Association of Radiation Oncologists of India

NEWSLETTER

S A M P A N D A N

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Exploring New Concepts in Brachytherapy

Dr. Ashutosh Mukherji

Brachytherapy literally means treating up close or when the source is located in or on the patient's body and has often been an unsung hero in the treatment of cancer patients. In India, cancers of the head and neck region and the cervix account for more than half of all registered cases in most cancer centres. In both these tumours, local control is the most significant prognostic indicator of survival and brachytherapy represents an excellent method of delivering high doses to the target volume while sharply limiting dose to the surrounding organs. [1]

Brachytherapy has often been labeled as the "poor man's IMRT" and its competent practice requires both good training and experience. In the age of an increasing penetration of modern linear accelerators into most cancer centres, many radiation oncologists find it easier to obtain required dose distributions through the use of modern techniques such as IMRT and VMAT. However while these techniques have offered a huge potential in the successful delivery of radiation in various sites and have helped achieve higher doses with less sequelae, it must also be remembered that the radiobiological advantages of brachytherapy cannot be simply wished away. In fact the very technological advances in EBRT that have brought in a "revolution" in dose delivery and conformity have also helped bring on a big change in brachytherapy practice. In the last few years, cutting-edge research has occurred in the field of brachytherapy, with the introduction of improved dosimetric techniques, imaging, and treatments.

High Dose Rate versus Low Dose rate:

LDR brachytherapy usually involves manual after-loading of brachytherapy catheters/ devices or the surgical placement of sealed radiation sources directly in or near the area being treated while in HDR brachytherapy, the catheters or applicators are placed in the desired configuration in the target volume and then connected to the machine. The dose is delivered by a single stepping source which travels through the catheters by means of a pneumatic device and is remotely controlled. The key benefits of HDR brachytherapy include patient convenience and avoidance of radiation exposure for hospital personnel and patients can potentially be treated as out-patients with treatment times lasting only a few minutes. The present trend toward HDR is a result of the enhanced control of dose delivery, the decrease in radiation safety concerns, and the potential for outpatient treatment.

Cobalt-60 HDR versus iridium-192 HDR systems:

The increasing use of Iridium-192 (Ir-192) and its gradual replacement of Caesium as the preferred after-loading source for brachytherapy was because of its high specific activity which allowed fabrication of very small sized sources. Also the small size of the sources allowed for the fabrication of thinner needles for implant and hence less tissue damage during the implant procedure. The only major disadvantage with Ir-192 is its half of 74 days which means that a source exchange is required each 3-4 months. In the last few years, new HDR after-loaders have been introduced using Co-60 instead Ir-192. These initially were bigger in size and were not immediately popular; but now the newest types of sources are of the same size as Ir-192 with the advantage of higher specific activity and longer half-life.

The cobalt source has the advantage of higher air kerma rate constant consistent

From AROI, ICRO office & AROI Newsletter Editorial Board

Dear Friends,

As you all know, new directory of members is under compilation, more than 70% members have sent their CV with latest addresses .

Those of you who have not done are requested to send the updated CV at earliest so that directory could be releases at stipulated time.

Annual conference is just around the corner, please do whole hearted participation to make it a grand success.

Also next quarter is full of festivals, we wish you a great time ahead and convey our seasons greetings.

Please do give us regular feedback on different courses, meets and workshops so that contents could be made more relevant and updated as per needs.

Let us together make AROI a success.

With warm regards,

Dr. Rajesh Vashistha
Secretary General AROI

Inside this issue:

with Co-60 and compared to Ir-192, the aimed source strength for Co-60 can be achieved with lower activity. (1 GBq Co-60 is equivalent to 2.77 GBq Ir-192). Nominal values of activity currently available on the market are 370 GBq for Ir-192 and 74 GBq for Co-60 (model Co0.A86, Eckert & Ziegler BEBIG). Co-60 has a higher mean energy (1.25 MeV) than Ir-192 (0.355 MeV) and according to recent TG-43-data, the dose rate of Co-60, proceeding below Ir-192, shows a cross-over just only at a distance of approximately 25 cm, where the dose rate conforming to the inverse square law drops to less than 0.2%. Supporters of Ir-192 systems however point out that the specific activity of the Ir-192 is much higher than C0-60 (370 GBq vs 74 GBq) resulting in nearly 1.7 times shorter treatment time for Ir-192. Also the higher mean energy of cobalt source means higher tissue penetration and hence higher cost of radiation protection. On the other hand, analysis of dose distributions and by application of TG-43 data, it has been seen that on comparing doses in areas outside the treated volume, Ir-192 treated patients had higher doses than Co-60 treated patients at shorter distances from the treated volume; while at larger distances, Co-60 treated patients had higher doses than Ir-192 treated patients (Venselaar et al) [2]. The overall result is an 18% lower effective dose per clinical absorbed dose from a Co-60 source. The cost of higher radiation protection for a Co-60 source should also be assessed in comparison to the higher cost of maintenance of Ir-192 sources with replacements every 3-6 months with its attendant cost of source, customs, transport and replacement as well as work days lost due to recalibration and dosimetry.

Target Volume:

Up to nearly a decade back, both intra-cavitory and interstitial brachytherapy practice was guided by use of X-rays for monitoring placement of needles and applicators. Intra-luminal brachytherapy depended on fluoroscopy to monitor coverage of luminal lesion extent; while surface moulds were applied using standard dose calculation formulae. These based on past experience had led to the postulation of various rules for dose prescription and delivery (Paris rules, ICRU-38). However there was little information for the clinician on the volume of target tissue receiving various doses and it was difficult to predict sequelae. With the advent of CT- and MR-guided brachytherapy application, more information is now available regarding the target volume as well as normal tissue surrounding the tumour. With better tumour tissue definition by imaging modalities, near target volumes have been defined such as GTV_D and the GTV_B which is gross imaged / examined disease at the time of diagnosis and just before brachytherapy respectively. [3] These assume importance whenever a course of external beam radiotherapy has been incorporated in a treatment regime and there is shrinkage of the tumour tissue before brachytherapy. This helps determine the CTV with the GTV_B becoming the CTV-HR and the GTV_D becoming the CTV-IR. [3] In surface brachytherapy, CT or MR scans help in determining the depth of the target lesion and thereby help determine the prescription isodose. Furthermore, use of newer imaging modalities can help in determination of choice of isodose for dose coverage as well as choose location of hot spots (PET-hot areas or GTV_B).

Treatment Planning:

Use of new imaging modalities in brachytherapy can help in proper identification of catheter or applicator placement as well as in helping obtain a good evaluation of the target volume and surrounding organs at risk. Optimisation of source position and dwell times can then be better done on the basis of dose distributions obtained in the CT picture and an optimum isodose which adequately covers the target volume can be selected. CT imaging also helps locating the hot spots which can be retained or further optimized depending on their location and therefore usefulness towards the overall therapy plan. For example if a PET CT shows an active spot in a part of the target volume, the dose distribution can be optimized so that the hot-spot lies in this PET active part.

Interstitial brachytherapy is an excellent technique for obtaining high doses in the target volume alone without exposing surrounding structures to significant dosages.[1] However cases have to be properly selected with respect to volume of implant and distance from any critical structure. Pernot et al. [4] has described the importance of a safety margin around the tumor surface on basis of outcome of 448 tongue cancer implants, and Siebert et al. has underlined the importance of the use of the Paris System geometry in individually optimized dose distributions [5]. Inspite of all optimization techniques, however, the clinician must understand that the distribution can be obtained only a good implant and wrong placements cannot be corrected beyond a point. CT-imaging can help in restricting higher dose isodoses (greater than 150%) to within the needles or inside as minimum of tissue as possible.

Similarly surface mould brachytherapy and intra-luminal brachytherapy have been traditionally practiced by approximating the prepared customized mould or intra-luminal applicator with the target lesion and prescribing the dose as per standard rules (Manchester rules for moulds and 0.5 cm from the applicator surface for intra-luminal). The use of CT-based planning has changed greatly such standard planning. Planning and prescription can now be individualized based on the dose distribution obtained. It has been this author's own experience both with surface moulds and intra-luminal applicators that the area enclosed by the150% isodose can be limited to less than 10% and that by the 200% line to within the mould. [6] This will help keep tissue reactions to a minimum. In our Institute, we have experimented with thermoplastics as a base frame for applying dental wax and have found that the resulting moulds were more malleable, could approximate tissue surfaces much better, were more tensile, and compared to wax only moulds were thinner (5-6 mm compared to 1-1.2 cm) and thus caused less discomfort to the patients.

Good Results with well guided techniques:

The Hungarian National Institute of Oncology published the results of their long-term study of HDR-BT as a boost following surgery and found that after studying nearly 100 patients that inter-

Our Orators

stitial HDR-BT boost yielded a low incidence of late side effects with local tumor control rates that are similar to percutaneous boost techniques.[7] Similar results have been reported by the GEC-ESTRO group. These studies as well as the study by the NSABP39/RTOG group [8] laid the basis for APBI. Also the advantage of adding brachytherapy in the treatment of soft tissue sarcomas has been reported by Pisters et al. [9] Similarly in studies were done in nasopharyngeal cancer by the IAEA and by the Rotterdam group. While the IAEA reported no significant improvement in survival with the addition of brachytherapy to a chemo-radiation schedule, the Rotterdam group reported significant differences in local control in T1 -T2N+ tumors, thus confirming the results of previous studies from East Asia in patients with early local disease [10-12]. The authors of the Rotterdam group however maintained that for higher stage tumours (T3+) IMRT or stereotactic (SRT) boost method was associated with better outcomes. All these results from these various studies have been achieved with the use of optimum imaging and brachytherapy procedure guiding modalities.

Getting the Dose right:

With most brachytherapy applications now on HDR systems, commonly prescribed doses range from fraction sizes of 3 to 10 Gy. This can create confusion in the minds of the clinicians in calculating total doses especially when a brachytherapy regime has to be combined with an external beam regime. The radiobiological effects of standard EBRT doses and HDR brachy doses are different. Traditionally conversion factors used from LDR brachy was used with HDR dose being 0.6 of the LDR (which radio-biologically was considered equivalent to standard fractionation EBRT). Hence HDR brachy doses were multiplied by a factor of 1.4-1.6 to get an EBRT dose equivalent. However in the paper by Subir Nag et al [13], the authors have pointed out that fractionated HDR brachy follows Linear-quadratic principles at least till fraction sizes of 5-6 Gy, and also that the tumour tissue behaves differently from normal tissue in repair capabilities. Hence the LQ model can be used for calculated the 2Gy equivalent dose (EQD2) by using α/β values of 3 for normal tissues and 10 for most tumours. Recent data suggest α/β values of 2-3 for breast and 1.5-2 for prostate. [13] To this depending on whether EQD2 dose to tumour volume or organ at risk is being calculated, a Dose Modifying Factor or DMF is used (EQD2 calculated from BED_3 or BED_{10} is multiplied with the DMF to get the actual dose) which is the percent isodose line covering that particular volume.

Electronic Brachytherapy:

This is a new modality for skin brachytherapy and basically entails the placement of an HDR source or low energy photon beams (50 KV) directly in a skin applicator close to the skin surface combining the benefits of brachytherapy with those of low energy X-ray radiotherapy. Electronic brachytherapy does not use radionuclides and is advantageous over conventional brachytherapy for skin and superficial lesions in that there is a higher dose rate and hence the treatment time is reduced; and also because of low energy beams being used extensive radiation protection may not be required.

Conclusion:

Brachytherapy deserves more attention as a valuable and highly improved technique with unique advantages. The recent advent and integration of sophisticated radiation planning and imaging modalities has improved the quality of brachytherapy treatments, allowing for more conformal radiation delivery.

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For reference details and full text, approach author directly.

23rd ICRO PG Teaching Programme

The 23rd ICRO PG Teaching Programme was conducted in Pune on the 27th and 28th of August 2016, under the aegis of Indian College of Radiation Oncology (ICRO) and the Maharashtra State chapter of AROI (MS AROI). M. N. Budhrani Cancer Institute, a wing of Inlaks & Budhrani Hospital, Pune was the local host. It was a two day residential classroom teaching programme for second and third year PG residents in Radiation Oncology with a wide range of topics being covered from basic radiation physics to advanced techniques and novel treatment options followed by an assessment in the form of a quiz. Radiation Oncologists from various esteemed institutes across the country such as AERB, BARC Mumbai, TMH Mumbai, Institute of Medical Sciences BHU, SGPGI, Lucknow, Kidwai Memorial Institute of Oncology and many others attended same. It received an overwhelming response from all the PG Doctors whose attendance was a impressive 72 which included two residents from Nepal. It was much appreciated by the resident doctors and the faculty alike.

The host, Dr Gautam Sharan and his team at Inlaks and Budhrani Hospital is extremely grateful for being provided the opportunity to conduct such an important programme of the AROI which is supported by Sun Pharma.

Program Reports

ICC 2016, Changing Paradigm in Cancer Management

The Formal Inauguration of was held at the hands of Shri Nitinji Gadkari, Hon'ble Cabinet Minister in the august presence of Hon. Chandrashekhar Bawabkule, Guardian Minister and Mayor, NMC,Hon. Mr. Pravin Datke, on Saturday 9th July at 12 noon

This was followed by LIFE TIME Achievement Awards Presentation to **Dr Praful B Desai (Surgical Oncologist and former Director Tata Memorial Hospital, Mumbai), Padma Bhushan Dr Suresh H Adwani (Medical Oncologist ,Director Jaslok Hospital ,Mumbai), Dr Anita Borges (Surgical Onco Pathologist and Director SRL Diagnostic, Mumbai), Dr Harish Kulkarni (Radiation Oncologist and former Director, RST Cancer Hospital ,Nagpur) and Dr C Palanivelu (Minimally Invasive Surgical Oncologist and Chairman GEM Hospital and Research Centre, Coimbatore**)

Our main objective is to place this Congress at the forefront of development of knowledge for the prevention and treatment of cancer in the country said Dr. Ajay Mehta, Organizing Secretary, ICC, while making opening welcome speech and highlighted the need of updating and increasing knowledge from the experiences of world leaders in the field of cancer science of oncology.

Shri. Nitin Gadkari hailed the efforts of organizing team. Poor person should be and expressed that Poorest of poor should get the benefit of health care, more so when the cancer management is out of pocket for most of the people. He urged doctors to undertake research and make life comfortable for the sick.

Dr. Mrs. Suchitra Mehta, Treasurer of ICC, proposed the vote of thanks.

Patel Hospital Conference on Oral Cancer

Patel hospital had organized one of the biggest conferences on Oral Cancer on 8th to 10th July at Jalandhar under the aegis of AROI, FHNO, AOI-NWZ, ASI, IMA, AOMSI and APSI. In this conference all the senior faculty from various cancer hospitals participated.

The main highlights of the conference:

- The region's first hands-on head and neck cadaver dissection workshop saw enthusiastic participation by over 70 attendees.
- The pre-forum CME in conjunction with the IMA, members of the press and affiliated organizations saw over 150 participants. The entire event was well received by the press with main oration by Dr. G.K. Rath and Dr. Anil D'Cruz.
- The main multidisciplinary academic event saw extremely enthusiastic participation with over 400 attendees, who ensured a full house through the forum duration across two halls.

The forum was attended by renowned faculty from all specialties of Head and Neck cancer including: Dr. Anil D'Cruz(Head & Neck Surgery), Dr GK Rath (Radiation Oncology), Dr Harit Chaturvedi, Dr MK Mahajan, Dr David Tauro, Dr AK Anand, Dr Sapna Nangia, Dr Krishnakumar T, Dr Harpreet Singh, Dr Sarbani Ghosh Laskar, Dr Sanjoy Chatterjee, Dr Rakesh Kapoor, Dr DS Sandhu, Dr Amit Dhiman, Dr Subramania Iyer, Dr Ravi Mahajan, Dr Chanjiv Singh.

Reliance Group Hospitals to install 18 more Linacs, 1st EDGE installed at Mumbai

.Reliance group will set up high end 18 LINACS True Beam in each of their 18 centres and 1st three will come at Akola , Sholapur and Gondia. First Edge installation of Asia was inaugurated by the honourable Chief Minister in presence of the Ambani family.

Eminent Oncologists and guests were present during inauguration. Dr Giri emphasised the need of larger inclusion of high precision radiation in the teaching curriculum .Dr Vashistha emphasised that high precision radiotherapy is the need of the hour in India and we need to get our act together as Radiation Oncologists.

1st AROI Dr Reddy's Lab Post teaching Course, 10th-11th September 2016 at GCRI Ahmedabad

AROI 1st Primary Management Course for Radiotherapy was organized by DRL for budding radiation oncologists post MD 0-10 years on 10th and 11th September 2016 at GCS Medical College Ahmedabad and organized by Gujarat Cancer & Research Institute Ahmedabad headed by Course Chairman Dr R K Vyas and Course Coordinators Dr U Suryanarayana and Dr Pooja Nandwani Patel. ICRO and AROI Executive Committee Members alongwith faculity were present.

There were total 40 attendees who found the program very informative and brainstorming discussions on topics like setting up of new radiotherapy department, audits and housekeeping, documentation, setting up of research facility and various other didactic lectures followed by endless discussions.

The idea, lectures and faculties were well appreciated by attendees.

CRAB-E-CON DWITIYA a LUNG CANCER UPDATE

It was organised in Jammu on 3rd September, 2016 by LBN Radiations of Hope under Aegis of North Zone AROI and supported by Maharishi Dayanand Hospital & Medical Research Centre, Department of Biotechnology Shri Mata Vaishno Devi University and J & K Dharmarth Trust.

Dr Deepak Abrol gave a presentation of activities of LBN-ROH .

Dr G.K. Rath, Director BRAIRCH AIIMS & Director, National Cancer Institute delivered talk on India's Cancer Scenario, Dr Rakesh Kapoor Add. Medical Superintendent PGI Chd & Professor of Radiotherapy gave a talk on stereotactic Ablative Radiotherapy .

Dr Rajesh Vashisth, Secretary General AROI enlightened with talk on Role of NGO's in managing cancer. Padamshree Dr Ashok Vaid delivered a talk on Targeted therapy in LUNG Cancer while Dr Purvish Parikh president ICON gave an impressive talk on how to Manage Lung cancer

Hon'ble Minister Sh. Bali Bhagat, national faculty, Dr, Sabhyata Gupta (Medanta Gurgaon) and Dr Abhishek Shankar (aIIMS New Delhi) were felicitated during the conference.

Dr Manish Pandey General Secretary NZAROI and Dr A K Rathi President NZAROI were also felicitated on the occasion.

A pan India online essay competition was held in which three best entries were announced. Faculty and post Graduates from various institutes of India took active part in poster and oral presentation.

Dr Deepak Abrol (Organising Secretary) presented vote of thanks.

AROICON MP-CG Chapter 2016 at Indore

It was organized by Choithram Hospital & Research Center and Govt. Cancer Hospital, Indore on 30th & 31st July 2016. The conference marked the formation of MP-CG Chapter (independent from Gujarat). And more than 200 delegates attended the same. The best paper award was given to Dr. Pulkit Nag from SAIMS Medical College, Indore. GBM was held on 30th July, 2016 and office bearers for the newly formed Chapter were proposed and elected as follows, Dr. O.P. Singh, Bhopal (President). Dr. A. Kekre, Sr. Radiation Bhilai (vice president), Dr. Ramesh Arya

Indore (Secretary)l and Dr. Suruchi Singh,Indore (Treasurer). Conference organizing committee consisted of Dr. Fakhruddin (Chairperson), Organizing Secretary Dr. Suruchi Singh, & Treasurer Dr. Manish Siddha.

Dr. Sudhir Singh felicitated

Dr. Sudhir was felicitated for his good work in field of cancer by an NGO, Sewa Bharti and Excellence Award by KGMU, Lucknow for excellence in academic and research activities. Kudos to him on these achievement.

List of applicants for Awards and Fellowship

Name	Institute
Proferred Paper >40 years	
Dr. Meenu Gupta	CRI, SRHU, DEHRADUN
Dr. Deepak Abrol	GMC, Jammu
Proferred Paper <40 years	
Dr. Kuldeep Sharma	Tertiary Care Hospital, Delhi-NCR
Dr. Sudhir Silwal	Tata Medical Centre, Kolkata
Dr. Richa Chauhan	Mahavir Cancer Sansthan, Patn
Dr. Pankaj Agarwal	Max Hospital, Delhi
Dr. Sasikala	HCG curie centre of oncology
Dr. Kushal Narang	Medanta The Medicity, Gurgaon
Dr. G.C. Pant Best Paper Award	
Dr. Supriya Mallick	AIIMS, New Delhi
Dr. Jyoti Poddar	GCRI, Ahmedabad
Dr. R Kiran Pothamsetty	KNM Hospital, Allahabad
Dr. Richa Chauhan	Mahavir Cancer Sansthan, Patna
Dr. Pankaj Agarwal	Max Hospital, Delhi
Dr. Sugashwaran Sugash	KMIO, Bangalore
Dr. Sowmiya S	Max Hospital, Vaishali, Delhi
Dr. Amit Kumar	Meherbai TMH , Jamshedpur
Dr. Maitrik Mehta	GCRI, Ahmadabad
Dr. M.S. Gujral/Dr. M C Pant Best Paper Award	
Dr. Rony Benson	AIIMS, New Delhi
Dr. Indranil Khan	Medical College Kolkata
Dr. Nagarjuna Burela	BMCHRC, Jaipur
Dr. G.LAKSHMI DEEPTHI	PGIMER, Chandigarh
Dr. Sandhya Gowda	BMCRI, Bengaluru
Dr. Harsh Goyal	SAMC & PGI, INDORE
Dr Sneha Susanna George	CMCH Ludhiana
Dr .Pradeep Kumar K.N	SNMC AGRA
Dr. Navin Nayan	BBCI, Guwahati, Assam
Dr. Gunjesh Singh	VMMC and SJH, New Delhi
Dr. Karishma Tekta	MAMC,New Delhi
Dr. Saadvik RY	SAMC&GI, Indore
Dr. Bodhisattwa Dutta	Medical College, Kolkata
Dr. Christalsuji Shalini	Madras Medical College,Chennai
Dr. Manjari Shah	Max superspeciality hospital, Vaishali
Dr. Subeera Khan	GMC, NAGPUR
Dr. Jasti Vijay Krishna	GSIMC, Rajahmundry
Dr. Poulami Basu	MCH, Kolkata
Dr. Mangesh korde	JK Cancer Institute ,Kanpur
Dr. Preethi.A	MMC, Chennai
Dr. Khushboo Rastogi	RMCH, Ahmednagar
Dr. Rajiv Lochan Jena	MCH, Kolkata
Dr .Upasana Mukherjee	MCH, *Kolkata*
Dr. AD Sharma	GCRI,Ahmedabad
Dr. KARTICK RASTOGI	SMS Medical College, Jaipur
Dr. Debanti Banerjee	RGKMCH, Kolkata
Dr. Vibhay Pareek	Jupiter Hospital, Thane
Dr PULKIT NAG	SAIMS HOSPITAL, INDORE
Dr. Seetha Mohandas	RCC, Trivandrum
Dr. HB Singh	Dr. RMLIMS, Lucknow
Dr. Rishabh Sansi	VIMS, Bangalore
Dr Moumita Maity	RGKMCH, Kolkata
DR. BODHISATTA ROY	RGKMCH, Kolkata
Dr. Milan A	RCC, Thiruvananthapuram
Dr. Shreeya Pabi	Vydehi Hospital, Bangalore
Dr Satyajeet Rath	Dr RMLIMS, Lucknow
Dr. Rahul Bhowmick	RGKMCH, KOLKATA
Dr. R.K.Spartacus	SMSMCH, Jaipur
Dr. Narmadha Rathnasamy	Madras medical college, Chennai
Dr. Abhishek Basu	MEDICAL COLLEGE HOSPITAL, KOLKATA
Dr. Priyadarsini C	Madras mediacl College, Chennai
Medical Physicist	
Dr. Abhijit Mandal	IMS BHU, Varanasi
Dr Om Prakash Gurjar	SAIMS, Indore
Dr.S.Senthilkumar	GRH&MMC, Madurai
Fellowships	
Age group > 50 years (AROI-Kirloskar Technologies) :	
Dr. A K Rathi	LNJP, New Delhi
Dr. Dinesh Singh	Max Hospital, Vaishali
Dr. Harpreet Singh	Action Cancer Hospital, Delhi
Age group 40-50 year:	
Dr. Pavan Kumar Mehrotra	SRMS, IMS, Bareilly
Dr. Susan Mathews	RCC, Thiruvanthapuram
Dr. Sanjukta Padhi	AHRCC,CUTTACK
Dr. Daulat Singh	VCSGGIMS&R, Garhwal
Dr. Rahat Hadi	DrRMLIMS, Lucknow
Dr. Pritanjali Singh	AIIMS, Patna
Dr Preety Jain	GCH,Indore
Dr. P S Bhattacharyya	MGCH Visakhapatnam
Dr. Amit Kumar	MTMH , Jamshedpur
Age group 35-40 year:	
Dr. Supriya Mallick	AIIMS, New Delhi
Dr Pranabandhu Das	(SVIMS) UCC, Tirupati,
Dr. Vivek Tiwari	GMC, Bhopal
Dr Kuldeep Sharma	Artemis Hospitals, Gurgaon
Dr Amrut Kadam	Victoria Hosp, Bangalore
Dr. Sajjal Kakkar	Max Hospital, Mohali
Dr. Parveen Ahlawat	Action Cancer Hospital, New Delhi
Dr. Maitrik Mehta	GCRI, Ahmadabad
Age group < 35 year:	
Dr. Jyoti Poddar	GCRI, Ahmedabad
Dr. Saurabh Bansal	SRHU, Dehradun
Dr. Ravi Kiran Pothamsetty	KNM Hospital, Allahabad
Dr. Anupam Datta	JIPMER, Puducherry
Dr. Vibha Saluja	KNMH RCC, Allahabad
Dr. Abhishek Gulia	Max Saket Delhi
Dr. Chandra Prakash	Dr. RMLIMS, Lucknow
Dr. Sowmiya S	Max SS Hospital, Vaishali,
Dr. Isha Jaiswal	Dr. RMLIMS, Lucknow
Neil Joseph Fellowship for PG students	
Dr. PB Kainthaje	Dr.SMC Jodhpur
Dr. Sneha Susanna George	CMCH Ludhiana
Dr. Pradeep Kumar K.N	SNMC AGRA
Dr. Navin Nayan	Dr BBCI, Guwahati, Assam
Dr. Gunjesh Singh	VMMC and SJH, New Delhi
Dr. Karishma Tekta	MAMC,New Delhi
Dr. Saadvik RY	SAMC&PGI, Indore
Dr. Bodhisattwa Dutta	Medical College, Kolkata
Dr. Christalsuji Shalini	MCC, Chennai
Dr. Subeera Khan	GMC COLLEGE, NAGPUR
Dr. Neeraj D	BHMRC, Delhi
Dr. Jasti Vijay Krishna	GSIMC,Rajahmundry
Dr. Mangesh Korde	JK Cancer Institute ,Kanpur
Dr. Preethi.A	MMC, Chennai
Dr. Khushboo Rastogi	RMCH, Ahmednagar
Dr. Rajiv Lochan Jena	MCH, Kolkata
Dr. Upasana Mukherjee	MCH, Kolkata
Dr. AD Sharma	GCRI,Ahmedabad
Dr. KARTICK RASTOGI	SMS Medical College, Jaipur
Dr. Debanti Banerjee	RGKMCH, Kolkata
Dr. Vibhay Pareek	Jupiter Hospital, Thane

National / international

Oct 2016

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

17-19 13th Asia Pacific Oncologists Meeting
Kuala Lumpur, Malaysia
http://cancer.global-summit.com/asia-pacific/

27-29 ICOR 2016, Dubai, UAE
Website: www.icorad.com Email: cancer@magnusgroup.org

Nov 2016

05 Teaching course on Radiation Biology Max Hospital, Vaishali(Ghd)
Dr. Dinesh Singh, 9811351486 Email:drdineshsingh@hotmail.com

05-06 AROI-ICRO_Sun PG Teaching Course (Breast Cancer), Guwahati

07-08 CRHC 2K16, chrc2k16@gmail.com

12-13 AROI-ICRO-Dr. Reddy's Lab Post PG Teaching Course (South Zone)
Vydehi Inst.of Medical Sciences, Bangalore

18-20 AMPICON 2016, KIMS, Secunderabad
Email:ampicon2016@yahoo.com

24-27 AROICON, 2016, Cuttack, http://www.aroicon2016.com/
Org Secretary, Dr. Dillip Kumar Parida (09438884060

Dec 2016

06-10 AROI ESTRO teaching course , Dr. Sumit Basu
drsumeetbasu@gmail.com Cell: +91 9860721029

17-18 AROI UPCON 2016, Apex Hospital, Varanasi
Email; aroiupcon2016@gmail.com

Jan 2017

27-29 **Young Radiation Oncology Forum (YORF) 2017**
Dr.Shankar Vangipuram, GCC, Udaipur
Phone: +91-80031-54436 drshankarvangipurapu@gmail.com

Feb 2017

18-19 9th Biennial Conference on Hyperthermia in association (IAHOM)
Hyperthermiagcri2017@gmail.com Ph:079-22688269

May 2017

13-14 Best of ASTRO 2017, Queen's NRI Hosp, Vishakhapatnam

Nov. 2017

8-12 ICC 2017, Bangalore **Prof. RAMESH S BILIMAGGA,**
Mob:+91-9845365315 ; bilimaga@gmail.com Website - http://www.indiancancercongress2017.com/

List of Applicants....contd.

Dr. HB Singh	Dr. RMLIMS, Lucknow
Dr. Meenakshi Sharma	PGIMS, Rohtak
Dr. Rishabh Sansi	VIMS, Bangalore
Dr. Amit Kumar	Meherbai TMH , Jamshedpur
Dr Moumita Maity	RGKMCH, Kolkata
DR. BODHISATTA ROY	RGKMCH, KOLKATA
Dr. Shreeya Pabi	Vydehi hospital, Bangalore
Dr Satyajeet Rath	Dr RMLIMS, Lucknow
Dr. Narmadha Rathnasamy	Madras medical college, Chennai
Dr. Daniel Udayan	CMC, Ludhiana
Dr. Ashish Upadhyay	AHRCC, Cuttack.
Dr. P Guru Sai Ratna Priya	M.S.Ramaiah medical college, Bangalore
Dr. Phaneendra Mettapalli	JIPMER
Dr. Narmadha Rathnasamy	Madras medical college, Chennai
Dr. Daniel Udayan	CMC, Ludhiana
Dr. Ashish Upadhyay	AHRCC, Cuttack.
Dr. P Guru Sai Ratna Priya	M.S.Ramaiah medical college, Bangalore
Dr. Phaneendra Mettapalli	JIPMER
Dr. Jayasree Kuna	SVIMS, Tirupati

Note: Please note utmost care has been taken in preparation of above list, in case you find any error/ omission, please contact AROI Secretariat Office.
Dr. Rajesh Vashistha, Secretary General, AROI, Mob:9316911970

NeuroOncology meet at Dehradun

CRI, SRHU, ISNO and NZAROI organized a joint CME Programme, attende by 200 delegates, on August 12, 2016 at Dehradun .

The Scientific Meeting featured plenary sessions on the 2016 revision of the WHO Classification of CNS Tumors and a special session focused on Epigenetics in Brain Tumors and their application in countries with limited resources Various posters presented by PG students and three of them were finally judged to be the winners. Dr Sunil Saini was the Organizing Chairman and Dr Meenu Gupta was the Organizing Secretary. CME was concluded with announcement of Uttrakhand Neurooncology Group.

MSAROICON 2016 organized at Kolhapur on 13th August 2016. The theme was "Radiation Response modifiers - New Insights

Dr. AM Nisar Syed gets American Brachytherapy Society 'Founder's Award'

Kudos from AROI members for this achievement.

We are proud of you!

Season Greetings

Response to last issue question

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

Today's era of Radiotherapy is era of precision and accuracy in beam delivery which in turn warrants good target delineation and OARs.

With the advancement in radiation treatment technologies, techniques like SRS, SBRT, VMAT, IMRT and IGRT are practiced in routine with the help of finer MLCs, sub millimeter level isocentre and reproducible immobilization.

Clinician has to make use of different imaging modalities like MRI, PET, 4DCT for appropriate tumour and OARs contours.

Image fusion can be done within Region of Interest (ROI) on planning CT using applications like Bone or Soft Tissue matching, rigid registration, MIP, MAP, Gating, This helps in well defined clinical and planning target volumes.

Radiation Oncologists /Physicists/RTTs need to collaborate with other imaging departments for same positioning parameters across bands for better repositioning accuracy.

Image fusion is of utmost importance for better delineation of volumes and treatment outcomes.

IMPORTANT NOTICE

Applications are invited through Zonal chapter to hold the following conference/teaching course:-

- AROICON 2019
- AROI-ESTRO Teaching Courses 2019 (on Gynae Malignancies)
- AROI-ESTRO 2018 Teaching Courses (on Advance Technologies)
- Best of ASTRO 2018
- Young Radiation Oncology Forum (YROF) 2018
- AROI ICRO-Sun PG teaching Courses 2017 (Zone wise)
- AROI-Dr. Reddy's Post PG Teaching 2017 (Zone wise)

GBM1
On 26 Nov 2015 just after completion of best paper session

GBM2
15 minutes after completion of GBM1

Agenda for both GBM to be circulated later

Question of this issue

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

How much is Indian authors contribution in International RadOnco publications, your take.