ASSOCIATION OF RADIATION ONCOLOGISTS OF INDIA

Quarterly Newsletter

March 2017
Vol 13, Issue 01

IN THIS ISSUE

Dear Members of AROI

Greetings to one and all!

The preparations for the ICC and the 39th AROICON 2017 are currently in full swing here at Bangalore. The dates for the Meeting are from 9/11/17 to 12/11/17. As was during the previous ICC meeting at Delhi in 2013 the morning half of the days are a combined meeting of the principal Associations of the AROI, ISO, ISMPO and the IASO and the afternoon sessions are devoted to the individual associations to hold their annual conferences. You will be aware that the AROI is the lead organization for this edition of the ICC 2017, with Dr. Ramesh Bilimaga as the Organising Secretary.

CONTINUED ON PAGE 02
Note from Dr. Giri G.V.

"The idea of winning a doctor's degree gradually assumed the aspect of a great moral struggle, and the moral fight possessed immense attraction for me."

- Elizabeth Blackwell

NOTE FROM DR. GIRI G.V.

To The Members Of The Association Of Radiation Oncologists Of India

Continued from Page 01 : The preconference ICRO workshop and teaching programme to be held on the 8/11/17 has been finalized. The workshop will be E – COUNTOURING of common sites of malignancy seen in our country. An attempt is being made to hold this workshop as a joint meeting with the ASTRO and discussions are being held to this end.
The AROI executive meeting was held at Hyderabad on the 4/2/17 and it was decided to invite Dr. Akhila Vishwanathan as the Orator for the Dr. K.A. DINHAW oration and as has been the precedence, the past president Dr. U.P. SHAHI for the Dr. P.K. HALDAR ORATION. Dr. Virender Vyas has been invited to deliver the Dr. RANGI PRASAD ORATION.

Regards the other aspects of the AROICON 2017 i.e. the best paper sessions of various categories, the proffered papers session, fellowships and the topics for the scientific session are being looked at in detail by the local Karnataka chapter in full consideration with the scientific committee of the AROI and the organising committee of the ICC. The details of which will be communicated very shortly.

It is extremely important that members send abstracts for either Oral presentation or Posters in maximal numbers so that they may be accommodated during this conference. It is imperative, to "show case" our original works in OUR conference and the presence of the AROI be recognised during the ICC. The portal for submitting the abstracts for the ICC and AROI has been opened and members can start submitting the papers. Kindly check the ICC web site for the same.

The teaching schedules of the ICRO and AROI has been finalised for the year 2017. The first of the teaching programmes was that of the ESTRO-AROI Teaching programme on GYNE GEC-ESTRO implementation along with the cadaveric workshop, held at M.S. RAMIAH MEDICAL COLLEGE, Bangalore from the 8th-12th March. Kudos to Dr. Janki and her team for holding such a successful program. Later In the month of March , at Nagpur, the first of the Radiobiology courses under the leadership of Dr. Manoj Gupta ably assisted by Dr.Vyas (Sr. Vice president) and Dr. Srinivas (Jt. Secretary ICRO) will commence. The Sun Pharma sponsored ICRO teaching for Postgraduate students at Dheradun is scheduled in the month ofApril . The complete schedule of teaching programmes is mentioned in the Newsletter.

I request all members to participate in these programmes of the AROI, in spite of the many other meetings that are taking place during the year.

Finally once again I appeal to all members to register for the ICC & AROICON 2017 and come participate in the conference. Showing our strength is most important.

Warm regards
Giri G.V. (Secretary General, AROI)

ORATORS 39TH AROICON DURING ICC 2017

Get to know the Orators at the International Cancer Congress 2017

DR K A DINSHAW ORATION

Dr Akila N Vishwanathan MD MPH, is Professor and Executive Vice Chair and the Director of Gynecological Radiation Oncology at the Department of Radiation Oncology and Molecular Radiation Sciences, John Hopkins University Baltimore. Her special interest lies in Gynecological Oncology.

DR P K HALDAR ORATION

Dr U P Shahi is the Professor and Head of Radiation Oncology at Banaras Hindu University, Varanasi. He completed his MD in Radiation Oncology from AIIMS, New Delhi. His special interests lie in Gynecological malignancies.

DR RANGI PRASAD MEMORIAL LECTURE

Dr Virendra Vyas is the Professor and Head of Radiation Oncology at Mahatma Gandhi Institute of Medical Sciences, Wardha. He completed his MD in Radiation Oncology from MGM Medical College and SGPT Cancer Hospital, Indore. His interests lie in Head and Neck Oncology as well as Gynecological Cancers.

PROTON BEAM THERAPY-PRESENT STATUS IN TREATING SMALL STEREOTACTIC LESIONS

By Dr. V.K. Sathiya Narayanan

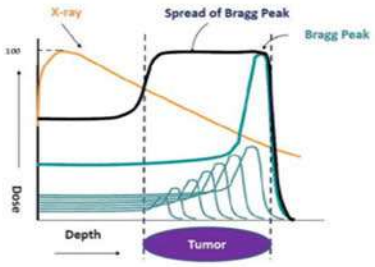
Proton beam therapy has been available for the last 4 decades or so and technology has been moving at great speed mitigating the required mammoth concrete and steel to a meaningful one. The number of installations are also increasing and presently at least 3 organizations are at different stages of the required civil construction process in the country. In every meeting we find clinicians and physicists flying down from abroad and speaking about these technologies eloquently. It looks like most of the treatment options are available to treat with, in terms of all sites and sizes. Dose distributions in terms of PTV coverage appear to be very adequate, but considerable normal tissues sparing makes proton beam therapy very superior when compared with fixed gantry IMRT and VMAT. Even the large volume treatments are also done using proton beams with very good conformal dose distributions also resulting in significant normal tissue sparing. It is emerging as a most suitable option in pediatric malignancies, reducing the probability of second malignancies. The most often treated sites such as head & neck, gynecological malignancies, and tumors of thorax and abdomen are also covered very precisely by proton beam therapy planning and delivery. Treatment of moving tumors using proton beam also has the issue of movement similar to photon, but with substantial normal tissue sparing. The additional normal tissue sparing reduces the toxicity associated with radiation therapy. Despite its high cost of procurement and maintenance, proton beam therapy withstood the test of time by demonstrating superior cure rates for some tumours.

Though, it looks complete on all sides, scientific queries pops up certain questions on specific tumours and sites. One such question was put forth recently in a meeting where more than 150 radiation oncology professionals were present, and the question was about the "role of proton beam therapy for small stereotactic cases". The presenter was affirmative, still very careful in choice of his words as the question was very general for stereotactic lesions. Presently, three most advanced and popular tools used for stereotactic treatments are Cyberknife(CK), Gamma knife(GK) and high end image guided LA with mMlc delivering rotational FFF beams. Each one has certain advantages over others; some has physical i.e dose distribution as an advantage or ease of delivery or time of delivery or accuracy of delivery as an edge over others. However the users of these technologies vouch for their versatility over others. Reverting back to our topic of interest "proton beam therapy", we rephrase the question of sterotactic lesions as follows. *Can proton beam therapy systems deliver dose distributions comparable to Cyberknife, Gamma Knife and LA based stereotactic plans to small stereotactic lesions?* This question appears to be for post graduate examination one or for ABR. However, let us have a look into it. To understand this, we need to know a few basic fundamentals of proton beams.

BRAGG PEAK & SOBP

The first method is to make a narrow beam of proton to be passively scattered by material which gives a broad beam which in turn is further degraded by a set of distributed absorbers to create a beam of a particular shape and maximum energy. Proton beams deposit less than 40% of its dose in the earlier few cms and when they slow down deposit most of their energy. The rate of energy loss of protons is inversely proportional to the square of its velocity. So, as the proton's velocity approaches zero, the rate of energy loss becomes maximum, hence makes a peak as shown in fig.1. The dose deposition becomes insignificant within 5mm to 10mm of the peak deposition. This sharp fall of makes them to be very useful on sparing normal tissue beyond the PTV as in fig.1.

Figure 1: comparisons of the physical characteristics between proton beam and X-ray



However, the PTV's are normally not that small, so to cover the PTV of a cm or a few cms, this Bragg peak has to spread out and that Spread Out Bragg Peak(SOBP) is achieved by combining lower energies in the same aperture. The summation makes the peak broader and the increase in the entrance normal tissue dose is the trade off in this case, which is quite acceptable by clinical standards and proven to be within clinically acceptable levels.

In case of lesions, lying just before the critical OAR, the SOBP is achieved by placing the physical compensator and delivering the treatment. But, if the lesions have complex concave or convex shapes in the proximal and distal directions, then designing this compensator to produce a dose distribution which can be very tight as in photon treatments(such as Gamma knife or CK or LA) is highly challenging one. The main difficulty is for small lesions of the order of ccm and our discussion is centered on them. Delivering proton beams for medium or larger volumes is not difficult and many tight dose distributions are seen in many publications. Having two scatterers, one for initial spreading and the other to limit the shape and to degrade to the energy required, makes the penumbra larger and there is some lateral spillage too in this situation. To overcome these difficulties, Pencil Beam Scanning was suggested and it offers better accuracy as one can see from the discussion below.

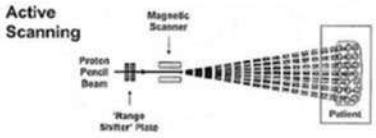
DR. V.K. SATHIYA NARAYANAN

Dr. V.K.Sathiya Narayanan is working as the Chief Medical Physicist & RSO in the Department of Radiation Oncology of Ruby Hall Clinic, Pune. He has vast experience in commissioning different types and models of Linear Accelerators and commissioned and used different Treatment Planning Systems. Has keen interest in QA protocols and experience in handling IMRT, SRS&SRT and SBRT workflow and systems. Published more than 50 articles as a first author and group author, presented many international forums. Holds an international patent also.

PENCIL BEAM SCANNING METHOD

In the pencil beam scanning method, the entire beam is made to be composed of infinite number of pencil beams usually of finite size closer to 5mm and this pencil beam is made to scan the voxels by deflecting them magnetically. There are at least two methods that are employed while using pencil beam scanning. In the first method, pencil beams of particular energy are delivered at particular voxels and then the beam is interrupted and then the next energy is chosen. This way the entire cumulative dose is delivered.

In the second method, the pencil beam scans in a raster pattern while changing the pencil beam's energy and intensity as directed by the TPS. The above two methods of dynamic pencil beam scanning overcomes all the drawbacks of passive scattering which uses the beam modifiers. These dynamic methods lead us to implement intensity modulated proton beam therapy (IMPT) which in turn delivers conformal dose distributions.



There are some uncertainties in the proton beam therapy while treating small tumours. The first one is the heterogeneity that can disturb the dose distribution, especially in skull base lesions or targets. The second is the hot and cold areas that can be formed due to the effects of lateral scattering and the third is the uncertainty in positioning the patient. Proton beam's dose distribution is very sensitive to the inaccuracies in geometric positioning i.e setup uncertainty; this is basically because of the reduced number of beams that are used for delivery. The last, but not the least is the range uncertainty. There is some finite uncertainty in the way the dose falls off at the distal portion of the target, especially when OAR is just surrounding the target. If the range errors overshoot or undershoot even by 1 mm, the steep dose fall off makes conformity index of that dose distribution vary a lot. There are some publications which suggest a range uncertainty values to be incorporated in the planning and they suggest values closer to 5mm. This will result in proton beam therapy plans, not be in comparable level in terms of conformity, with the dose distribution that can be achieved while using GK, CK or an LA with Mlc leaves width of 2 to 3mm. However, further technological advances may mitigate them, but till then proton beam therapy centers may have one of the above other equipments or their equivalent or may refer these cases to the centers which have these complementing technologies.

REFERENCES

1) The Physics of Radiation Therapy by F.M.Khan, Chapter 26. Proton Beam Therapy
2) ICRU Report 78. Prescribing, Recording, and Reporting Proton-Beam Therapy. Vol 7 No.2, 2007
3) A comparison of dose distributions from..... Paul.J.Doolan et al, Journal of Applied Clinical Medical Physics. Vol 16. No.1, 2015
4) Reducing the sensitivity of IMPT treatment plans to setup errors nd range uncertainties via probabilistic treatment planning. Jan Unkelbach and Thomas Bortfeld. Med Phys 36(1) Jan 2009, 149-163.

IMMUNOTHERAPHY & STEREOTACTIC RADIOTHERAPY : AUGMENTING LOCAL & ABSCOPAL EFFECT

By Dr. Vikash Kumar

Immunotherapy refers to various treatments including antigen vaccinations, antibody therapy focused directly on tumor cells, as well as treatments that alter immune checkpoints. Previously, immunotherapy had been limited to nonspecific agents such as the BCG vaccine, IL-2, and interferon-γ, but the characterization of cancer-specific antigens allowed for the emergence of cancer vaccines and cell-based therapies. Recent data has shown that the radiation response in the tumor and surrounding normal tissue activates several pathways that can help the host mount an immune response against tumors, especially in conjunction with immunotherapeutic agents.

In order to understand how stereotactic radiation can enhance immunotherapy and lead to cancer control both locally and systemically, it is important to understand the interplay between the immune system and cancer. One proposed model by which the immune system responds to cancer has been termed "cancer immunoediting" and it consists of three phases: elimination, equilibrium, and escape [1]. The elimination phase is thought to involve both the innate and adaptive immune systems by releasing cytokines such as IFN-⌧ by NK-cells to enhance macrophage cytotoxicity and dendritic cell maturation [2]. In turn, antigen-presenting cells can use the released tumor antigens to activate T-cells and the adaptive immune response. For the rare cancer cells that can survive the elimination phase, they can enter a state of equilibrium for variable periods of time during which the host immune cells such as lymphocytes and cytokines such as IL-12 and IFN-⌧ not only can suppress the cancer cells but also, exert immense selective pressure for cells that can thrive in such an environment. Cells typically express lower levels of costimulatory molecules (such as B7.1 and B7.2) and have high expression levels of coinhibitory molecules (such as B7-H1 also known as PD-L1) [3]. To fully escape the immune system cancer cells typically either (1) mutate to decrease expression of antigens that currently induce an immune response, (2) lose expression of MHC class I proteins so antigens are no longer presented to the immune system, or (3) have an aberrant antigen processing pathway so antigens cannot be loaded onto the MHC class I molecules [4]. Although immune escape is required for clinically relevant tumor growth and development, the immune system is still active, and manipulations through immunotherapy and radiation can potentially result in lasting tumor directed responses and cancer control.

Although radiation is predominately considered a "local" treatment modality in that radiation only has direct effects on tumor cells in the field of irradiation, abundant evidence also exists that in certain settings radiation can also enhance the activity of the immune system against cancer. Established tumor cells escape the immune system by frequently losing presentation of antigens through various genetic and epigenetic mechanisms. One way to re-establish presentation of tumor antigens is through the release of tumor antigens upon cancer cell death. The direct cytotoxic effects of radiation can lead to the release of tumor specific antigens, which can then direct antigen-presenting cells to induce a T-cell immune response [5]. One mechanism of achieving this enhanced T-cell activation following tumor irradiation is via the secretion of the HMGB1 protein by dying irradiated tumor cells and binding of HMGB1 on TLR4 expressed by dendritic cells. Irradiated tumor cells can also release other "danger" signals such as heat shock proteins (HSPs) [6]. In addition, radiation-induced cell death is associated with translocation of calreticulin to the cell surface, which facilitates phagocytosis of tumor cells by dendritic cells. Therefore, during radiation-induced cell death, both tumor antigen release and presentation are enhanced, helping to activate an immune response [7].

Another mechanism is through direct elimination of part of the tumor population or immune cell population that is detrimental to mounting an effective immune response. Radiation treatment may eliminate more immunoresistant tumor clones, allowing for more effective immune mediated killing of the remaining tumor clonogens. These mechanisms described above for enhancing the immune system activity against tumors act locally against tumors being irradiated, but a local immune response can also translate into systemic immunity, inducing "abscopal" effects at tumors distant to the irradiated site [8].

The results of preclinical studies with mouse orthotropic cell line glioma model, triple negative breast cancer mouse model etc and few Phase I and Phase II clinical studies has confirmed the potential synergy between the two modalities. Recently, multiple separate reports of patients with metastatic melanoma or renal cell carcinoma have demonstrated abscopal effects after treatment with radiation and immune modulatory therapies. A phase I study treated metastatic melanoma or renal cell carcinoma patients with one, two, or three doses of stereotactic body radiation (SBRT) (20Gy per fraction) with the last dose administered 3 days before starting IL-2. Among 12 patients, eight (or 66.6%) achieved a complete (CR) or partial response (PR) with abscopal responses observed [9]. One case report presented a metastatic melanoma patient who had progressive disease on ipilimumab, an anti-CTLA-4 antibody, who received 28.5Gy in three fractions to a paraspinal mass. There was initially no response for one month following the radiation. However, when an additional dose of ipilimumab was given one month later, there was subsequent regression in the irradiated tumor, as well as other tumors in the patient that were not irradiated [10].

Similarly, there is a more recent case report of a metastatic melanoma patient treated with ipilimumab and stereotactic radiation (54Gy in 3 fractions). Patient only received treatment to two of seven metastatic liver lesions, but developed complete resolution of cancer all over the body, and is free of melanoma one year after the radiation treatment [11].

RADIATION DOSE & FRACTIONATION

It is likely that a threshold exists in terms of the size of the radiation fraction necessary to induce an optimal immune response. Schaue et al. studied the impact of dose size on immune response in a syngeneic murine model of melanoma. Although B16-OVA tumor by itself generated little tumor immunity, doses of 7.5 Gy and greater, but not 5 Gy, seemed to produce the best tumor control and tumor specific T-cell response [12]. In an animal model looking to combine radiation with IL-2 in metastatic renal adenocarcinoma to the lung, authors also saw that higher radiation dose resulted in greater tumor reduction, both inside the radiation field, and in the contralateral unirradiated lung. In this study, 8Gy caused a more pronounced increase in H-2Kd class I MHC antigen than 3Gy [13]. Another study also supports fractionating radiation treatment in conjunction with immunotherapy, by testing anti-CTLA-4 antibodies with radiation in a mouse breast cancer model. Mice were treated with 20Gy × 1, 8Gy × 3, or 6Gy × 5 fractions in combination with 9H10 monoclonal antibody against CTLA-4. Authors found that fractionated but not single-dose radiotherapy induces an abscopal effect when used with anti-CTLA-4 antibody [14].

DR. VIKASH KUMAR

Dr. Vikash Kumar was awarded M.D. in Radiation Oncology by the Institute of Medical Scientists, Banaras University, in 2006. He has extensively worked on modern radiotherapy techniques at Medanta The Medicity, Gurgaon, and Jaypee Hospital, Noida. Currently, he is a cyberknife consultant at B L K Superspeciality Hospital Delhi.

CONCLUSION

New and innovative treatment strategies for cancer patients in the fields of immunotherapy and radiotherapy are rapidly developing in parallel. The early preclinical and clinical data suggest synergistic effects in several tumor model systems. These studies demonstrate that radiation combined with immunotherapy can result in superior efficacy for local tumor control. More alluring is the emergence of data suggesting an equally profound systemic response also known as "abscopal" effects with the combination of radiation and certain immunotherapies. While the optimal radiation dose, fractionation, and modality to be used in combination with immunotherapy remain to be determined, some preclinical evidence suggests that higher loses of radiation such as those delivered during hypofractionated regimens generate more immunologic responses. Thus, stereotactic radiation in combination with immunotherapy agents represents an exciting and potentially fruitful new space for improving therapeutic gain.

REFERENCES

1.G. P. Dunn, A. T. Bruce, H. Ikeda, L. J. Old, and R. D. Schreiber, "Cancer immunoediting: from immunosurveillance to tumor escape," Nature Immunology, vol. 3, no. 11, pp. 991–998, 2002.
2.B. A. Pulaski, M. J. Smyth, and S. Ostrand-Rosenberg, "Interferon-⌧-dependent phagocytic cells are a critical component of innate immunity against metastatic mammary carcinoma," Cancer Research, vol. 62, no. 15, pp. 4406–4412, 2002.
3.C. G. Drake, "Combination immunotherapy approaches," Annals of Oncology, vol. 23, supplement 8, pp. 41–46, 2012.
4.R. D. Schreiber, L. J. Old, and M. J. Smyth, "Cancer immunoediting: integrating immunity's roles in cancer suppression and promotion," Science, vol. 331, no. 6024, pp. 1565–1570, 2011.
5.S. Demaria and S. C. Formenti, "Sensors of ionizing radiation effects on the immunological microenvironment of cancer," International Journal of Radiation Biology, vol. 83, no. 11-12, pp. 819–825, 2007.
6.A. Melcher, S. Todryk, N. Hardwick, M. Ford, M. Jacobson, and R. G. Vile, "Tumor immunogenicity is determined by the mechanism of cell death via induction of heat shock protein expression," Nature Medicine, vol. 4, no. 5, pp. 581–587, 1998.

BATRA HOSPITAL CONFERENCE

Input by Dr. Kundan Singh Chufal | 19th March 2017

Batra Hospital & Medical Research Centre, leading & oldest super-speciality and Oncology Centre in New Delhi, organized one day Conference on 19th March 2017 at India Habitat Centre, Lodhi Road, New Delhi. The conference was accredited 5 hours 30 minutes of credit score by Delhi Medical Council.

Eminent Radiation Oncologist from leading hospitals of Delhi NCR and North India under the aegis of NZAROI met on 19th to have discussion on the topics related to "Understanding OAR in the era of precision radiotherapy" The sessions were a great academic feast for all and greatly appreciated by all attendees.

28TH UP AROICON 2016

Input by Dr. Madhup Rastoni | 17th - 18th December 2016

The 28TH UP AROICON 2016 was held on Dec 17th and Dec 18th 2016 at Apex Hospital, Varanasi with a very novel theme " Organ Preservation With Precision Radiotherapy:Recent Trend And Advancements". It was one of the largest cancer gathering held in the State Chapter with eminent national faculties and over 130 registrations. The entire conference was packaged with scientific presentations, panel discussions ,orations ,poster presentation,Onco Quiz.

The conference kicked off with the contouring workshops for Young Radiation Oncologists to gain practical experience with newer radiotherapy techniques and precisely define the target, and deline-ation of organs at risk. Contouring workshop was on Head & Neck & Pelvic malignancy.All the workshops had full attendance and were well appreciated.

The theme of the practicum and the conference was Head Neck ,CNS , Gastro-intestinal, gynaecological , breast cancer,Brachytherapy and Medical Physics. Renowned National faculties participated in this event and discussed various controversies and latest evidence in these fields .Each session was concluded with an interactive discussion . Panel discussions and debates with the audience response included(Voting Pads) were specially appreciated by the audience and brought out useful consensus on the management of different cancers in various scenarios.

CONFERENCES

CURRENT AND UPCOMING

The **inaugural function** of the conference was held on the 17th Dec 12:00AM. with Dr.S .K.Srivastava ,HOD,Department of Radiation Oncology, TMH as the Chief Guest along with the Padmashree Prof T.K.Lahiri and Prof Prithvish Nag as Guest of Honour. Their presence and support signified the magnitude of this event.

HONOUR & AWARDS

Prof MLB Bhatt (HOD,Dept of Radiation Oncology, KGMU) was awarded prestigious **Prof B.N.Lal Oration** for his lecture on **"Science Of Chronomes:From Chronobiology To Chronomedicine And Chrono-Oncology "**.

Prof Neeraj Rastogi (Professor, Dept of Radiation Oncology, SGPGI) was awarded prestigious Prof M.C.Pant Oration for his lecture on **"How to make cost of cancer care affordable : A dream of Prof. Pant"**.

Prof A.K.Asthana was felicitated with **Lifetime achievement award**.

There were 55 posters presented by Consultants , Residents and physicists for best paper from all over the State.

The conference was accorded with 4 credit points by UP Medical Council.

Consultant Category :
First : Dr Asha Latha,Apex Hospital,Varanasi
Second : Dr Surabhi Gupta, SNMC ,Agra

Resident Category :
First : Dr Ritusha Mishra, BHU,Varanasi
Second : Dr Vibha Saluja, KNH ,Allahabad

Physicist Category :
First : Ms Navitha M,SRMS, Bareilly
Second : Ms Sajni,BHU,Varanasi

Talent Hunt--ONCO Quiz :
Winner : KGMC , Lucknow Team
Runner Up : RMLIMS, Lucknow Team

General body meeting was held on 17th Dec. Dr Madhup Rastogi (HOD,Dept of Radiation Oncology,RML) was elected unopposed as President UPAROI (2017-2019) and Dr Ankita Patel as Secretary UPAROI(2017-2019)

The Cultural programme and banquet dinner was held on the night of 17th December at Hotel Amaya .

The 28TH UP AROICON 2016 was a conference was an academic feast which consisted a little bit of everything, a brilliant scientific program, enthusiastic doctors sharing their knowledge and the entertaining cultural evening. .It was well attended and was full of enthusiasm.

BEST OF ASTRO 2017

Download the full document by visiting the link below.

bit.ly/bestofastro2017

YROC 2017

Inputs by Dr. Shankar Vangipurapu & Dr. Ashu Abhishek | 27th - 29th January 2017

The most constant thing about change is that it is never the same. So to keep pace and not be left out in the race, we must adapt and keep ourselves up to date with the changing times!

Radiation therapy is a technology based art that re-modifies itself with every passing decade. With reference to the recent advances in last 2 decades of radiation therapy technology, now even a decade seems to be a century old. Amidst these changing times, advances in applications, technologies and methodologies in newer radiation techniques has brought stereotactic radiosurgery in the forefront of modern radiotherapy. With these developments, each and every budding radiation oncologist in India feel the ardent need for adequate exposure and optimal learning in this branch of modern radiotherapy.

It could not have been a better stage than the city of lakes, Udaipur, to host the much awaited, first ever scientific meet on Advancing technique of Image guided Radiosurgery, SRS and SBRT under the aegis of AROI and YROC. The conference was planned to disseminate end to end knowledge from case selection to intricacies of complex radiosurgery delivery techniques for both extra and intracranial targets. Planned as a two and a half day education feast with about 7 international and 50 national faculties, this meet was surely planned to be the the launching pad for a unified national level radiosurgery program to take off in India.

The 2.5 days of the conference was packed with a robust scientific program encompassing didactic lectures, showdown debates, panel discussions and Live demos to benefit one and all. The immaculate handpicked topics involving stalwarts from major specialities of both national and international level, was the key feature of this meet. Dr V Shankar, Geetanjali University Medical Education and Rajasthan Medical council, Jaipur really deserve a big round of applause to have initiated the whole idea of having such an academic rendezvous for the 5th Annual conference of Young Radiation Oncologists of India (YROC-2017) and then put in all the necessary efforts to make it a grand success. Kudos team!
This Conference was designed for clinicians, physicists and radiotherapy technologists aiming to either set up a stereotactic program, wishing to update on latest developments or those wishing to implement SRS or SBRT for more complex and challenging cases or new indications. The whole idea was to move the YROC Vision forward and present what promised to be an event looking at the challenges of the future.

The first and the foremost highlights of the meeting was the hand picked International Faculty spanning all-important SBRT areas, namely
- Dr. Ajay Niranjan, MS,Mch; Pittsburg: Brain Radiosurgery
- Dr. Samuel T Chao, MD; Cleveland Clinic: Spine & Brain Radiosurgery
- Dr. Suresh Senan, MD,FRCR; Amsterdam: Lung Radiosurgery
- Dr. Laura Dawson, MD, FRCR; Toronto: Hepatobiliary Radiosurgery
- Dr. Morten Hoyer, MD; Aarhus, Denmark: Pancreas Radiosurgery
- Dr. Patrick Kupelian, MD; UCLA: Prostate Radiosurgery
- Dr. Nicholas Van As, MD; UK: Prostate Radiosurgery

The success of any scientific event depends on the content and its relevance in present day. The well planned 2.5 days of YROC 2017, did not disappoint either.

Day 1: 27th January 2017- covered General and Spine track in pre-lunch and CNS Radiosurgery in post-lunch sessions. General and Spine track included 5 lectures , 1 live interactive demo on contouring guidelines, a showdown debate on MESCC and finally difficult case panel discussion.The post lunch CNS track covered basics of Imaging, Radiobiology and clinical care process of intracranial radiosurgery and unique lectures on frameless radiosurgery of ocular tumors,Functional indications and Oligometastases .

It was concluded with well moderated panel discussion on benign and malignant brain tumors . The enticing day 1 for all the delegates ended with a relaxed evening and a grand banquet dinner.

Day 2: 28th January 2017 – with a grand success and packed house on day 1, day 2 was efficiently planned to cover Lung and GI sub-specialities. There were lectures on topics of Lung atlas, 4D imaging and motion management. The lectures on deformable registration and post treatment imaging and a live demo on clinical practices of lung SBRT was well delivered, spanning all intricacies and details of lung radiosurgery. The showdown debate on operable lung cancers was worth each penny spent. Towards the end, there was a panel discussion with challenging cases addressing the key decision making issues of Lung radiosurgery. In post Lunch session too eminent speakers covered all important topics of Liver and pancreatic radiosurgery. Lectures on 4 Pi therapy and radiosurgery on IKON , was a sneak peek into the future of radiation oncology for all youngsters.There was a difficult case panel discussion in the end which involved both the audience and the panellist, and made the session a lot more interesting and interactive.

Day 3: 29th January 2017: The last day which was meant to be a half day affair, had a bright start with young radiation oncologists competing for the top spot for the best paper award. Speakers from Medanta-The Medicity, Gurgaon stole the show with Dr Ashu Abhishek bagging the 1st prize (SBRT in HCC-PVTT) and Dr Kushal Narang winning the 3rd prize (SBRT-Prostate) . Dr Rajendra Kumar from Max Hospitals, Delhi, was awarded 2nd prize for his work on Malignant Epidural spinal cord compression and SBRT.The best paper session was then followed by Prostate radiosurgery track featuring contouring guidelines and experiences from TMH and HCG hospitals. The stage was set on fire with an intense debate on prostate brachytherapy Vs prostate SBRT. The last session of the YROC 2017 finally featured head and neck radiosurgery. The scientific sessions finally ended with a very important and significant panel discussion at the end questioning the availability and need of radiosurgery education and facilities in India. It was an open discussion amongst panellist, audience and the moderator, to bring out the urgent need of improvising the radio surgical practices in India and also empower the young guns with better opportunities and facilities for adequate exposure to this unique and intricate branch of modern radiotherapy.

AROI-WEST BENGAL ANNUAL CONFERENCE 2017

Input by Dr. Jyotirup Goswami | 11th to 12th February 2017

The Association of Radiation Oncologists of India (West Bengal chapter) conducted its Annual Conference on February 11-12, 2017 at Hotel Hindusthan International, Kolkata. This year, the theme of the conference was " Optimising Outcomes for Pediatric & Geriatric Patients in Oncology. "

The event was preceded by a Pre-Conference Workshop on "Motion Management & SBRT for Lung Tumors" at Tata Medical Centre, Kolkata on 10 February 2017, which included talks and hands-on demonstrations on 4DCT acquisition, contouring, plan evaluation & gated treatment delivery.

Pediatric oncology is a daunting area, calling for immense dedication, knowledge and cooperation across multiple specialities; with a developing & longer-lived India, the nuances of managing geriatric patients are also vitally understand to integrate in clinical practice. The the focus sessions on Pediatric & Geriatric Oncology, involving outstanding speakers from across the state & country, are expected to help to fill a major void.

The invited speakers included Prof JP Agarwal, Prof Tejpal Gupta & Prof Siddhartha Laskar from Tata Memorial Hospital, Mumbai, as also Prof GK Rath from AIIMS, New Delhi, who was unfortunately unable to attend. Highlighting the important links between science, technology and oncology, the Chief Guest at the Inauguration Ceremony was Prof Ajay Kr Ray, Padmashree, Director of Indian Institute of Engineering, Science & Technology, who stressed on the importance of setting up a medical research & technology in Eastern India.

The programme was well attended with over 200 delegate registrations, not just from West Bengal but also from invited members from North East, Nepal & Bangladesh.

Besides the usual talks & panel discussions, involving both senior & junior faculty members, there were a number of interactive sessions for the residents, including a short paper session, case presentation session & quiz. Another highlight was the lively Debate, the motion for which was " The House believes that while Stereotaxy is the standard of care for oligometastases to brain, it is an impossible paradigm to implement across India".

The winners of the paper session were Dr Upasana Mukherjee (1st-Medical College Hospital, Kolkata), Dr Bodhisattwa Dutta (2nd-Medical College Hospital, Kolkata) and Dr Debanti Banerjee (3rd –RG Kar Medical College Hospital, Kolkata); the quiz was won by the team from Saroj Gupta Cancer Centre & Research Institute, comprising Dr Sanchayan Mondal & Dr Roopesh Reddy.

CANCER CI

Input by Dr. Vijay Anand Reddy | 02nd - 05th February 2017

Yet another successful CANCER CI conducted 2nd – 5th February 2017, HICC, Hyderabad.

The 7th edition of CANCER CI & 3rd edition of APOLLO CANCER CONCLAVE was conducted at HICC, Hyderabad under the Chairmanship of Dr. P. Vijay Anand Reddy, Director, Apollo Cancer Institute, Hyderabad.

There were 2370 delegates, 33 International faculty & 230 National Faculty who participated in the meeting. A pre-conference Surgical workshop on Live Robotic Surgery and a Radiation Workshop on Magnafield Radiotherapy, Proton therapy & Tomotherapy was conducted. One hundred and sixty seven Radiation Oncology students participated in the meeting. There were 96 Posters presented and three Best Paper selected for awards by three judges after interacting with the students.

General and basic oncology, various site specific symposiums, Practice changing innovations were part of the deliberations and discussions.

Sincere thanks to all the participants for their continued support and trust in our academic exercise – CANCER CI. See you all again in February 2019 at Hyderabad.

9TH BIENNIAL CONFERENCE ON HYPERTHERMIA

Input by Dr. Jigna Bhattacharya | 18th - 19th February 2017

The 9th Biennial Conference on Hyperthermia was organized by The Gujarat Cancer and Research Institute (G.C.R.I.), Ahmedabad in association with Indian Association of Hyperthermic Oncology and Medicine (I.A.H.O.M.), held at the Hotel German Palace, Gandhinagar on 18th -19th February 2017. The Chairman of the organizing committee was Dr. R. K. Vyas, the Director of G.C.R.I.; and Organizing Secretary was Dr. Jigna Bhattacharya. The rest of the organizing committee included the whole Radiotherapy department of G.C.R.I.

The Conference started on 18th morning at 8.00 a.m. with registrations and breakfast. There were 9 sessions in the conference including 3 orations, 18 lectures and 3 panels by international and national along with poster and oral presentations by students. The conference had 144 registrations.

The international faculties included Prof. Mark Hurwitz, Radiation Oncologist from U.S.A; Prof Hans Crezee and Prof. G. C. van Rhoon, both research physicists from Netherlands; Dr. Carrie Minnaar, PhD Candidate (Radiation Oncology) from South Africa; Associate Prof. Dr. Oliver Szasz, C.E.O., Oncotherm Group; and Mr. Mark Elderfield, Managing Director, Teneovita Medical Innovations, Canada.

The conference was also attended by Dr. Sergio Lais-Suarez, Consul General of India, Argentina as a special invited delegate. Mr. Stefan Heckel-Reusser, the Managing Director of heckel medizintechnik GmbH, Germany, also attended the conference.

The national faculties included prominent faculties from different fields including Radiation, Medical and Surgical Oncology, Cancer Biology, and Engineering design. The faculties are Dr. Nagraj Huilgol, Padmashri Dr. J.K. Singh, Dr. Virendra Vyas, Dr. Kavitha Arunachalam, Dr. S. K. Shrivastava, Dr. Digpal Dharkar, Dr. Ramesh Bilimagga, Dr. Bhavesh Parekh, Dr. Chirag Desai, Dr. H. K. Shukla, Dr. D. G. Vijay, Dr. Bankim Shah, Dr. Shashank Pandya, Dr. K.S. Sethna, Dr. R. C. Joshi, Dr. Asha Anand, Dr. Shubhada Chiplunkar, Dr Kiran C. Kothari, Dr. Rakesh Rawal, Dr. Devang Bhavsar, Dr. Prabhudas Patel, Dr. V. K. Gupta, Dr. Venkatachala K., Dr. Deepak Rao, Dr. Sridhar P.S., Dr. Kinjal Jani, Dr. Kaustav Talpatra, Dr. Hemendra Mod, Dr. Vivek Bansal, Dr. Sanket Mehta, Dr. Mahesh Patel, Dr. Sonia Parikh, Dr. Manas Mayank, Dr. Samir Batham, Dr. Mohit Sharma, Dr. Rahul Jaiswal, Dr. Ashish Kumar, Dr. Richa Chauhan, Dr. Sapna Gupta, Dr. Vikas Warikoo, Dr. Abhishek Jain, Dr. Mainank Patel, Dr. Chirag Amin, Dr. Nilesh Mahale, Dr. Rushi Panchal, Dr. Maulik Bhensdadiya.

Shri Pankaj Patel, Chairman of G.C.R.I. & the Chairman and Managing Director of Cadila Healthcare was the chief guest for the inaugural function. The dignitaries in the inaugural function included members of I.A.H.O.M. and the organizing committee, Dr. Nagraj Huilgol, Dr. R. K. Vyas, Padmashri Dr. J. K. Singh, Dr. Sridhar P. S., Dr. U. Suryanarayan and Dr. Jigna Bhattacharya. Our chairman made encouraging remarks regarding the conference and Hyperthermia. It was followed by felicitation of the oration recipients, Prof. Mark Hurwitz, Dr. Kavitha Arunachalam and Dr. Shubhada Chiplunkar. Prof. Hans Crezee and Prof. G. C. van Rhoon received life time achievement award for their extraordinary contributions in the field of Hyperthermia. Mr. Dayal Arora, who was the Chief Physicist at G.C.R.I. for many years and even after his retirement continues to give his service at the institute, was also felicitated for his contribution to G.C.R.I. It was followed by vote of thanks by Dr. Jigna Bhattacharya, the organizing secretary of the conference.

In the academic sessions, extensive discussion in form of three orations and 18 lectures was held on the technical aspects and physics of Hyperthermia, newer techniques like conformal treatment and nanoparticles.

The lectures also included challenges faced by anesthetists and surgeons in HIPEC. Experienced faculties discussed about the challenges faced in their practice with video demonstrations of techniques. Lectures also included ways for optimally combining hyperthermia with radiation, chemotherapy, and immunotherapy with promising results.

There were three panel discussions in which two panels were on using Hyperthermia for treatment of head and neck cancer and one panel dealt with making Hyperthermia more and more popular in India. All three panels included Medical, Surgical and Radiation Oncologists, Physicists, and Engineers.

There were oral paper presentations by 5 students and poster presentations by 13 students from all the three specialties and IIT students from Chennai. Awards were given for best paper and poster presentations. The posters had technical aspects of Hyperthermia, by delegates from IIT Madras, Chennai.

SBRT WORKSHOP - 1ST AROI GUJARAT CHAPTER EVENT

Input by Dr. Pooja Nandwani Patel & Dr. Rushi Panchal | 24th December 2016

The AROI Gujarat Chapter held its first event "SBRT WORKSHOP" at Shree Krishna Hospital, Karamsad on 24th December 2016 under dynamic organizing chairmanship of Dr Rushi Panchal. The Workshop had total 130 attendees and covered various topics like role of SBRT in lung, prostate, spine and liver.

The AROI Gujarat Chapter was pleased to initiate its first academic event with such huge success under the guidance of AROI Gujarat Chapter Office Bearers – President - Dr U Suryanarayana, Vice President - Dr Vipul Patel, Secretary and Treasurer – Dr Pooja Nandwani Patel and senior Executive Members – Dr R K Vyas, Dr Vimal Batra, Dr Jaiprakash Neema, Dr Vivek Bansal and many others. There was live demonstration on contouring of cases of carcinoma of lung, spine, prostate and liver treated with SBRT followed by lots of discussions and learning both by attendees and faculties. The academic feast was huge and interesting with national and state faculties sharing their knowledge and experience on SBRT.
The AROI Gujarat Chapter's first successful event had paved way for many such events coming in future. The event ended with GBM with inputs and suggestions to hold such more workshops and conferences atleast twice in a year and other fruitful discussions in making the organization more strong.

1ST ESTRO-AROI GYN TEACHING COURSE

Input by Dr. Janaki M.G. | 08th - 11th March 2017

"Transition from Conventional 2D to 3D Radiotherapy with a special emphasis on Brachytherapy in Cervical Cancers"

ESTRO course directors were Richard Pötter from medical University Hospital, Vienna ,Austria and Kari Tanderup, from University Hospital, Arhus, Denmark. AROI course directors were Umesh Mahantshetty and Jamema Swamidas,from Tata Memorial Centre, Mumbai. Christine Haie Meder from Institut Gustave Roussy, Villejuif, France and D. N. Sharma, from AIIMS, Delhi were the course teachers. Janaki Manur Gururajachar and Revathi were the local organizers from department of Radiotherapy from Ramaiah Medical College.There were 24 physicists and 41 physicians as participants for the course.We had three international participants.

The teaching course saw extensive coverage of the concepts as well as the application of various concepts. The lectures ranged from basics of cervical cancer to EBRT to IGBT, while the hands on sessions ranged from contouring for EBRT to contouring for brachy to commissioning of brachy source and reconstruction of applicators. The cadaveric hands on workshop saw active demonstration by the faculty and actual applications by every participant. Trans abdominal and Trans vaginal ultrasound enhanced the learning and brought confidence to the participants.

The European faculty felt it was excellent in terms of the cadaveric sessions, hands on workshop and most importantly the interactions during the sessions.Over all, it was well attended, well organized and the faculty contributed to the success of this teaching course.

UPCOMING CONFERENCES

For 2017 - 2018

AROI-ICRO SUN PG TEACHING PROGRAMME 2018

12th & 13th August '17	**Dr. V Parthasarathy** JIPMER, Pondicherry (TN & Puducherry)	drpatchu03@gmail.com	9443601748
22nd & 23rd April '17	**Dr. Meenu Gupta** Cancer Research Institute, Swami Rama Himalayan University, Dehradun (North Zone)	meenugupta.786@rediffmail.com	8954785377
- November '17	**Dr. Rajesh Vashista** JIPMER, Pondicherry (TN & Puducherry)	drvashistha@gmail.com	9316911970

CONFERENCES

CURRENT AND UPCOMING

RADIOBIOLOGY COURSES

23rd September '17	**Dr. Manoj Gupta** IGMC, Shimla	mkgupta62@yahoo.co.in	9816137344
03rd June '17	**Dr. Munish Gairola** North Zone: Rajiv Gandhi Cancer Institute & Research Center, Delhi	gairolam@hotmail.com	9958431598
09th September '17	**Dr. Anup Kumar** East Zone: RIMS, Ranchi (Jharkhand Chapter)	anupkr_74@yahoo.co.in	9199395419
25th March ' 17	**Dr Ashok Diwan** West Zone: GMC,Nagpur (Maharashtra Chapter)	tinuad_07@hotmail.com	9822816608
28th October '17	**Dr Ashwin Shah** South Zone: Kamineni Hospital, Hyderabad	ashwinmanikantshah@gmail.com	9848031770

AROI-ICRO DR. REDDY'S LAB POST PG TEACHING

To Be FInalized '17	**Dr. Suresh Kumar** Kerala	mkgupta62@yahoo.co.in	9816137344
08th & 09th July '17	**Dr. Pritanjali Singh** AIIMS, PATNA (Bihar Chapter)	drpritanjali@yahoo.com	9334931395
29th & 30th April '17	**Dr. Madhup Rastogi** RML, Lucknow (UP Chapter)	drmadhup1@rediffmail.com	9418155955
- October '17	**Dr. Sandeep Jain** SMS Medical college/BMC Inst, Jaipur (Rajasthan Chapter)	jaindrsandeep@rediffmail.com	9828233338
To Be Finalized '18	**Dr. M Nagrajan** V. N. Cancer centre at GKNM Hospital, Coimbatore (TN & Puducherry)	mnr81@yahoo.com	9848031770
To Be Finalized '18	**Dr. Maqbool Lone** SKIMS ,Srinagar (North Zone)	drlone.m@gmail.com	9622457526
- October '17	**Dr. Sandeep Jain** SMS Medical college Jaipur (Rajasthan Chapter)	jaindrsandeep@rediffmail.com	9828233338
To Be Finalized '18	**Dr. Manoj Gupta** IGMC, Shimla	mkgupta62@yahoo.co.in	9816137344
To Be Finalized '18	**Dr. M.G. Janaki** South Zone: M.S.Ramaiah, Bengaluru (Karnataka Chapter)	drjankimg@gmail.com	9845362932
To Be Finalized '18	**Dr. Preety Jain** West Zone: GMCH MGM Medical College Indore (MP & CG Chapter)	jainpreety2005@yahoo.com	9827227738
To Be Finalized '18	**Dr. S K Sarkar** East Zone: Medical College, Kolkata (West Bengal Chapter)	shyamalsarkar20141@gmail.com	9831097315
To Be Finalized '18	**Dr. Ashok Diwan** West Zone: GMC, Nagpur (Maharashtra Chapter)	tinuad_07@hotmail.com	9822816608

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To Be Finalized '18	**Dr. S N Senapati** East Zone: A.H. Regional Cancer Centre, Cuttack (Odisha	snsenapati2007@gmail.com	9437031718
To Be Finalized '18	**Dr. Vijay Anand Reddy** South Zone: Apollo Cancer Hospital, Hyderabad (Telangana Chapter)	vijayapreddy@hotmail.com	9848020002

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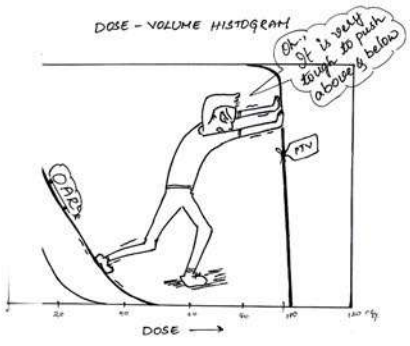
COMIC STRIPS

Illustrated by Dr. Nagarjun Burela

Illustration 01



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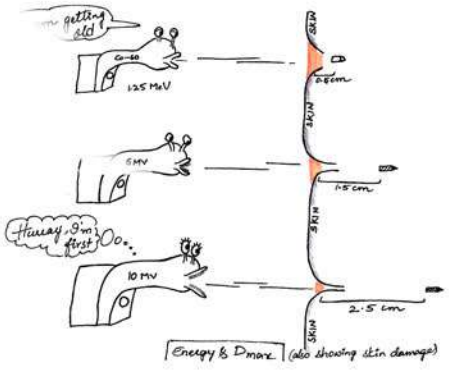

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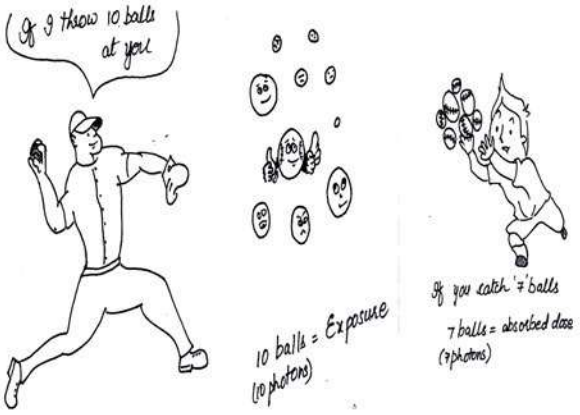

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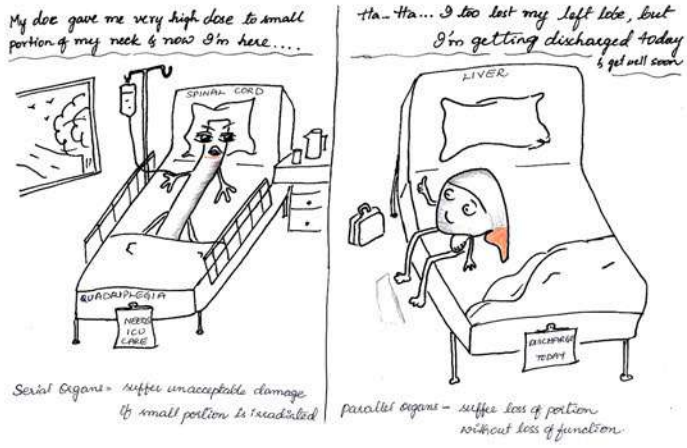

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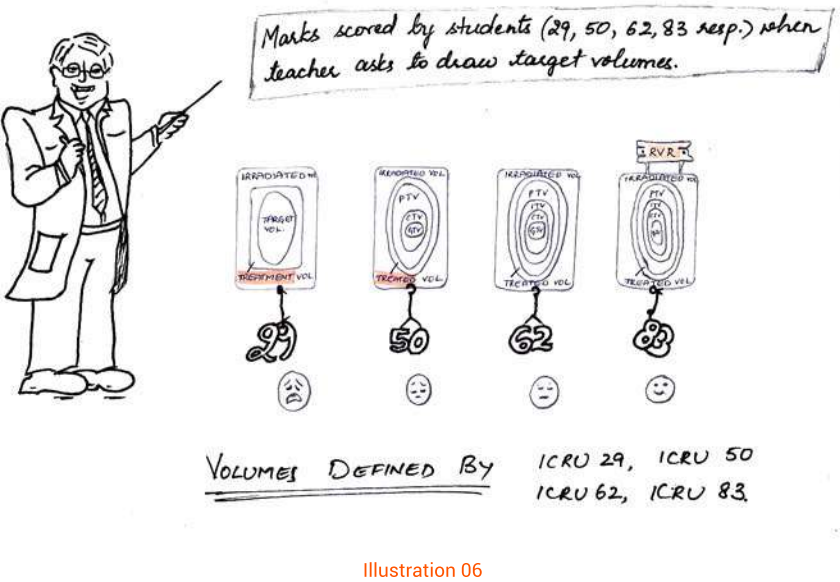

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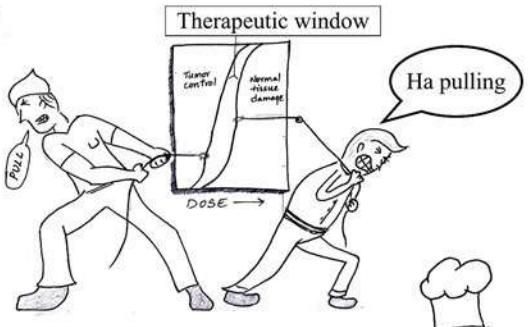


Illustration 06

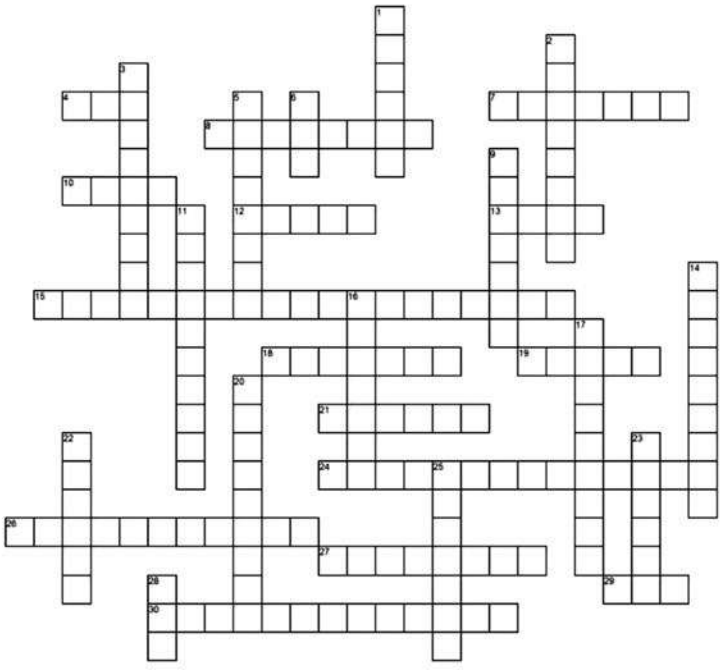
Illustration 06

ACTIVITIES

FUN & ENJOYMENT

CROSSWORD

Radiation Oncologist Brain Teasers



ACROSS

4 A tool in TPS to compare how best is your plan.
7 Elekta linac - one and one could be eleven
8 A famous author was demonstrating the applicators used in radiotherapy
10 An imaging device to check setup error
12 Radiobiologically highly damaging
13 An international organization
15 Noble prize winning discovery but scientist is famous for another research
18 A condition in which radiosenstivity of the tumour decreases
19 Minimum possible radiation
21 Radiation oncologist and physicist were eating biscuits in TPS room and discussing about a city in France famous for motor race
24 Sometime children have to suffer because of hereditary Problems
26 View of stars in sky is amazing with telescope
27 Cathode rays
29 Treatment algorithm
30 Patient was angry and spoiled the radiograph with onion peels

DOWN

1 Parallel but critical
2 High variation in dose at the edges of the beam.
3 A professional, you may love or hate but difficult to ignore
5 You are not allowed to enter in radiation zone without this gadget
6 Visible and palpable
9 Linac is a cold bold (water) machine
11 Robot in radiotherapy
14 Proton therapy
16 Dose is same on these curves.
17 Color filled balloons are quite handy in Holi
20 Jewelers use expensive metals other than gold for ornaments
22 Bending of electron beam
23 From Manchester
25 Tricky to shield
28 True false is high, be careful

SEND & WIN

Complete the crossword and take a print out, scan or snap it and send it to us at the email addres provided below and from the correct answers we wil randomly pick one winner who we will send an exciting prize. The winner will be announced in the next newsletter. Don't wait, send us your answers fast!

dr.gautamsharan@gmail.com

This issue is brought to you by Dr. Gautam K. Sharan (Inlaks and Budhrani Hospital, Pune, India for the Association of Radiation Oncologists of India)
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