Crystal Reed, M.D.

Dr. Reed is a Radiation Oncologist who graduated from Jefferson Medical College in Philadelphia, Pennsylvania. She completed her internship at Mercy Medical Catholic Center and her residency in radiation oncology at Albert Einstein Medical School in Philadelphia, Pennsylvania. Dr. Reed is certified by the American Board of Radiology in Therapeutic Radiology.

Dr. Crystal Reed Moves Her Practice

Dr. Crystal Reed, Radiation Oncologist with Evansville Cancer Center, is moving her practice from the campus of Deaconess Hospital to the campus of Evansville Cancer Center located at 700 N. Burkhardt Road. You may reach Dr. Reed after March 11th by calling Evansville Cancer Center at 812-474-1110.

Radiation Oncologists
Al Korba, M.D., FACRO, Aly Razek, M.D., FACRO, Shannon Lamb, M.D. & Crystal Reed, M.D.

Medical Oncologists
Rick Ballou, M.D., Ph.D., Ronald Ruszkowski, M.D. & Lotfi Hadad, M.D.

Radiation Physicists
Saiyid Masroor Shah, Ph.D. & Arnold Sorensen, B.S.

Evansville Cancer Center is the only ACRO accredited cancer facility in the entire Tri-State area!

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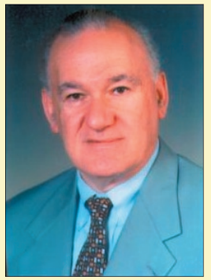


Aly Razek, M.D., FACRO

Dr. Razek graduated from Cairo University. He completed his residency at Washington University in St. Louis, Mo. He is board certified in both radiation oncology and pediatrics. He co-authored four text books in radiation oncology and contributed to more than 20 publications in oncology journals. He served on the national committee of the Southwest Oncology group, Intergroup Ewings sarcoma and National Wilms Tumor Committee. Dr. Razek is a fellow of the American College of Radiation Oncology.

Results of Prostate Cancer Presented at ASCO

The outcomes from the prostate cancer treatment program at Evansville Cancer Center were accepted for presentation and presented by Aly Razek, M.D. at the American Society of Clinical Oncology's 2005 Prostate Cancer Symposium held February 17-19, 2005. Over 300 abstracts from around the country and internationally were submitted with only 75 being accepted. The following is the abstract as presented.

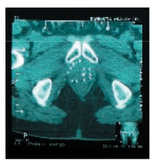
High Dose Rate Brachytherapy as An Integral Part in The Treatment of Early Prostate Cancer

Aly Razek, M.D., FACRO, A. Korba, M.D., FACRO, P. Siami, M.D., S. Shah, Ph.D., W. Fisher, M.D., D. Foertsch, M.D., T. Gadient, M.D., P. Gilson, M.D., B. Romick, MD., B. Samm, M.D., A. Sorensen, B.S., B. Smith, R.N., B.S.N., OCN.

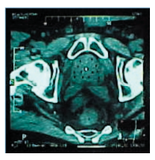
BACKGROUND:

Both low dose brachytherapy (LDR) using Iodine 125 or Palladium 103 seed and high dose brachytherapy (HDR) using Iridum 192 has been utilized in the treatment of carcinoma of the prostate. In our practice, we noticed the prolongation of side effects to the bladder and rectum with the permanent placement of the radioactive material into the prostate with the use of LDR. At Tri-State Prostate Cancer Center, Evansville, Indiana we elected to utilize HDR brachytherapy with the temporary use of Iridium 192 combined with external radiation. A prospective trial in an attempt to decrease the side effects was initiated. HDR bracytherapy usually requires hospitalization and is delivered in multiple fractions but we elected to use HDR brachytherapy as an outpatient procedure in two insertions two weeks a part.

METHODS:



LDR Brachytherapy



HDR Brachytherapy

A team of urologists, radiation oncologists, medical physicists, anesthesiologists, and nursing staff cooperated in the delivery of HDR brachytherapy to the prostate gland involved with localized cancer. Patients with prostate cancer T1,2No received external beam radiation therapy to a tumor dose of 45 - 50.4 Gy. 3D conformal or intensity modulated (IMRT) planning was utilized. Four weeks following the completion of external radiation, patients are treated with HDR brachytherapy in two separate procedures separated by two weeks. The procedures utilize spinal anesthesia and the patient is placed in the lithotomy position. An ultrasound probe attached to a stabilizer along with a template is introduced into the rectum. Stainless steel needles (trocars) are inserted through the grid of the template following preplanned positions with adequate coverage of the prostate bilaterally and in a pattern to decrease the dose to the urethra and the rectum. The trocars are removed and plastic catheters with stainless steel inserters are placed into the path created by the trocars. The tip of the catheters are visualized just beyond the base plane to ensure adequate coverage of the full length of the prostate. Following the completion of all catheter insertions, the template is sutured to the perineum and the catheters locked in place by the template-locking device. A CT scan is obtained with contrast dye in the bladder to ensure all catheter tips are at the base plane and do not shift during patient mobilization. The catheters are marked in the secured position to ensure proper positioning in case of any sliding of the catheters. The CT images are transferred to the treatment planning computer

(Continued to page 2)

(Continued from page 1)

and an isodose plan is produced following desired optimization program. A real time program is produced to deliver 12 Gy to the peripheral zones with a minimum of 10 Gy to the prostatic capsule with a 0-2mm margin. We attempt to keep the dose to the urethra to less than 12 Gy and the dose to the anterior rectal wall 10 Gy. Upon approval of the desired isodose plan, the patient is placed into the HDR remote afterloader room and the machine is connected to the hollow plastic catheters placed in the prostate. Upon completion of delivery of Iriduim 192 radiation to the prostate, all catheters are removed and the patient released following urination.

RESULTS:

A group of 249 patients were treated with external radiation and HDR between January 2001 and December 2004. The toxicity results were compared to a retrospective group of 326 patients previously treated with LDR between January 1999 and September 2003. The toxicity was graded according to RTOG/EORTC definition as shown in Figure 1.

Figure 1

PROCEDURE	GU TOXICITY			GI TOXICITY		
	I	II	III	I	II	III
LDR	44%	13%	4%	9%	10%	5%
HDR	25%	7%	2%	5%	1%	0%

Three patients treated with LDR developed severe GI complications requiring surgical intervention of which one patient survived and two died. In our experience, HDR delivered a more uniform dose distribution throughout the prostate and avoided areas of hot spots as seen with LDR. This may explain the lower incidence of GU and GI toxicity noted with HDR. Furthermore, HDR enabled us to implant large prostate glands that were not feasible for adequate implantation with LDR. Biochemical failure was noted in 6% and 4% of patients in LDR and HDR groups respectively.

LDR vs. HDR Brachytherapy

LDR	HDR
1. Limited prostatic volume (<55 cc).	1. Treat small & large prostates.
2. Probability of non symmetric distribution with 'hot' & 'cold' spots.	2. Uniform radiation distribution throughout the whole prostate.
3. Risk of radiation exposure to physicians & staff.	3. No radioactivity exposure.
4. Seeds are permanently inserted in the prostate with risk of radiation exposure to others.	4. No radioactive material left in the prostate.
5. High cost of seeds.	5. Cost effective.
6. Chance for seed migration.	6. No seed migration.
7. Low dose radiation.	7. High intensity radiation.
8. Prolonged acute urinary & bowel side effects & increased late complications.	8. Short acute side effects & appreciable decrease of late complications.

Figure 2

CONCLUSION:

The combined use of external radiation therapy and HDR brachytherapy in the treatment of prostate cancer in our experience showed to be an effective method in treatment of prostate cancer. HDR bracytherapy could be delivered on an outpatient basis and is associated with minimum side effects and better patient tolerance. (See Figure 2.) Long term follow-up of such combined modality is necessary to ensure long term cancer control.

- Aly Razek, M.D., FACRO, Radiation Oncologist

Shannon Lamb, M.D.

Dr. Lamb is a Radiation Oncologist specializing in breast cancer treatment. She has been practicing medicine in the Tri-State area since 1977. Dr. Lamb graduated from the University of Louisville School of Medicine and completed her residency in Radiation Therapy at The Radiation Center in Louisville, Kentucky. She is board certified by the American Board of Radiology in Therapeutic Radiology.

Carcinoma of the Cervix

January was cervical cancer awareness month. The estimated number of new cases of invasive squamous cell carcinoma of the cervix for 2005 in the US is 10,370. This is not a huge number but the importance of this disease becomes more apparent with estimated deaths of 3, 710. Unfortunately this disease affects younger women with the peak age of 47 years. Half of the patients are less than 35 years of age at diagnosis and therefore significant number of deaths occur In the 20-40 age group.

Since the widespread use of the Pap smear in 1943, the mortality from cervical cancer has fallen dramatically. But screening is essential for early diagnosis and improved cure rates. The American Cancer Society recommends a pap smear and pelvic exam yearly beginning no later than 3 years after first vaginal intercourse (and no later than age 21). After age 30 women with 3 consecutive normal tests may go to every 2-3 year testing unless there are significant risk factors.

Cervical cancer follows a pattern of sexually transmitted disease with most cases associated with HPV (human papillomavirus). More than 70 subtypes of this virus have been isolated with types 16, 18, 31 and 33 being highly associated with invasive carcinoma. The risk factors for cervical carcinoma include early onset of sexual activity, multiple sexual partners, early pariety , sexually transmitted disease, cigarette smoking (immune dysfunction, not tobacco specific carcinogen) and HIV.

At least 80% of cases have squamous cell histology but adenocarcinoma pathology is definitely increasing. Lymphoma, sarcoma, melanoma and small cell make up a very small percentage of cases.

FIGO has defIned the most widely accepted staging system for carcinoma of the cervix.

International Federation of Gynecology and Obstetrics Staging of Carcinoma of the Cervix

Stage O	Carcinoma in situ, intraepithelial carcinoma; Cases of stage O should not be included in any therapeutic statistics for invasive carcinoma.
Stage I	The carcinoma is strictly confined to the cervix (extension to the corpus should be disregarded.)
Stage IA	Invasive cancer identified only microscopically. All gross lesions, even with superficial invasion, are stage IB cancers. Invasion is limited to measured stromal invasion with a maximum depth of 5 mm and no wider than 7 mm. (The depth of invasion should not be more than 5 mm taken from the base of the epithelium, either surface or glandular; from which it originates. Vascular space involvement, either venous or lymphatic, should not alter the staging.)
Stage IAI	Measured invasion of stroma no greater than 3 mm in depth and no wider than 7 mm.
Stage IA2	Measured invasion of stroma greater than 3 mm and rio greater than 5 mm in depth and no wider than 7 mm.
Stage IB	Clinical lesions confined tothe cervix or preclinical lesions greater than IA.
Stage IBI	Clinical lesions no greateithan 4 cm in size.
Stage IB2	Clinical lesions greater than 4 cm in size.
Stage II	The carcinoma extends beyond the cervix, but has not extended onto the pelvic wall; the carcinoma involves the vagina but not far as the lower third.
Stage IIA	No obvious parametrial involvement.
Stage IIB	Obvious parametrial involvement. The carcinoma has extended onto the pelvic wall; on rectal examination there is no cancer-free space between the tumor and the pelvic wall; the tumor involves the lower third of the vagina; all cases with a hydronephrosis or nonfunctioning kidney should be included, unless they are known to be due to another cause.
Stage III	No extension onto the pelvic wall, but involvement of the lower third of the vagina.
Stage IIIA	Extension onto the pelvic wall or h:ydronephrosis or nonfunctioning kidney.
Stage IIIB	The carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder or rectum.
StageIV	The carcinoma has extended beyond the true pelvis or has clinically involved the mucosa of the bladder or rectum.
Stage IVA	Spread of the growth to adjacent organs.
Stage IVB	Spread to distant organs.

Treatment depends on stage, tumor size, histology, lymph node status and risk factors for complications. However, as a rule, intraepithelial lesions are treated with superficial ablative techniques (cryosurgery, laser); microinvasive cancers invading less than 3 mm (Stage IA) are usually managed with conservative surgery (excisional conization or extra fascial hysterectomy); early invasive cancers (IA 2 & IB1) are generally treated with radical surgery or radiation; and locally advanced cancers (IB 2-IV A) are managed with radiation therapy.

The goal of radiation treatment is to sterilize disease in the cervix, paracervical tissues and regional lymph nodes in the pelvis. Patients are usually treated with a combination of external beam irradiation and brachytherapy (intracavitary radioactive implants). External beam irradiation delivers a homogenous dose to the primary tumor and potential sites of regional spread while brachytherapy optimizes high doses to the bulk of disease (cervix & paracervical tissue) and limits dose to sensitive GI structures. These implants - given via high dose rate 192 Iridium - are a critical element in the curative treatment of cervical cancer.

The control rates depend on the stage of disease. Stage I generally has a 90% 5 years survival while Stage IV A has only about a 30-35% survival rate. Stage II typically is favorable at approximately 80-85% and Stage III falls in the 70% control rate.

Data regarding chemo-radiation therapy have changed the standard of care for patient with locally advanced cervical cancer. Numerous trials with radiation sensitizing chemotherapy and radiotherapy have been done and are ongoing. Weekly Cisplatin for 6 weeks concurrently with radiation has shown increased survival over radiation alone (83% vs74% 3 year survival). So far, Cisplatin alone at low dose (40 mg/m2) with radiation is as good as combination drug regimens with RT. Until new agents or drug combinations are demonstrated to be superior, Cisplatin is the standard for combined chemo-radiation at this time.

- Shannon Lamb, M.D., Radiation Oncologist

Inserted into this issue of Regional Oncology Update is the front cover of The Environmental Protection Agency's SunWise Monitor, a national newsletter published quarterly by the EPA. The EPA spotlighted Robin Lawrence-Broesch, Director of Marketing at Evansville Cancer Center, as their SunWise Champion because of her ongoing efforts to increase the awareness of skin cancer through education and by coordinating free skin cancer screenings with local dermatologists.