plus brachytherapy, the implantation of radioactive seeds near the prostate. The combination patients received brachytherapy in the form of an I-125 permanent prostate implant. None of the patients received androgen deprivation therapy (ADT).

Sexual function at baseline, two years and five years post-therapy was evaluated via patient reported..
outcomes using two scales— the International Index of Erectile Function (IIEF) scale and a simple, three-item questionnaire that asked patients to indicate which applied to them: 1) I am able to be sexually active without aids or medications; 2) I am able to be sexually active with aids or medications; or 3) I am not able to be sexually active.

The three-question scale was used in addition to the IIEF, which validates erection quality by sexual performance with a partner, because many men were not sexually active with a partner, despite their ability to be active with a partner. Patient-reported outcome on sexual performance according to the IIEF was lower than the outcome reported according to the three-question scale. The average two-year follow-up IIEF scores for EBRT patients and combination therapy patients were 16.5 and 20.8, respectively. The average five-year follow-up IIEF scores for EBRT patients and combination therapy patients were 15.4 and 16.9, respectively.

According to the three-question scale, erectile function was remarkably preserved using MRI-planned vessel-sparing treatment, even in patients who received combination therapy: 78.6 percent of patients who received EBRT (33 of 42) and 91.8 percent of patients who received combination therapy (45 of 49) reported the ability to be sexually active with or without aids at five years post-treatment.

“In the past, men with prostate cancer expected to pay a high toll in loss of quality of life to achieve cure and were willing to accept that as necessary,” said lead study author Patrick W. McLaughlin, MD, director of radiation oncology at University of Michigan Providence Cancer Institute in Novi, Mich. “This study makes it clear that even with combination radiation protocols, which are capable of curing the majority of prostate cancers more than 90 percent of the time, avoidance of critical adjacent tissues, such as vessel-sparing, makes cure and quality of life an achievable goal for many men.”

The abstract, “Comparison of External Beam and Combination Therapy for Prostate Cancer: Patient Reported Outcomes of Sexual Function with 5-Year Follow-up” will be presented in detail during a scientific session at ASTRO’s 56th Annual Meeting at 4:15 p.m. Pacific time on Monday, September 15, 2014. To speak with Dr. McLaughlin, please call Michelle Kirkwood on September 14 – 17, 2014, in the ASTRO Press Office at the Moscone Center in San Francisco at 415-978-3503 or 415-978-3504, or email michellek@astro.org.

ASTRO’s 56th Annual Meeting, to be held at the Moscone Center in San Francisco, September 14-17, 2014, is the nation’s premier scientific meeting in radiation oncology. The 2014 Annual Meeting is expected to attract more than 11,000 attendees including oncologists from all disciplines, medical physicists, dosimetrists, radiation therapists, radiation oncology nurses and nurse practitioners, biologists, physician assistants, practice administrators, industry representatives and other health care professionals from around the world.
Led by ASTRO President Bruce G. Haffty, MD, FASTRO, a radiation oncologist specializing in breast cancer, the theme of the 2014 Meeting is “Targeting Cancer: Technology and Biology,” and the Presidential Symposium, “Local-regional Management of Breast Cancer: A Changing Paradigm,” will feature Jay R. Harris, MD, FASTRO, and Thomas A. Buchholz, MD, FASTRO, to highlight recent practice-changing, landmark studies and current developments in the local-regional management of breast cancer. ASTRO’s four-day scientific meeting includes presentation of up to four plenary papers, 360 oral presentations, 1,862 posters and 144 digital posters in more than 50 educational sessions and scientific panels for 20 disease-site tracks. Three keynote speakers will address a range of topics including oncologic imaging, biology and targeting in oncology, and human error and safety concerns: Hedvig Hricak, MD, PhD, Chair of the Department of Radiology and the Carroll and Milton Petrie Chair at Memorial Sloan Kettering Cancer Center; Frank McCormick, PhD, FRS, DSc (hon), Professor Emeritus and the David A. Wood Distinguished Professor of Tumor Biology and Cancer Research of the University of California at San Francisco Helen Diller Family Comprehensive Cancer Center; and Sidney Dekker, PhD, MA, MSc, Professor and Director of the Safety Science Innovation Lab at Griffith University, Brisbane, Australia.

ABOUT ASTRO

ASTRO is the premier radiation oncology society in the world, with more than 10,000 members who are physicians, nurses, biologists, physicists, radiation therapists, dosimetrists and other health care professionals that specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, the Society is dedicated to improving patient care through professional education and training, support for clinical practice and health policy standards, advancement of science and research, and advocacy. ASTRO publishes two medical journals, International Journal of Radiation Oncology • Biology • Physics (www.redjournal.org) and Practical Radiation Oncology (www.practicalradonc.org); developed and maintains an extensive patient website, www.rtanswers.org; and created the Radiation Oncology Institute (www.roinstitute.org), a non-profit foundation to support research and education efforts around the world that enhance and confirm the critical role of radiation therapy in improving cancer treatment. To learn more about ASTRO, visit www.astro.org.

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Comparison of External Beam and Combination Therapy for Prostate Cancer: Patient Reported Outcomes of Sexual Function with 5 Year Follow-up

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Purpose/Objective(s): MRI-based planning allows maximum dose restriction to the sub-apex region and specific erectile tissues (corpus cavernosum (CC) and internal pudendal artery (IPA)). Using this technique, we compare 5 year sexual function outcomes for external beam radiotherapy (EBRT) versus combination beam plus brachytherapy (combo).

Materials/Methods: Patients were treated with EBRT (> or = 77.8 Gy) or with combo (using an I-125 permanent prostate implant) at a single institution. All patients underwent MRI-based treatment planning for accurate apex delineation, CC definition, as well as IPA angiography. None received ADT. Sexual function was obtained prospectively by patient reported outcomes using two scales at baseline, 2 years, and 5 years post-treatment; the International Index of Erectile Function (IIEF) scale and a 3 question scale (Q3) as follows: “I am able to be sexually active without aids or medications”, “I am able to be sexually active with aids or medications”, and “I am not able to be sexually active”. The additional scale was utilized to offset the IIEF scale tendency to overestimate sexual dysfunction by its dependence on validated patient self-report.

Results: The sexual function for 91 patients (49 combo, 42 EBRT) is presented in Table 1, which summarizes results separated by treatment and baseline function as follows: IIEF > 16, IIEF 21-25, and all patients for Q3 scale. The average baseline and 5 year (+/−) IIEF scores for combo and EBRT were 22.5 and 20.8, 16.9 and 16.0, and 16.5 and 15.4, respectively. At 5 years post-RT by the Q3 metric, 79% of EBRT patients and 92% of combo patients were able to be sexually active (p=0.070). The D90s to the CC and IPA were lower for the combo group (average CC D90 EBRT = 9.2 Gy, combo = 4.5 Gy; average IPA D90 EBRT = 13.3 Gy, combo = 10.2 Gy).

Conclusions: We observed high rates of preserved sexual function 5 years after MRI planned vessel-sparing RT for prostate cancer. The EBRT versus combo outcomes by Q3 metric (79% versus 92% able to be sexually active, respectively) approached statistical significance at 5 years (p=0.070) and suggest that intensive combo therapy can be delivered without compromising long-term sexual function. The lower dose to critical erectile structures with combo versus EBRT may have contributed to this outcome. Further assessment including the influence of patient co-morbidities will clarify the sexual outcome differences we observed between combo and EBRT.

<table>
<thead>
<tr>
<th>Treatment cohort</th>
<th>Baseline score (n=number of patients)</th>
<th>2 yr no aid (%)</th>
<th>p-value (combo v EBRT)</th>
<th>5 yr no aid (%)</th>
<th>p-value (combo v EBRT)</th>
<th>2 yr +/- aid (%)</th>
<th>p-value (combo v EBRT)</th>
<th>5 yr +/- aid (%)</th>
<th>p-value (combo v EBRT)</th>
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</thead>
<tbody>
<tr>
<td>Combo</td>
<td>IIEF &gt;16 (n=48)</td>
<td>56.3</td>
<td>51.0</td>
<td>75.0</td>
<td>63.3</td>
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<tr>
<td>EBRT</td>
<td>IIEF &gt;16 (n=42)</td>
<td>69.0</td>
<td>0.210</td>
<td>54.8</td>
<td>0.652</td>
<td>73.8</td>
<td>0.897</td>
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<td>Combo</td>
<td>IIEF 21-25 (n=36)</td>
<td>69.4</td>
<td>55.6</td>
<td>75.0</td>
<td>66.7</td>
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<tr>
<td>EBRT</td>
<td>IIEF 21-25 (n=22)</td>
<td>63.6</td>
<td>0.648</td>
<td>59.1</td>
<td>0.792</td>
<td>72.7</td>
<td>0.848</td>
<td>63.6</td>
<td>0.814</td>
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<td>Combo (Q3)</td>
<td>All patients (n=49)</td>
<td>59.2</td>
<td>55.1</td>
<td>100.0</td>
<td>91.8</td>
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<tr>
<td>EBRT (Q3)</td>
<td>All patients (n=42)</td>
<td>64.3</td>
<td>0.618</td>
<td>45.2</td>
<td>0.348</td>
<td>76.1</td>
<td>p&lt;0.001</td>
<td>78.6</td>
<td>0.070</td>
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