



Revisiting Seed Brachytherapy: Indian Perspective

Dr. D.N. Sharma



Seed brachytherapy (SB) refers to the treatment of malignant diseases by placement of sealed radioactive sources near or within the tumor tissue. The physical characteristics of certain radioisotopes like Iodine-125, Palladium-103 (low average photon energy, short half life) make them amenable to be used as ideal sources for permanent SB. SB mostly is a single session treatment, does not require heavy equipments and is convenient to the patient (minimal in hospital stay and practically no radiation protection issues). Radiobiologically, SB has several advantages: very high tumor dose (reaching >150-200 Gray at times), biology equivalent to low dose rate and also minimal doses to normal tissues. Although practiced widely at several centers along the globe, is a time tested modality and also proven to be cost-effective; *non-believers* of SB has several reasons to disfavor this as an apt treatment option even for suitable patients. Some of these quoted limitations with SB are: limited availability, less control on dosimetry as compared to high dose rate brachytherapy, issues with seed migration and dislodgement etc.

SB has been used for various tumor sites either alone as monotherapy or in combination with surgery and or external beam radiotherapy (EBRT). Most common tumor sites treated with SB are prostate cancers, brain tumors, head and neck cancers, lung tumors, pancreatic cancers, gynecological malignancies, sarcomas (in that order). Whitmore and Hilaris performed retropubic implantation of I-125 in prostate cancers in 1970s. Transrectal Ultrasonography guided I-125 implantation was pioneered by Holm and Pederson in 1980s. Presently, SB is used either as monotherapy, in combina-

tion with EBRT or in salvage setting for prostate cancers. American Brachytherapy Society (ABS) has issued guidelines for Transrectal ultrasound guided permanent prostate brachytherapy and is mostly followed for this purpose [1]. SB alone has shown excellent results in low risk and selected intermediate risk patients and is a used in combination with EBRT for high risk prostate cancers. The diverse indications of SB is widening in the recent times. Intra-operative cesium-131 implants has shown excellent local control in patients with brain metastasis [2]. Iodine-125 implantation in lung metastatic lesions has been found to yield decent local control [3]. Apart from its uses in pancreatic cancers and head and neck cancers, Au-198 seeds have been used for centrally recurrent inoperable cases of carcinoma cervix and yields 2 year local control rates of around 40% [4]. Pignol et al [5] performed accelerated partial breast irradiation (APBI) in 134 suitable patients with palladium-103 and reported excellent outcomes at 5 years (recurrence rates <2%).

Globally, the use of SB has shown an increasing trend in clinical practice as noted in our literature based survey [6]. SB use has risen by 30% from 2010 to 2014 worldwide. Most commonly used radio-isotopes were Iodine-125 and Palladium-105 followed by Gold-198 and Caesium-131. Newer radioisotopes like Ytterbium-169 are also being used at some centers. The clinical use of seed brachytherapy has been very limited. I-125 Ocu-Prosta seeds were developed by Bhabha Atomic Research Center, Mumbai [7]. Khetan et al [8] used these seeds for management of intra-ocular tumors and reported it to be safe and effective based on their experience of 35 patients. However, the use of these indigenous seeds has remained limited including in prostate cancers for which these were developed. The incidence of prostate cancers is on the rise in India. It is the second

From AROI, ICRO office &
AROI Newsletter Editorial Board

Dear Friends,

This year we are going to bring out new directory, for that we need your small CV. Many members have sent their CV and those who have not send please send urgently.

It is needed for AROI Directory, circulation of Journal and identification in election.

This year we are going to start new teaching course:-

1st AROI Dr. Reddy's lab Post PG teaching course for post PG students up to 10 years experience in the month of Aug/Sept.

New AROI ESTRO course with the collaboration of ESTRO School on **Image Guided Cervix Cancer Radiotherapy- with special focus on adaptive Brachytherapy** in the month of Feb /March 2017.

With warm regards,

Dr. Rajesh Vashistha
Secretary General AROI

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most common cancer among males in cities like Delhi, Kolkata, and Pune and features among top ten cancers in rest of the registries and shows an increasing trend. The other sites like recurrent cervical cancers, head and neck cancers and brain tumors also would increase the clinical requirement of SB in India by many folds in times to come.

In summary, SB is a highly conformal form of radiotherapy with distinct radiobiological and clinical supremacy in selected tumor sites like prostate cancers. The use of SB is expanding to other tumor sites and it has been found to be both safe and effective. Despite having the potential as well as need of SB, the use has been very limited in Indian setting. Efforts needs to be made for continuous production and easier availability of seeds in order to optimize the use of SB. This would definitely benefit the patient community at large as well as give boost to teaching, training as well as research in this field.

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Dr. D.N. Sharma,
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Congratulations



Dr. Maitrik Mehta, Associate Professor of The Gujrat Cancer Research Institute, Ahmedabad, availed ESTRO Young School Mobility grant and attended IPO, Portugal to study '18 FDG_PET guided IMRT planning'. He learnt about role of Image Fusion in planning as well as dual energy IMRT, VMAT and SBRT planning. He will make use of knowledge and experience gained at IPO effectively at his parent institute.

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Our Orators for AROI National Conference 2016 at Bhubneswar

Dr. Anil Kumar Anand



Presently a resident of Delhi is Director, Radiation Oncology, Max Cancer Centre,, Max Hospital 2, Press Enclave Road, Saket, New Delhi-110017

He is in radiotherapy field for last 35 years.

He did his MBBS from DMC, Ludhiana followed by PG in Radiotherapy from PGI, Chandigarh in 1983.

He worked as Senior Consultant, Department of Radiation Therapy, Batra Hospital and Medical Research Center, New Delhi from 1991-2002. Till 2009 he worked as Co_ordinator & Senior Consultant, Radiation Oncology in RGCI, Delhi prior to joining Max Hospital as Director.

He got selected for Commonwealth Medical Scholarship (sponsored by British Council) and was attached to the Middlesex Hospital Medical School, London for specialized training in Radiotherapy of Head & Neck cancers, specially with electron beam. He visited various other hospitals in U.K. to get acquainted with various specialized treatments at: Royal Marsden Hospital, London (for Head & Neck Cancers) Hammersmith Hospital, London (for whole body electron treatment) St. Bartholomew's Hospital, London (for childhood Cancers). Clatter bridge Hospital, Liverpool (for Neutron Therapy in Pelvic, Head & Neck Cancers)

In 1996, he was selected for prestigious 'Nargis Dutt foundation fellowship' for specialized training in Brachytherapy at the New York hospital medical centre of Queens, New York affiliated to Cornell University.

He has several publications in national and International Journals.

Philip Poortmans, M.D., Ph. D.

Born in 1961 in Herentals, Belgium, Philip completed medical studies at the University of Antwerp, in 1986, Later he was trained as a radiation oncologist at the Middelheim and Vincentius Hospitals in Antwerp. After a short stay in Turnhout, Belgium, he started working as a radiation oncologist in Tilburg in 1991 and in 2014, moved to Nijmegen to chair the depart-

ment of radiation oncology of the Radboud University Medical Centre.

Personally he is especially interested in breast cancer, quality assurance in clinical trials, malignant lymphoma and rare tumours. Most of his publications focus on these topics. He completed his Ph.D. thesis on quality assurance in clinical trials in breast cancer in 2005 at the University of Maastricht with Philippe Lambin and Walter Van den Bogaert as promoters.

In 2005, H was elected as councillor of the board of ESTRO for a term of 3 years. For 3 years, starting in 2007, he was the representative for radiation oncology in the Multidisciplinary Oncology Committee of ESMO. He became president ESTRO from 2014-2016.



Other activities include membership of the editorial boards of Radiotherapy and Oncology, The Breast

(specialty editor for radiation oncology), Cancer Radiothérapie, Egyptian Journal of Oncology, Revista de Senologia y Patologia Mamaria (associate editor) and Reports of Practical Oncology and Radiotherapy, membership of scientific committees, international advisory boards and other active contributions to a number of conferences, teaching courses and workshops or as reviewer for several journals and trial organisations.

For some years now, my involvement in teaching is becoming relatively more important. Internationally, in the framework of the ESTRO School of Radiotherapy and Oncology, I serve as course director of the annual teaching course "Multidisciplinary Management of Breast Cancer", as liaison person for all multidisciplinary course and as core member of the Educational and Teaching Committee.

All this leads of course to the so-called "scientific output", for which I refer to PubMed (<http://www.ncbi.nlm.nih.gov/sites/entrez>). Apart from these articles, I wrote a number of other papers and contributed actively to a few book chapters. In 2012, the book "Technical Basis of Radiation Therapy. Practical Clinical Implications.", that I co-edited together with our

famous colleagues Seymour H. Levitt, James A. Purdy and Carlos A. Perez, was released by Springer.

I was granted the honorary membership of BVRO/ABRO (Belgian Society for Radiation Oncology) in 2012 and of ESSO (European Society of Surgical Oncology) in 2014. I was nominated as "Toparts" (Outstanding doctor) by the Dutch radiation oncologists in 2011 and 2012.

Yes, there is life next to radiation oncology! Therefore, I do try to reserve enough time for meaningful leisure. Most importantly, I like to spend 'quality time' with family and friends. I love to meet new people and explore new places while travelling, a pleasure I am often granted while participating in conferences and teaching courses. Sport wise I enjoy the physical labour of skiing, diving and cycling. As for the quiet moments of the day, I devote these to the experience and joy of wine tasting.

Dr. R K Vyas,



Presently a resident of Ahmedabad, is I/C Director Gujarat Cancer & Research Institute, Ahmedabad, Gujarat, India. He is in radiotherapy field for

last 30 years.

He did his MBBS from SPMC, Bikaner followed by PG in Radiotherapy in 1985.

He started his professional career as Senior Registrar, AIIMS, New Delhi in 1985 and became Professor, Radiotherapy in 1997 at GCRI, Ahmedabad where he is currently working.

As recipient of British Council fellowship, he worked as fellow in Weston park Memorial Hospital Sheffield, U.K. (July-Oct. 1994). He also worked as fellow under UICC fellowship at Mallinckrodt Institute of Radiology, St. Louis, U.S.A. (May-June, 1996).

He had training at Prince of Wales Hospital, Sydney, Australia (April, 1998).

Recently he also got AROI travel grant for Training at CBCC, USA 2011

He has over 50 publications in international and Indian journals

Program Reports

Best of ASTRO India

Best of ASTRO India was held on 14th-15th May, 2016 in collaboration with AROI by Division of Radiation Oncology, Medanta the Medicity at Gurgaon. It was attended by eminent Radiation, Medical and Surgical Oncologists from all over the world. The guest faculty included renowned National and International. Radiation Oncologists.

A total of 12 tracks were presented from ASTRO-2015. Each track was site-specific with 6-7 speakers. 10 case discussions and a panel discussion for 7 tracks was also conducted. Over 240 registrations were done, besides participation by the industry with 18 exhibition stalls.

The Conference was remarkable for the attendance by the audience through-out two days and for interactive sessions. The Chairpersons and faculty made it possible to keep time for all sessions and allow questions from the audience, an arduous task, very ably conducted!



The conference was inaugurated by Dr. Naresh Trehan, CMD, Medanta and the Chief patron for Best of ASTRO India on 14th May, 2016. In his inaugural address he congratulated AROI for bringing Best of ASTRO to India and he encouraged the participants should start presenting Indian data at National/International fora as Indians have the best brains.

The Organizing Committee/Scientific Committee and the Core Committee for Best of ASTRO, India deserves compliments for conference in a short span of 10 weeks.

As the Organizing secretary I am grateful to our Organizing Chairman, Dr Rajesh Vashistha, for helping us negotiate the weeks preceding the conference in a pro-active manner and co-ordinating with ASTRO Education Committee .

Dr. Tejinder Kataria

Honorary D.Sc. Degree Awarded to Dr. G. K. Rath

Dr. G. K. Rath, Head National Cancer Institute, AIIMS, New Delhi was awarded honorary degree of Doctor of Science (D.Sc.) on 12th April 2016 in 10th Convocation ceremony of Pravara Institute of Medical Sciences - DU Loni. He was invited as the chief guest of 10th Convocation ceremony of the PIMS-DU. Where he addressed the august gathering of more than 500 Under graduate and Post graduate students of various constituent colleges along with their parents, aca-

demical council members and all the staff of Pravara Institute of Medical Sciences – DU. Honorary D.Sc. Degree was awarded to Dr. G. K. Rath for his outstanding contribution in the field of oncology by Honorable chancellor Dr. Vijay Kelkar, the Padmavibhushan awardee. Other dignitaries Honorable Shri Balasaheb Vikhe patil, the Padmabhushan awardee, Vice Chancellor Dr. S. D. Dalvi, Shri. Rajendra Vikhe Patil, CEO, PIMS were also present. After the ceremony, sir was in the Department of Radiotherapy & Oncology with PG students and had a great group discussion on various aspects of Radiation Oncology.



By Dr. Vandana Jain,
Prof. & Head, Department of Radiotherapy, RMC, PIMS, Loni

Prof. S K Shrivastava gets OSOCON Oration Award-2016

Odiisha Society of Oncology, formed in the year 2008 with over 108 members works towards sharing of knowledge among its members and render the awareness program against cancer among the public and extend the helping hand to the poor & needy patient of Odisha state.

This year award OSOCON Oration Award-2016 was bestowed to. Prof. Shyam Kishore Shrivastava, Head, Department of Radiation Oncology, Tata Memorial Hospital, Mumbai. on 28th March, 2016 in the temple city Bhubaneswar by Hon'ble Vice-chancellor, Utkal University.



Prof. Dr. Shrivastava's oration lecture on "Role of precision radiotherapy in present era" was highly appreciated and was most beneficial for the post-graduate student of the Oncology.

AROI signs MOU with ESTRO

AROI has entered into MoU with ESTRO for 3 more years for conducting teaching program in India recently on 30-April-2016.

Dr. Ramesh S. Bilimagga, Chair international, collaboration has signed this MoU on behalf of AROI with ESTRO President Dr. Philip Poortmans.



22nd ICRO Teaching programme

It was held successfully at ATRCC, Bikaner on 16th & 17th April 2016. This year's topic was Head and Neck Malignancy. A good academic discussion and medical education programme took place. It was attended by approx 100 PG Students from all over India along with renowned National and International faculties from TMH, AFMC Pune, GCRI, Ahmedabad, Kidwai Cancer Institute, RCC Kuttak, Shimla Cancer Institute. SGPGI Lucknow, Indore and Varanasi. Institute looks forward for arranging such teaching



programme in future also.

Radiobiology Course held at RCC, Trivandrum

Radiobiology, the basic essence of radiotherapy, has always been a difficult subject for the radiation oncology residents. There are only very few resource persons in the country to handle this topic. Regional Cancer Centre, Trivandrum arranged a one day teaching programme on radiobiology on 30th April 2016 for the benefit of the radiotherapy post graduates in Kerala. This programme was attended by more than 60 participants including junior consultants. Prof. Manoj Gupta from Indira Gandhi Medi-



cal College, Shimla was the faculty. He has a passion in conducting lectures in this subject. He taught the practical aspect of radiobiology in a nutshell, starting from the basic concepts, its application in day-to-day clinical practice, to the recent advances in this field. His presentation was very interesting and informative. He taught this tough subject in such a way that the students could understand it easily. The feedback from our students was excellent. We are planning to conduct similar lectures for the postgraduates in radiotherapy in future.

Jupiter Hospital holds a Teaching Course

On may 7 and 8th 2016 a teaching programme on general and advances in radiation physics was successfully conducted by Jupiter Hospital, Thane The course was taken by Dr Rajiv Sarin



sir and Dr. Sai S Subramaniam. A total of 45 students attended the course at our hospital

Congratulations: 22nd ICRO Teaching Course Winners

Ajay Sasidharan, TMH, Mumbai, V. Pradeep, AIIMS, New Delhi

AROI Fellowships/Grants/Awards

S.No.	Name of Fellowship	Nos	For	Age Group (Years)	Fellow-ship Grant (in Rs)	Basis	LM AROI since (Yrs)	Min. Papers	Regularly Attending AROI conferences	Already availed fellowship in last 5 years
Overseas										
1.1	AROI- Kirloskar Therapeutics	2	Radiation Oncologists	>50	1.5 Lakhs	MD/ DNB	10	5	yes	No
1.2	AROI Fellowship	2/3	Radiation Oncologists	41-50	1.5 Lakhs	MD/DNB	10	5	yes	No
1.3	AROI Fellowship	2/3	Radiation Oncologists	35-40	1 Lakh	MD/DNB	5	5	yes	No
2. Within India 4										
2.1	AROI	2	Radiation Oncologists	30-35	50,000	MD/DNB	3	Presenting Paper in the Conference	yes	No
2.2	AROI	1	Medical Physicist	<40	20,000	DRP/MSc (MP)	2		Yes	No
2.3	AROI	1	Radiation Oncologists	< 35	20,000	MD/ DNB	3		-	-
2.4	AROI	1	RT Technologist	<45	10,000	AERB certified	yes			No
2.5	Neil Joseph Fellowship	5	Radiation Oncologists		15,000	Student MD/DNB	yes	Presenting Paper in Conf		
3 Best Paper										
3.1	Best Preferred Paper for Senior Members	1	Radiation Oncologists	40-50		Post MD/ DNB >10 Yr	10-15	To be decided In conf. upon Presentation		
3.2	Best Preferred Paper Senior Members	1	Radiation Oncologists	35-40		Post MD/ DNB 5-10 yr	5-10	Condition As above		
3.3	Dr. G C Pant Young Doctor Award	1	Radiation Oncologists Post MD/DNB	<40	20000 for fellowship + plaque	Post MD/ DNB 3 yrs	3	Condition As above		
3.4	Dr. M S Gujral Gold Medal	1	Radiation Oncologists Doing MD/DNB		10000 + Medal		yes	Condition As above		
3.5	Dr. M C Pant Gold Medal	1	Radiation Oncologists		7500 + Medal		yes	Condition As above		
3.6	Gold Medal Medical Physics	1	Medical Physicist/ Radiation oncologist with physicist	<30	7500	DRP/MSc in Med. Phy. and MD/DNB	yes	Condition As above		

Conditions

- Applicants have to send a copy of date of birth certificate.
- Applicants to send a copy of the publications mentioned under each Fellowship
- Self certified proclamation that they are working full time in radiotherapy.
- Fellowship amount will be given to candidates from money received from sponsors after tax deduction and 15% contribution to AROI fund.
- All the applications for fellowship/ best paper awards be sent along with the letter from head of department/ institute to the office of Secretary General AROI by 5 PM, August 31st

2016.

- No Objection certificate from their head of Department if selected to go for fellowship. drvashistha@gmail.com
- PG Students shall send their certificates through Head of the Department.
- For the best paper award, applications should be sent along with the full paper. (soft copy by email & hard copy by post)
- Abstract along with the letter from the head of dept. for publication in JCRT should be sent along with the paper.
- For fellowship more then 35 years age cate-

gory should be member of ICRO.

- Applicants to send softcopy also thru email.

Mailing address:

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National / international**July 2016**

8-10 FOURTH HN FORUM ON ORAL CANCER
Patel Superspeciality Hospital, Jalandhar
Dr Shomit Chopra, Ph: 08146299899. drshomit@gmail.com

9-10 **International Cancer Congress**
Dr. Ajay Mehta, Organizing Secretary
ajayonco@hotmail.com

30-31 23rd ICRO Teaching Course
Aurangabad

Aug 2016

26-28 6th Annual Conf. of Indian Brachytherapy Society
Dr. Kamakshi Memorial Hospital, Chennai
Dr. V. Srinivasan (Organising secretary)
Mobile: 9841022366 Email: ibscon2016@gmail.com

Sept 2016

16 4th Fortis Radiation Oncology annual
Fortis Memorial Research Institute (FMRI), Gurgaon
Contact; Ms. Monica Sethi Mob. 9582078117, 9582082961.
Email: fmriradoncannual@gmail.com

Oct 2016

15-16 NZAROICON, 2016, GGSMCH, Faridkot
Organizing Secretary ; nzaroifdk2016@gmail.com

20-22 UAE Cancer Congress
Email : uaecancercongress@mci-group.com

Nov 2016

18-20 AMPICON 2016, KIMS, Secunderabad

24-27 AROICON, 2016, Cuttack, <http://www.aroicon2016.com/>
Organising Secretary, Dr. Surendranath Senapati
snsenapati2007@gmail.com

Dec 2016

6-10 AROI ESTRO teaching course
Dr. Sumit Basu drsumeetbasu@gmail.com Cell: +91 9860721029

Jan 2017

28-29 **Young Radiation Oncology Forum (YORF) 2017**
Dr. Shankar Vangipuram, GCC, Udaipur
Phone: +91-80031-54436 drshankarvangipurapu@gmail.com

Other events to look forward (Final dates to be announced later)

ICC 2017, Bangalore Tentative Date: November 2017

Prof. RAMESH S BILIMAGGA,

Mob:+91-9845365315 ; bilimaga@gmail.com

YROC Winners**BEST PAPER:**

- 1) DR VIBHAY PAREEK-
JUPITER HOSPITAL THANE
- 2) DR RAMA VAGHMARE-
NIZAMS HYDERABAD
- 3) DR SEETHA MOHANDAS-
RCC TRIVANDRUM

BEST POSTER:

- 1)DR MOHAMMED AFSAL K
RCC TRIVANDRUM
- 2) DR R KI POTHAMSETTY-
KNMH,ALLAHABAD
- 3) DR ANUPAMA DARAPUCMC
VELLORE

Congratulation to all young radiation oncologists on award of fellowships and prizes. Wow!

CONGRATULATIONS**Dr. Pooja completes ESTRO Transfer Mobility Grant at England**

Dr. Pooja Nandwani Patel, Associate Professor, Department of Radiation Oncology, GCRI, Ahmedabad, completed training on IMAGE GUIDED RADIATION THERAPY (IGRT) at Freeman Hospital, Newcastle, England, United Kingdom from 22nd September to 1st October 2015 under Fellowship from ESTRO Transfer Mobility Grant 2015.



BMJ 2016;354:



Page 1 of 2

Kudos to Dr. Akhil Kapoor, ATRCTRC, Bikaner on publication of his article in BMJ on plight of cancer patients in Malwa region.

VIEWS & REVIEWS**PERSONAL VIEW****A train offers hope to Punjab's patients with cancer but it isn't enough**

Dr. Akhil Kapoor, a resident of Varanasi, begs Royal Marsden Hospital fellowship for insight study on "Advance Treatment Planning in Gynaecological and Skin malignancies".

**1st AROI-Dr. Reddy's Post PG (upto 10 years) teaching Course under ICRO in Aug/Sept. 2016**

We are going to organise one & half day Post PG teaching programme up to 10 years experience. Under ICRO: - **AROI-Dr Reddy's Lab Post PG Teaching Course**, scientific programme is finalised by ICRO

Dr. Reddy's Lab will take care of faculty members and two lunches and one dinner.

For the convenience of candidates the programme is divided in four Zone:-

South Zone

1. Telangana, 2. Andhra Pradesh, 3. Kerla, 4. Karnataka
5. TN & Pondicherry

West Zone

1. Rajasthan, 2. MP, 3. Gujarat, 4. Maharashtra, 5.

Chhattisgarh, 6. Goa

North Zone

- 1.J & K, 2. Himachal, 3. Punjab, 4. Haryana, 5. Delhi, 6. Uttarakhand, 7. U P

East Zone

1. Bihar, 2.Jharkhand, 3.Orissa, 4. West Bengal, 5.Sikkim 6. Assam, 7.Arunachal Pradesh, 8.Meghalaya, 9. Manipur, 10. Nagaland, 11.Tripura, 12.Mizoram

Tentatively programme is fixed in Aug-Sept (Sat-Sun). Those who want to hold, please inform us through your Zonal/state chapter with tentative date urgently. The host institute should have good auditorium with audiovisual facility.

Learning with visual graphics

Our brains retain more information if we add visuals to text which we want to learn. Dr. Patro has been working on this learning methodology for quite sometime. He has come up with series of posters/slides which help in retaining the information for longer periods with faster recalls. Learn with fun!

AROMATASE INHIBITORS
BISPHOSPHONATES
CALCIUM

ABC PROTOCOL

WHILE PRESCRIBING AROMATASE INHIBITORS FOR POSTMENOPAUSAL HORMONE RECEPTOR POSITIVE BREAST CANCER PATIENTS, DO NOT FORGET TO PRESCRIBE ONE OF THE BISPHOSPHONATES AND CALCIUM TO MAINTAIN BONE DENSITY [ANTI RESORPTIVE THERAPY]

Ref-CEPA. M et. al. Acta Reumatol Port, 2015 OCTOBER-DECEMBER

ONCOLOGY CARTOON-BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

S₂ AND S₃ junction —origin of piriformis muscle

CONFUSED ABOUT S2 AND S3 JUNCTION TO DELINEATE PRECASCAL NODES

If the Presacral lymph nodes are included, the CTV should not be split, and at the midline a 1.5 cm margin between the anterior border of the CTV and the anterior border of the vertebral body or sacrum should be maintained. The Presacral lymph node coverage should discontinue when the piriformis muscle is clearly visualized (approximately the inferior border of S2).

Figure 4) In patients requiring presacral lymph node irradiation, the presacral lymph node coverage should discontinue when the piriformis muscle is clearly visualized (approximately the inferior border of S2). The CTV should be disconnected into two volumes at this level. and

Ref- William Small Jr et. al., IJROBP, 2008

ONCOLOGY CARTOON-BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

DREAM PROTOCOL

DEKA
RANITIDINE
EPTOIN [SOS]
ANTIEMETIC
MANNITOL

PATIENTS OF PRIMARY BRAIN TUMORS OR PATIENTS WITH BRAIN METS HAVING RAISED INTRACRANIAL TENSION AND LOW PFS DREAM PROTOCOL CAN BE STARTED IMMEDIATELY. IT WILL IMPROVE THE PFS. DRAMATICALLY.

Ref-Le Rhun É et. al. Cancer Radiotherapy, Jan 2015

ONCOLOGY CARTOON-BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

YOU HAVE A PROBLEM CALLED OSTEOCROSIS OF JAW

SIR, I AM TAKING BISPHOSPHONATES AS PER ADVICE AND HAVING DENTAL PAIN

SIR WHY YOU HAVE NOT SENT ME FOR EVALUATION BEFORE?

ALWAYS CONSIDER DENTAL EVALUATION BEFORE STARTING A BISPHOSPHATE

Ref-Gupta S et. al. National journal of maxillofacial surgery, JULY 2013

ONCOLOGY CARTOON-BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

PIGNATTI'S CRITERIA-DECISION ABOUT ADJUVANT RADIATION FOR LOW GRADE GLIOMA

When you are in confusion Not only recall my name but also think about SWIPE

- S- Size >6cm
- A- ASTRO component
- D- Deficit before sx
- A- Age >40
- M- midline shift
- S-Spectroscopy activity
- W-Wish [patient]
- I- Index MIB >6%
- P- Perfusion [inc]
- E-Enhancement [cont]

*PIGNATTI'S CRITERIA are used to assist in decision making for observation For low grade glioma. *if more than 2 criteria are present then patients to be offered immediate radiotherapy.

Ref- Pignatti F et. al. JCO, 2002

ONCOLOGY COMIC-BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

Response to last issue question

Radiation induced Immunotherapy, your story.

Cancer treatment has always been a challenge since the days man set his feet on moon soil. With so many treatment armaments up in his sleeve, it is still a challenge for oncologists to tackle certain types of cancer after decades of research and advancements.

Lately US President Barrack Obama announced establishment of a new 'National Cancer Moonshot Initiative' to make more therapies available to more patients and one of the fields in which biggest investments will be made is 'Immunotherapies and Combination Therapies' extended particularly to all solid tumors where it is more effective. More research will be done to understand how to use immune system to modify cancer cells and their activities.

Radiation and Immunotherapy could become a synergetic combination of cancer therapy in near future as we make inroads through research how these two techniques can compliment each other.

Our prior understanding of radiation treatment is based on tumor cells redistribution in cycles, repopulation, reoxygenation, repair of DNA damage etc. Similarly when Immunotherapy is applied, certain tumor cells will not respond due to antigenic mutations or the immune-evasive properties of cancers.

Challenge lies in how therapeutic reach of each can be enhanced by complimenting each other technique in routine practice.

It has been observed during Radiotherapy that when we give ablative dose to tumor cells resulting in mutation of the hit cells, unirradiated

cells in vicinity show genotoxic response, 'bystander effect', kind of death signals to neighbouring tumor cells though may not be in direct radiation field.

And disappearance/shrinkage of the distant metastatic growth due to abscopal effect which researchers have suggested that this may be due to activation of the immune system in which T-cell and dendritic cells are supposed to play active role.

From immunotherapy point of view, cancer cells are in one of the stages of response, either elimination, or equilibrium, or escape.

Radiotherapy can disturb the equilibrium stage by increased antigenic expression, or release cytokines to recruit immune cells, or induce death receptors, or promote antigen cross-presentation and T-cell activation. And by doing this, RT may shift the tumor immune system balance towards elimination. Ongoing trials in this direction may benefit certain subgroup of patients.

Question of this issue

Please send your reply for publication in next issue of AROI newsletter to deepak.arora3@maxhealthcare.com

Enhancing role of Image fusion in delineation of targets and OARS, your comments?