

DOSE OF RADIATION AND TREATMENT OUTCOME FOR PROSTATE CANCER

By: Gil Lederman, M.D.

A major question confronting those with prostate cancer is whether higher dose radiation is of benefit. There are many different ways of giving higher dose radiation. Standard radiation is limited because it has difficulty focusing the beam of radiation.

Conformal radiation is a way of giving smaller fields of radiation. It is meant that the beam conforms more to the shape of the cancer. The dose is another issue. It can be normal, lower or higher. Conformal radiation should allow delivery of higher dose treatment. Of course the doctor should discuss with the patient the intent planned. Higher doses have been felt in the past to give higher success rates but higher complication rates.

Seed implantation allows the radiation to be delivered directly to the prostate maximizing dose. Some consider this the ultimate in conformal radiation! There is always risks involved with higher dose treatments. Does the patient benefit? Is he more likely to be cancer-free? Is he more likely to be alive?

A recent paper by Valicenti et al, published in the prestigious Journal of Clinical Oncology evaluated dose and likelihood of improved survival.

A group of radiation centers called Radiation Therapy Oncology Group conducted four randomized studies for men with localized prostate carcinoma. This work started more than 20 years ago. 1560 men were treated with external beam radiation. Their dose of radiation was 6000 to 7800 rad. Rad is a measurement of radiation dose. Since many of these men were treated in the era before PSA testing, PSA was not part of the study either as pre-treatment or post-treatment results. Thus, the only analysis was based upon cancer survival and progression locally. This is obviously a limiting factor.

The median age of patients was 65 with a range of 45 to 87. Gleason scores are defined as the appearance of the cancer under the microscope with a range of 2 to 10. The greater the number the higher the risk of progressive cancer. Thirty six percent had Gleason 6 cancer while 17% had Gleason 7 cancer. Gleason 8 through 10 occupied 27% of men. This last group would be considered the highest risk cancers of the prostate.

The median radiation dose was 6840 rad . The Gleason score was predicted of likelihood of surviving. If a man had a Gleason of 2 to 5 there was an 85% likelihood of being alive at ten years. If the Gleason was 6 they had a 79% chance, Gleason 7, 62 % chance and Gleason 8 through 10, 43% chance of surviving.

The men with Gleason 8 to 10 prostate cancer at ten years the likelihood of being free of cancer was 46% if more than 6600 rad were given compared to 31% if lesser doses were given. The patients having the larger external beam radiation dose had a ten year overall survival rate of 27% compared to 16% getting smaller doses. If more than 6600 rad was given there was a 29% lower rate of prostate cancer death.

The authors concluded that, "centrally reviewed biopsy Gleason score is a strong an independent predictor of the risk of dying from prostate cancer. This information can provide reliable estimates of outcome for men treated initially with external beam radiation therapy. They can be compared directly with estimates of other management approaches. Because we have stratify outcome according to Gleason score, we were able to determine the risk of using higher radiation doses on reducing the death from prostate cancer. Because external beam radiation therapy seems to significantly lower rates local progression, disease specific survival, and mortality from men with

cancers having Gleason scores of 8 to 10, a randomized trial of dose escalated radiation therapy for groups of similar men as warranted."

Thus, the rationale of our radiation seed plus radiosurgery program. Higher doses - Most all radiation oncologists believe will produce greater likelihood of being cancer free. If one is cancer free one is more likely to be alive. We routinely give higher doses of radiation in an attempt to improve cancer-free survival and survival itself.

In our institution men receive markedly higher radiation doses. The palladium seed dose is 9000 rad to a minimum which is equivalent to approximately 11,500 iodine seed implantation dose. This is usually followed four weeks later by 4500 rad using fractionated radiation techniques.

It is not surprising, therefore, that our results are superior when compared head to head to standard radiation or even conformal radiation or radical prostatectomy. I encourage all men with prostate cancer to evaluate treatment options before proceeding with any therapy. Emergency to treatment is usually never indicated for localized prostate carcinoma. Emergency to inform the patient and loved one certainly is.

Our group has compared the combined prostate seed and radiosurgery group to those receiving standard or conformal radiation elsewhere as well as seed implantation or radical prostatectomy in well-known national centers. In essentially every instance, our patients with prostate cancer are more likely to be cancer-free than those elsewhere. This is a good incentive to seek all treatment options and results prior to any decision. Even adding one percentage point for prostate cancer, will affect nearly 2000 lives annually in America. Our results have improved overall cancer-free survival by 34% to one major cancer center offering conformal radiation.

This 34% on a national basis means tens of thousands of lives potentially saved. Improving outcome for those with cancer gives meaning to our life and expression to our creativity. Why are our results at Radiosurgery New York better than other major cancer centers? I believe it is a vision of years in the making - a vision that has been consistent.

Maintaining full dose radiation seed implantation into the prostate and following patients over the ensuing years gives great importance to our approach and our data. The Staten Island University Hospital prostate cancer team just published its results in the prestigious International Journal of Radiation, Oncology, Biology and Physics. We don't seek to copy any other center. Our work is unique and our experience vast. It is a strong testimony to our patients, our staff and associates.

Of course, not all men focus just on cancer-free survival. Other issues include quality of life such as sexual and urinary function. Also, mortality and morbidity of treatment - especially radical prostatectomy must be discussed in detail. We believe our approach offers substantial benefit in this regard as well.

Fortunately, more men have more treatment options than ever before. Results are improving.

That we have ten year data and comparison to seed alone, standard radiation, high dose conformal radiation, surgery and other treatments should be reassuring. Our best cancer-free outcome has been utilizing Palladium seed implantation followed by stereotactic body radiosurgery. This approach, for men with PSA's of 4 to 1, has about a 12% advantage over seeds alone or radical prostatectomy in excellent hands. The data is available for all to analyze.

For those with questions about prostate cancer, we have free seminars open to the public on a monthly basis. We also have a hot line at 212-CHOICES and you can e-mail question to gil.lederman@rsny.org. We also have panels of experts to evaluate each case. We believe that each man should investigate all treatment options before proceeding with cancer treatment - especially for prostate cancer where results can be so different and the side effects so vast.

Many of our patients, we believe, chose our approach because they wanted to avoid radical surgery and maintain urinary and sexual function.