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In This Issue

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Post mastectomy radiotherapy after neoadjuvant chemotherapy in breast cancer: current evidence

Dr Vaishali Zamre is a surgical oncologist at Max Super Speciality Hospital, Ghaziabad. Her interests include oncoplastic breast surgery.

Dr. Arun Kumar Goel is currently Director of Breast Oncology at Max Superspecialty Hospital, Vaishali.

In the management of breast cancer, the concept of neoadjuvant or primary systemic therapy (initiation of systemic treatment before definitive loco-regional treatment) evolved in the latter part of twentieth century. Initially, it was used for locally advanced/inoperable breast cancer and inflammatory breast cancer. Later on, use of neoadjuvant chemotherapy (NAC) was expanded to large operable breast cancer where breast conservation was not initially feasible but was desired by the patient. Reduction in tumour size allowed reduction in excised breast volumes and permitted conservation in more than half of such patients.

Primary systemic therapy has many theoretical advantages such as early attack on systemic micro-metastases, in vivo assessment of sensitivity of tumour to the administered drugs, down-staging of disease, better access of drugs to tumour as there is no disturbance of vascularity by surgery, etc. It was expected that that there would be improvement in overall survival but multitude of studies have failed to demonstrate any survival gain. Down-staging of tumour and its effect on surgical treatment has been the most tangible gain from NAC.

Over the decades, significant advances in chemotherapy for breast cancer with integration of anthracyclines and taxanes as well as the more recent incorporation of targeted therapy (HER2 directed agents such as trastuzumab and pertuzumab) has led to higher response rates with dramatic increase in the number of patients achieving pathological complete response (pCR). Further, it has been documented that patients who achieve pCR have excellent long term outcomes.

Use of neoadjuvant chemotherapy (NAC) to allow breast conservation was confirmation of the principal that de-escalation of local therapy is possible with NAC. The usage of adjuvant radiation therapy among patients who are being treated with NAC is also being looked at critically with a possibility of de-escalation and is the focus of the current article.

Adjuvant radiation therapy is an important component of multimodality management of breast cancer. While it has been in use for a long time, there was a transient decline in use when increase in delayed cardiac mortality was documented and it was found to be eroding the early gains from disease specific survival improvement.

In addition, advent of adjuvant systemic therapy also had some impact on loco-regional failure rates. However, publication of two large trials at the turn of the century documented beyond doubt that there is a significant improvement in overall survival with use of adjuvant radiation therapy among breast cancer patients receiving chemotherapy or hormonal therapy in adjuvant setting (1,2,3,4). Based on these data, radiation was used for patient with T3 or T4 tumour and those with metastases to 4 or more axillary nodes. Role of adjuvant RT in patients with 1 to 3 node metastases and other high risk factors was also advised based on various selection criteria. In addition, patients receiving breast conservation surgery have been candidates for whole breast radiation as part of the treatment. Recent studies have focussed on partial breast irradiation in patients undergoing breast conservation and found it to be safe in selected patients.

Majority of patients receiving NAC either have locally advanced breast cancer or large primary tumours. By conventional criteria, most of them would be candidates for adjuvant radiation therapy either after mastectomy or after breast conservation surgery. However, the detailed pathological information that is available in patients having primary surgery is often lost either partially or totally as a result of primary systemic therapy. The decision to administer radiation in these cases is then based on clinical and radiological parameters combined with limited pathological information that is available. The tendency has been to err on side of using radiation rather than otherwise. The questions that need to be answered in relation to the decision making process for adjuvant radiation therapy among patients receiving primary systemic therapy, are:

- What is the benefit of adjuvant radiation therapy after NACT and mastectomy?

- What should be the primary basis for radiotherapy decision making? Initial staging is based on clinical and radiological assessment and thus not as accurate as pathological staging. Pathological information after NACT is not a true representative of the primary pathological stage. How should both sets of information be integrated in the decision making process?

- Does response to NACT form a separate predictor of outcomes and can it influence the decision making process about radiotherapy after NACT?

- Do patients with pCR form a special subgroup where radiation therapy can be omitted? If not, what should be the parameters for recommending adjuvant radiation in this group of patients?

- Is there a role of considering biological markers in the decision making?

- If adjuvant radiotherapy is recommended, what should be the choice of fields, portals and dose?

Current evidence on PMRT after NAC:

Importance of radiotherapy as a part of multimodality treatment in locally advanced breast cancer management was reported in a study published in IJROBP in 1998. The study was carried out from 1990 to 1993 (5). The study reported outcomes of 55 patients treated as part of a multimodality protocol with MVAC (Methotrexate, Vinblastine, Adriamycin and Cisplatin) chemotherapy as both neoadjuvant and adjuvant along with surgery and postoperative adjuvant radiotherapy. However, 13 patients did not receive adjuvant radiation either due to patient refusal (9 patients) or early local or distant failure (2 each). No chest wall recurrences occurred among irradiated patients while 3 patients who did not have radiation developed chest wall failure. Five year overall survival was 69% in the irradiated group and 46% in the non-irradiated group. On multivariate analysis, pCR, number of preoperative chemotherapy cycles and adjuvant RT were factors that influenced overall survival. All patients in this study were preoperatively staged IIIA or IIIB. An interesting observation was that there was a high incidence of brain metastases in the group without postoperative RT. The authors concluded that radiation should be an integral part of multimodality management of locally advanced breast cancer.

A series of publications from MD Anderson Cancer Centre at the beginning of the century have addressed the issue of postoperative radiation therapy in breast cancer patients receiving neoadjuvant chemotherapy. In a retrospective analysis of 5 studies of NAC carried out from 1974 to 1998 and including nearly one thousand patients, 150 patients were identified who did not receive postoperative radiotherapy (6). Of these 43% were having stage II disease and 56% had stage III disease (some labelled stage IV due to ipsilateral supraclavicular nodes). No inflammatory breast cancers were included in these studies. In this group of 150 patients, only 15 (10%) had pCR. LRR developed in 35 patients (actuarial LRR rate of 27% at both 5 and 10 years). LRR was an isolated first event in 23 of these patients. Clinical T Stage, pathological tumour size and pathological N stage correlated with LRR. However, clinical N stage (negative versus positive) did not show correlation with LRR. Five year LRR was 19% for patients with pCR and not significantly different from patients without pCR (28%, p value=0.413). However, the group with pCR was small, leading to wide confidence intervals. Hormone receptor status showed no correlation with LRR. Use of tamoxifen showed a correlation with LRR rate of 7% for those receiving tamoxifen and 36% for those not receiving tamoxifen. Based on these results, the authors mention that both clinical and pathological factors are important predictors of LRR. Further, patients with initially advanced disease achieving significant down-staging still have high risk of LRR and merit adjuvant radiation therapy. Only patients with stage I and II disease and clinically as well as pathologically negative axilla had a low risk of LRR. Stage I and II disease is in general low risk disease for LRR even when NACT is not used and majority of them are not candidates for adjuvant radiation therapy.

The same question was addressed from another angle by the investigators from MDACC. The outcome of these patients was compared with a set of 1031 patients who had adjuvant chemotherapy and did not receive adjuvant radiotherapy. While there were more clinical stage III patients in neoadjuvant group, the pathological tumour size and nodal burden were lower in this group. In spite of this, the LRR was 27% for the neoadjuvant group and only 15% for the adjuvant group. This reinforced the concept that initial clinical stage has a significant bearing on the LRR and should not be ignored. All patients who are having advanced disease clinically should be administered adjuvant radiotherapy after NACT.

Another retrospective study from MDACC compared outcomes for patients treated with NACT, mastectomy and radiation therapy (542) with the group that did not receive radiotherapy (134) and were part of the earlier study. Patients who had recurrence within 2 months of surgery were excluded from the study. While the irradiated group had more adverse prognostic features (clinical and pathological stage, close or positive margins, poorer response to NACT), LRR was 22% in non-irradiated group versus 11% in the irradiated group. Even when pCR was achieved with NACT, there was a high risk of LRR. Among patients with clinical stage III disease and pCR, 10 year LRR was 33% without RT and 3% with RT. On multivariate analysis, radiation use had a significant impact on LRR with a hazard ratio of 4.7 for LRR if adjuvant radiotherapy is not used. In this study, clinical stage, pathological nodal burden, no tamoxifen use, oestrogen receptor negativity and poor response to NACT correlated with higher LRR. Cause specific survival was significantly better in irradiated patients in high risk subgroups. The conclusion again was to recommend adjuvant radiotherapy in all patients with advanced disease. The benefit in earlier disease (T1/T2 disease with 1 to 3 positive nodes) was not clear and further investigation was recommended for this group.

Another study from MDACC compared the outcome of younger women (<35 years of age) who received NACT and had mastectomy. Among 107 consecutive patients in this category, 80 received adjuvant RT while 27 did not receive RT. Loco regional control (88% with RT versus 63% without RT) and 5 year overall survival (67% with RT versus 48% without RT) were significantly different. While retrospective, this study showed a difference in overall survival with adjuvant radiation after NACT and mastectomy.

Focussing on patients achieving pCR, another study from MDACC compared outcome of 72 patients who received RT after pCR on mastectomy and 34 patients who did not receive RT after mastectomy documented pCR. For clinical stage I and II disease, LRR was 0% at 10 years in both groups. However, for stage III patients, LRR was 33.3% without RT versus 7.3% with RT (p value 0.04). Disease free and overall survival was also better in the group of patients receiving RT. While retrospective, this study has a fairly large cohort of patients who have pCR with NACT and have undergone mastectomy.

In a publication that analysed LRR among patients receiving NACT as part of NSABP B-18 and B-27 trials, 1071 patients had mastectomy without adjuvant PMRT. Loco regional recurrence occurred in 12.3% of mastectomy patients (8.9% local and 3.4% regional). The patients in these trials were mostly early stage tumours with majority being T1-2N0-1, explaining the relatively lower recurrence rates. Clinical tumour size, clinical node status, pathological node status and breast tumour response were predictors of LRR. This study represents a category of patients that are still uncommon recipients of NACT, especially in India.

Another recent publication by Nagar et al (2015) analysed patients treated with NACT and mastectomy at New York Presbyterian Hospital from 2003 to 2010. During this period 161 patients underwent mastectomy after NACT; 118 patients received adjuvant radiation while 43 patients did not. Radiation fields consisted of chest all and regional fields (axilla, supraclavicular and internal mammary). Patients who received PMRT had a lower rate of loco regional recurrence and better disease free survival at 5 years.

Another study reported from MDACC in 2011, clinical T3N0 patients were analysed. Out of 162 patients, 119 patients received PMRT while 43 patients did not receive PMRT (7). Five year LRR was 4% with PMRT and 24% without PMRT. This highlighted that a relatively better prognostic subgroup (cT3N0) also benefitted from use of PMRT after NACT.

There was a study from Korea that focussed on patients that were pathologically node negative after NACT (ypN0). In this study, while the local recurrences were more common in the group without RT, the difference was not statistically significant. More than half of the patients in this study were clinically stage II. Thus, it is an indication that low risk groups are there among patients receiving NACT and undergoing mastectomy and these patients may not derive significant benefit from PMRT. The question is to conclusively identify such categories so that patients are not undertreated or over treated.

The data that has been discussed in the above paragraph highlights that there is a significant benefit from PMRT after NACT. Clinical disease status plays a very important role in indicating the risk of LRR. While response to NACT is a prognostic factor, it does not negate the value of clinical parameters. Based on these studies, patients who are candidates for adjuvant radiotherapy (T3/T4 tumours and multiple nodes positive) continue to be candidates for PMRT after NACT. As of now, any patients with pathologically involved nodes after NACT should be offered PMRT. Even a pCR does not preclude the need for PMRT in these patients. Only cT1/T2 tumours with no axillary node involvement clinically and pathologically form a sufficiently low risk group to be managed without PMRT.

A retrospective review of published literature was reported by Fowble et al in 2012 (8). They found 24 retrospective studies that were representative. A LRR rate of 10% was taken as a cut off for recommending PMRT. Based on this, patients who fall in the low risk category include clinical stage I and II patients who receive pCR or have pathologically negative nodes. Clinical stage I-II patients who have 1-3 involved nodes pathologically are low risk if they have oestrogen receptor expression with no extracapsular extension or lympho-vascular invasion. Patients who were cT3N0 and achieved pCR also qualified as low risk patients. Other patients would not be eligible for the low risk status and would be candidates for PMRT.

A guideline update from ASCO, ASTRO and SSO focussed on the indications of PMRT in general (9). The guideline maintains that for patients with clinical Stage I and II who have received NACT, PMRT is recommended if there is pathological nodal disease.

NICE guidelines on the management of early and locally advanced breast cancer (2018) also recommend PMRT in all patients with locally advanced or inflammatory breast cancer and all patients who have cN+ or pN+ disease irrespective of pathological response. There is a recommendation to consider PMRT for T3N0 (either clinical or pathological).

A fresh look at the question of PMRT after NACT has been initiated by Fowble and co-authors by analysing failure rates in relation to the disease biology based on immunohistochemistry (10). This study suggests that hormone receptor and HER2 positive group had a higher risk of LRR. The study however has a small number of patients in total with few recurrences in total. The results from the study cannot be taken as indicative for any treatment decisions. However, a larger dataset focussing on this approach would be worthwhile.

Newer data from different institutions would be welcome to further explore the parameters that should be used for PMRT decisions. There is a significant use of HER2 directed therapy in neoadjuvant setting in recent years. This has led to higher pCR rates and may lead to significant reduction in loco-regional recurrences too. The importance of HER2 directed therapy has been highlighted by recent changes in AJCC TNM classification that now included HER2 directed therapy as a criterion for staging.

There are other changes taking place in the management of breast cancer. Sentinel node biopsy has become the standard of care in primary surgery of breast cancer. Investigations have been carried out in the setting of NACT and further data will clarify the appropriate usage of sentinel node biopsy in patients receiving NACT. These changes will have an interplay with the recommendations for radiation therapy including choice of radiation fields. An important change is improved axillary staging with use of modalities such as axillary ultrasound, ultrasound guided FNAC/biopsy from axillary nodes,

MRI and PET CT scanning. Use of sentinel node biopsy prior to initiation of NACT has been discussed. Overall, more accurate clinical staging information can now be available and help in making more informed decisions about PMRT.

Another question that needs to be answered is the choice of radiation fields when PMRT is being used after NACT. There is a lot of debate and discussion about the use of regional nodal irradiation. When primary surgery is used, nodal irradiation is considered if there is pathological node positivity. While there is unanimity about supraclavicular irradiation, internal mammary irradiation is considered especially for medial or central tumours and multiple axillary node metastases. Axillary irradiation is avoided if complete axillary irradiation has been carried out.

In the setting of NACT, clinical node assessment is incomplete and pathological node status may be negative or show a lower burden due to axillary down-staging. Many publications have not described in detail the radiation fields used in their patients. However, use of comprehensive irradiation (chest wall, axilla, supraclavicular and internal mammary) has been mentioned in some studies.

In a study from Miami, Wright et al presented retrospective data of 464 patients treated with PMRT after NACT (11). In this group, 82.5% patients received RT to chest wall and supraclavicular fields while 17.5% received RT to chest wall alone. Internal mammary irradiation use was negligible. On multivariate analysis, omission of supraclavicular fields was associated with high LRR (hazard ratio 3.39, P= 0.024).

In the retrospective analysis from National Cancer Database that focussed on cT1-3cN1 patients, data was also collected about the use of regional nodal irradiation. There was no survival difference between patients receiving chest wall RT and those receiving chest wall and regional nodal irradiation.

Thus, in the absence of any prospective studies, it is prudent to recommend supraclavicular irradiation for cN+ or ypN+ patients. Use of internal mammary and axillary irradiation can be carried out based on institutional policies and preferences. Some authors have recommended radiation to axilla if the axillary dissection is not adequately performed (<10 nodes dissected), if the nodes are found to be adherent to the vessels or more than 50% of the total dissected nodes still contain tumour cells after NAC.

Conclusions

Based on available literature, it can be concluded that there is lack of prospective evidence regarding recommendations for PMRT after NACT in breast cancer. However, multiple retrospective datasets provide fairly strong suggestion that both clinical and pathological factors are important in making the decision. Pathological complete response does not preclude the need for radiation. Only patients who can be spared PMRT with confidence are those who have cT1-2 disease and are clinically and pathologically node negative. For other potentially low risk groups, care should be exercised in avoiding PMRT. With more data in future, tumour biology can be integrated in such decision making. One prospective randomized trial (NSABP B-51/RTOG 1304) is assessing the role of local and regional irradiation after neoadjuvant chemotherapy in patients undergoing mastectomy as well as those undergoing breast conservation surgeries. In addition to such randomized studies, prospective non-randomized data collection may also contribute to the pool of available information and evidence.

Ongoing trials:

- NSABP-51/ NRG Oncology Group 9353 trial women with cT1–3 N1 breast cancer who undergo lumpectomy or mastectomy and are found to have ypN0 are randomized to receive RNI versus no RNI
- The Alliance A011202 trial randomizes women with cT1–3N1 breast cancer who remain ypN+ on SNB following NAC to axillary node dissection and RNI versus RNI alone

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Conferences

6th AROI-ICRO (INTAS) radiobiology course At Vydehi Cancer Centre, Bengaluru

6th AROI-ICRO (INTAS) radiobiology course for south zone was conducted on 14th July 2018 at Vydehi Cancer Centre, Bengaluru. The course director was Dr Manoj Gupta, professor and Head, Dept of Radiation Oncology, All India Institute of Medical Sciences, Rishikesh, Uttarakhand. The morning session started with module 1 followed by inaugural function. Dr Geeta S. Narayanan, Professor and Head, Dept. of Oncology briefed about Vydehi Cancer Centre. Dr VijayaAnand Reddy, Director Apollo Cancer Centre Hyderabad and President AROI inaugurated the course by lamp lighting. Dr G. Prabhakar, Principal, Vydehi Institute of Medical Sciences & Research centre was the guest of honor. DrPrabhakar spoke about the facilities of the Institute. Dr Reddy, the chief guest addressed the gathering with a special message to young radiation oncologists. Dr G.V.Giri, Senior consultant, Shankara Cancer Centre, Chamrajpeth and AROI secretary was also present at the venue. The scientific sessions were conducted in 5 modules. The graphics, course content and the presentations of Dr Gupta were widely appreciated by all the participants. The concluding remarks were made by Dr Giri. The course was conducted successfully with a total attendee of 104 who came from all over the country.

Conferences

29th ICRO Postgraduate Teaching Program VN Cancer Centre, GKNM Hospital, Coimbatore- 1st and 2nd September 2018

29th ICRO-SUN Postgraduate Teaching Program organized by V N Cancer centre, was conducted at GKD auditorium, GKNM hospital, Coimbatore on September 1 and 2, 2018. The program started with welcome address by Dr M Nagarajan, Course Chairman followed by Inaugural address by Dr Surendra Senapati, President ICRO and Chief guest address by Dr Ragupathy Veluswamy, CEO, GKNM hospital. Dr A N Vaidhyswaran- President TN-PY chapter AROI, Dr L Padmanabhan- Secretary TN-PY chapter AROI, Dr Rajkumar- Chairman Oncology GKNM hospital, Mr Arvind Suri- GM Sales & Marketing SUN Oncology and Dr Anand Narayan- Course co-ordinator chaired the function.

The topic of the program was "Meta-analysis". The lectures covered basics and importance of meta-analysis (Dr Saikat Das), interpretation of Forest plot (Dr SajalKakkar), overview of Cochrane (Dr Kanhu Patro), major meta-analysis evidences in different malignancies like CNS tumors (Dr Meenu Gupta), breast (Prof Manoj Gupta), cervix (Dr Supriya Sastri), head and neck (Dr Cessal Kainickal), stomach (Dr Pritanjali Singh), prostate(Dr Preeti Jain) , lung (Dr Srinivasan), rectum (Dr Monika Malik), STS (Dr Geeta Narayanan), lymphoma (Dr Jayant Goda) and pediatric cancers (Dr Selvamani). A total of 57 post graduates from across the country attended the course. The faculty and students were taken for facility tour of Oncology department. Participants felt the academics was good, extensive and very useful for their exam preparation.

Dr Nishant Vidyasagar (MS Ramaiah Medical college, Bengaluru) and Dr Abhilash Menon (JIPMER, Puducherry) bagged the top two prizes in quiz competition.

Conferences

29th ICRO Postgraduate Teaching Program
VN Cancer Centre, GKNM Hospital,
Coimbatore- 1st and 2nd September 2018

Indus Super Specialty Hospital, Mohali in collaboration with Association of Radiation Oncologists of India – North Zone organized the 24th Annual Conference (NZAROICON-18) on 15th & 16th of September, 2018 at The Oberoi Sukhvilas Resorts, New Chandigarh.

Under the vigilant guidance of dynamic NZ-AROI President – Prof. Manoj Gupta, NZ-AROI Secretary - Dr. Manish Pandey, the Organizing Chairman - Dr. Vinod Nimbran (Director-Oncology, Indus Super Speciality Hospital, Mohali), Co-Organizing Chairman - Dr. Narendra Kumar (Professor-Department of Radiotherapy & Oncology, PGIMER, Chandigarh) and Organizing Secretary - Dr. Pankaj Kumar (Senior Consultant - Radiation Oncology, Max Super Speciality Hospital, Mohali) and with the blessings of President Elect AROI – Dr. Rajesh Vashistha, a thought provoking and stimulating theme "Controversies in the Treatment of Malignancies" was chosen.

With the participation of distinguished and expert faculty, who have made their mark in the field of Oncology, this conference aimed at addressing the challenging clinical scenarios where there is controversy in the treatment of common malignancies of various sites. So, Evidence based treatment options for various controversies and management dilemmas encountered in our daily oncology practice were discussed over one and a half days. Lectures on controversial contouring guidelines in the present era of modern conformal radiation therapy were also included.

The Conference was attended by approximately 225-250 Radiation, Surgical & Medical Oncologists from North India (Jammu &Kashmir, Himachal Pradesh, Punjab, Chandigarh, Haryana, Delhi, Uttarakhand & Representation from UP Chapter of AROI).

The conference provided a platform for all Delegates, budding radiation Oncologists and participants to share their experience and raise the bar of the benchmark standards in the Treatment of Cancer. The event included paper presentations from postgraduate students, senior residents and junior faculty in the "Best Paper Session (Awards from NZ-AROI Executive Committee)" and in Proffered Paper Session (Awards from Organizing Committee, NZAROICON-18). Oncoquiz was also conducted, in which five teams from various Oncologyinstitutesparticipated and a separate ePoster presentation session was also included.

Conferences

Conferences

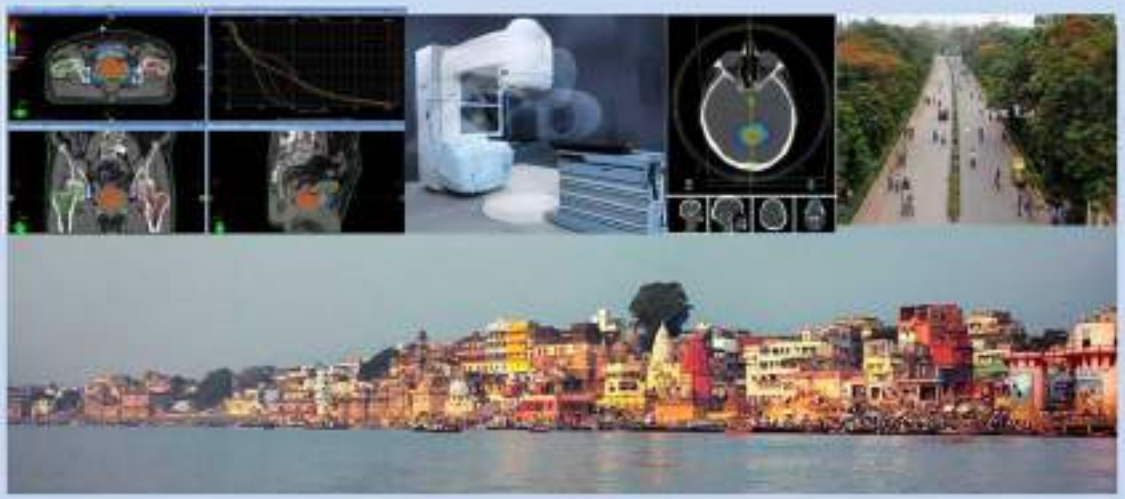
50 glorious years of Radiotherapy in Banaras Hindu University

30th Annual Conference of Association of Radiation Oncologists of India (UP Chapter)

UP AROICON 2018

Current Practices and Controversies in Management of Cancer

October 13-14, 2018



Hosted by

Department of Radiotherapy and Radiation Medicine

Institute of Medical Sciences, Banaras Hindu University

Varanasi (UP) -221005

Conferences

AROICON 2018

Thiruvananthapuram

Nov 29- Dec 2, 2018

We are delighted to invite you to Kerala – 'God's Own Country' for the next National Annual Conference of **AROI - AROICON 2018**. The capital city of Thiruvananthapuram will play host from **Nov 29th to Dec 2nd, 2018.**

President: Kerala Chapter
Dr Jayaprakash Madhavan

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Conferences

Prof. S. C. Sharma (Retired Senior Professor & Head, PGIMER, Chandigarh & Presently, Professor & Head, M. M. Medical College, Mullana, Ambala) delivered the second Prof. B. D. Gupta Oration on the first day, in which he highlighted the achievements of the great Prof. B. D. Gupta and also presented his personal work and experience in Hypofractionated Radiotherapy for Carcinoma Breast with relevant literature review. Late Prof. B. D. Gupta's son was present during the Oration, he was also felicitated by NZAROICON-18 Organizing Committee.

The Chief Guest for Inaugural Ceremony was Prof. Jagat Ram (Director- PGIMER, Chandigarh) and Guest of Honour was Prof. G. K. Rath (Chief- DRBRAIRCH, AIIMS, Delhi & Director-NCI, Jhajjar, Haryana). Other dignitaries who graced the occasion were the Chief Patron of NZAROICON-18 - Dr. S.P Singh (Chairman-Indus Group of Hospitals), Patrons Prof. S. C. Sharma & Prof. F. D. Patel, Co-Patrons Prof. Sushmita Ghoshal & Prof. Rakesh Kapoor, President Elect AROI – Dr. Rajesh Vashistha, NZ-AROI President – Prof. Manoj Gupta, NZ-AROI Secretary - Dr. Manish Pandey, the Organizing Chairman - Dr. Vinod Nimbran, Co-Organizing Chairman - Dr. Narendra Kumar and Organizing Secretary - Dr. Pankaj Kumar.

The inaugural ceremony included special session and talks by stalwarts of Radiotherapy- Prof. G. K. Rath, Dr. Shelly Hukku, Prof. F. D. Patel, Prof. Sundar Ayyagiri and Prof. K. T. Bhowmick, where they shared their lifetime experiences and journey in the field of Radiation Oncology.

I feel extremely humbled with the good wishes that have been pouring from all quarters. On behalf of the Organizing Committee of NZAROICON-18, I would like to thank my teachers, seniors, all dignitaries & Faculty members, colleagues, delegates and friends for participating actively in large numbers in the conference and makin it a grand success.

Dr. Pankaj Kumar,
Organizing Secretary - NZ-AROICON 2018, Senior Consultant - Radiation Oncology,
Max Super Speciality Hospital, Mohali (Punjab).

Best of American Society of Clinical Oncology (ASCO) Conference Report 28-29th July, 2018, The Ashok Hotel, Delhi

Abhishek Shankar, Assistant Professor, Preventive Oncology, AIIMS, Delhi

Best of American Society of Clinical Oncology (ASCO) was jointly organized by Indian Society of Clinical Oncology (ISCO) and Department of Preventive Oncology, All India Institute of Medical Sciences, Delhi under the leadership of Prof. GK Rath at The Ashok Hotel, Delhi on 28-29th July, 2018. This is an important conference organized every year in India but Delhi hosted it for the first time. All the Institutions/Hospitals in Delhi/NCR came together to make a good organizing team to deliver the best of scientific content important for India centric cancers.

This was officially licensed ASCO program with theme "Delivering discoveries: Expanding the reach of Precision Medicine. We tried to include all the specialties/superspecialities involved in cancer care to make it a true clinical oncology conference. Apart from abstracts provided by ASCO, we discussed important abstracts on India centric cancer under the heading ISCO rapid review. We had one panel discussion at the end of every session which summarized important decision making points.

We had 15 sessions covering Gynecological, Breast, GI, GU, Lung, and Head & Neck cancers along with Hematological malignancies, Soft Tissue Sarcomas, CNS Tumors and Supportive Care. We had a special session on cancer survivorship which was attended by large number of audience. This conference was attended by more than 1100 participants from 28 states/Union territories consisting of health care professionals and trade delegates. More than 400 oncologists participated as faculty and more than 400 as delegate.

Conferences

Best of American Society of Clinical Oncology (ASCO) Conference Report 28-29th July, 2018, The Ashok Hotel, Delhi

Abhishek Shankar, Assistant Professor, Preventive Oncology, AIIMS, Delhi

29th ICRO Postgraduate Teaching Program VN Cancer Centre, GKNM Hospital, Coimbatore- 1st and 2nd September 2018

29th ICRO-SUN Postgraduate Teaching Program organized by V N Cancer centre, was conducted at GKD auditorium, GKNM hospital, Coimbatore on September 1 and 2, 2018. The program started with welcome address by Dr M Nagarajan, Course Chairman followed by Inaugural address by Dr Surendra Senapati, President ICRO and Chief guest address by Dr Ragupathy Veluswamy, CEO, GKNM hospital. Dr A N Vaidhyswaran- President TN-PY chapter AROI, Dr L Padmanabhan- Secretary TN-PY chapter AROI, Dr Rajkumar- Chairman Oncology GKNM hospital, Mr Arvind Suri- GM Sales & Marketing SUN Oncology and Dr Anand Narayan- Course co-ordinator chaired the function.

The topic of the program was "Meta-analysis". The lectures covered basics and importance of meta-analysis (Dr Saikat Das), interpretation of Forest plot (Dr Sajal Kakkar), overview of Cochrane (Dr Kanhu Patro), major meta-analysis evidences in different malignancies like CNS tumors (Dr Meenu Gupta), breast (Prof Manoj Gupta), cervix (Dr Supriya Sastri), head and neck (Dr Cessal Kainickal), stomach (Dr Pritanjali Singh), prostate(Dr Preeti Jain) , lung (Dr Srinivasan), rectum (Dr Monika Malik), STS (Dr Geeta Narayanan), lymphoma (Dr Jayant Goda) and pediatric cancers (Dr Selvamani). A total of 57 post graduates from across the country attended the course. The faculty and students were taken for facility tour of Oncology department. Participants felt the academics was good, extensive and very useful for their exam preparation.

Dr Nishant Vidyasagar (MS Ramaiah Medical college, Bengaluru) and Dr Abhilash Menon (JIPMER, Puducherry) bagged the top two prizes in quiz competition.

Conferences

29th ICRO Postgraduate Teaching Program
VN Cancer Centre, GKNM Hospital,
Coimbatore- 1st and 2nd September 2018

RAJ AROICON-2018
18th & 19th August, 2018
Acharya Tulsi Regional Cancer Treatment & Research Institute, S.P. Medical College, Bikaner

Raj AROICON 2018 was held at Acharya Tulsi Regional Cancer Treatment & Research Institute, S.P. Medical College, Bikaner on 18th & 19th August, 2018.
Approximately 250 delegates and 28 speakers attended the event. It was a good academic feast.
The organizing committee conveys its gratitude and thanks to all the speakers who spent time out of their busy schedule for us and not the least to all the delegates for their active participation.
G.B.M. was held on 18th August, 2018 at 6 PM onwards. The meeting was attended by

Dr. Rajesh Vashistha, President Elect AROI
Dr. Rohitash Dana, President AROI, Rajasthan Chapter
Dr. Sandeep Jain, Secretary AROI, Rajasthan Chapter and
AROI Rajasthan Chapter Members

Results of election for various post of AROI Raj Chapter were declared elected as new office bears of AROICON (Rajasthan Chapter).

President: Dr. H.S. Kumar
Secretary: Dr. Shankar Lal Jakhar
Vice President : Dr. Nidhi Patni
Joint Secretary: Dr. Narender Rathore and Dr. Mukesh Singhal
Treasurer: Dr. Shantnu Sharma

A new trophy and cash award for the best paper presentation was started by RAJ AROICON Members in fond remembrance of Founder Director Dr. D.P. Punia.
Meeting concluded with vote of thanks and the venue for next RAJ AROICON 2019 was decided in favour of Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur.


Dr. H.S. Kumar


Dr. Shankar Lal Jakhar

International Conference On Nuclear and Radiological Emergency Management

9th - 11th February 2019

SMS Medical College and Hospitals

Jaipur, India.

Chief Patron
Dr. Raja Babu Panwar,
Vice Chancellor
Rajasthan University of Health Sciences, Jaipur

Patron
Dr. U.S. Agarwal,
Principal & Controller
SMS Medical College & Hospitals, Jaipur

Organizing Chairman
Dr. Arun Chougule,
PHOD, Radiological Physics
SMS Medical College & Hospitals, Jaipur

Better the Awareness and Preparedness - Better is the Emergency management

Co- Patrons
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Mr. Gurpreet Singh
Mr. Mukesh Jain
Mr. S R Choudhary
Mr. Ajay Prajapati

September 14, 2018

Greetings from Jaipur! Hope this mail finds you well.

It gives me immense pleasure to invite you to the International conference on Nuclear and Radiological Emergency Management, **'ICONRADEM2019'** during 9th - 11th February 2019 at Jaipur, organized by the Department of Radiological Physics, SMS Medical College and Hospitals Jaipur, India under the auspices of AFOMP (Asia– Oceania Federation of Organizations for Medical Physics).

The theme of the conference is ***'better the awareness and preparedness: better the emergency management'***. There has always been concern, anxiety and fear regarding the use of nuclear and ionizing radiation and hence the need for creating awareness and emergency preparedness amongst the professionals as well as the public.

In this context, I would like to request you to be a member of the national advisory committee of ICONRADEM 2019 and contribute actively for the all-round success of the conference. Looking forward to hearing a favorable reply from you as soon as possible.

With warm regards

AAchougule

Prof. Dr. Arun Chougule
Organizing Chairman
ICONRADEM 2019

Supported By:

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Conferences

ABSTRACT SUBMISSION

You can submit your abstract related to :

- Misadministration in nuclear medicine, radiotherapy and other radiation using departments
- Accidents, emergency situations in radiation application in industry, agriculture, research
- Justification of Radiation use
- Radiation hazards, protection and radiobiology
- Epidemiology of cancer
- Nuclear and radiological terrorism
- Role of professionals, media and stakeholders in creating awareness regarding safe use of radiation and mitigations in emergency situation
- Radiation emergency training and education
- Prevention & precautions of nuclear disaster
- Radioactive material transportation and accidents
- Radioactive waste disposal & management
- Radiosotope preparation, handling and managing accidents

The last date for submission of abstract is 30th November, 2018

REGISTRATION DETAILS:

You can register yourself by visiting website: *www.iconradem.org*

After adding personal details you will be redirected to the payment gateway. You can also submit abstract after logging into the website. Registration process will start on 20th August, 2018. Registration fee includes conference kit, tea, snacks, three lunches, two dinners, local transport , participation certificate etc.

FEE DETAILS:

Type/Section	Oct 31st 2018	Jan 10th 2019	On Spot
SAARC country delegate	₹5000	₹5500	₹6000
Accompanying delegate	₹2000	₹2500	₹3000
Students/ Scholars	₹2000	₹2500	₹3000
AFOMP/MEFOMP Members	US$ 200	US$ 250	US$ 300
Non Member	US$ 250	US$ 300	US$ 350
Foreign Student/ Accompanying delegate	US$ 150	US$ 175	US$ 200

BANK ACCOUNT DETAILS:

Account Name: CONRAD

Account No.:02751040001 30912

Bank: IDBI Bank, Vaishali Nagar Branch, Jaipur

IFSC Code: IBKL0000272

ADDRESS FOR CORRESPONDENCE:

Department of Radiological Physics
SMS Medical College & Hospital, Jaipur
Rajasthan, India
Email: iconradem2019@gmail.com

International Conference on

Nuclear and Radiological Emergency Management

ICONRADEM 2019

'Better the awareness and preparedness: better the emergency management'

9-11 February, 2019
Jaipur, Rajasthan, India

Organized by:
Department of Radiological Physics
SMS Medical College & Hospital, Jaipur
Under the auspices of
Asia-Oceania Federation of Organizations for Medical Physics

Supported by:

Endorsed by:

Conferences

Dear Colleagues,
Greetings from Jaipur, Pink City of India !!!

It gives us immense pleasure to invite you to the International conference on Nuclear and Radiological Emergencies, ICONRADEM 2019 organized by the Department of Radiological Physics, SMS Medical College and Hospitals Jaipur, Rajasthan during 9th to 11th February 2019 at **'Sushrath Sabhagar'** SMS Hospital Jaipur.

The theme of the conference is 'better the awareness and preparedness: better the emergency management'. There has always been concern, anxiety and fear regarding the use of nuclear power and ionizing radiation. This emphasizes the need for creating awareness and emergency preparedness amongst the professionals as well as the public.

Please visit the conference website:
'www.iconradem.org' for details and updates.

On behalf of Organizing Committee, we welcome you all to this scientific bonanza at the 'Pink City' of India.

Padharo Mhare Desh (Welcome to my land)!!!

Organising Chairman
Prof Arun Chougule
Sr. Prof & Head
Department of Radiological Physics
SMS Medical College & Hospitals, Jaipur, Rajasthan, India

Organising Secretary
Rajni Verma
Assistant Professor

ESSENCE OF THE CONFERENCE

Although nuclear and radiological emergencies are quite rare occurrences, their impact can potentially be very high, while response and recovery actions can have a high cost (human and material) and go on for a long time. Due to the unique characteristics of nuclear and radiological emergencies, it is vital that communities and emergency response mechanisms are specifically prepared for such situations.
The accidents in Chernobyl (1986) and Fukushima (2011) served as bitter reminders of the risks associated with nuclear power. However, due to the obvious benefits of nuclear and radiological applications, the global scientific community has no other option but to help improve safety and security in nuclear and radiological applications and enhance application of radiation for human welfare.

"Currently the role of medical/radiation physicist and medical professionals is confined to radiotherapy, diagnostics, nuclear medicine and research but this conference can serve as a platform to extend their role as key radiation safety experts in the context of nuclear and radiological emergency response"

OBJECTIVES OF THE CONFERENCE

The conference aims to encompass all aspects of nuclear and radiological emergencies including awareness, education and mitigation programs. The conference will serve as a forum:

- To create awareness amongst professionals, general public & the media, regarding nuclear and radiological technologies, their justified use and possible safety and security issues associated with these technologies.
- To prepare and train medical/radiation physicists and medical professionals to support response to nuclear and radiological emergencies at the hospital, regional or national level.
- Promote safe application of radiation in healthcare, industry & applications in other areas for welfare of mankind and prepare in case of radiological accidents/ emergency
- To increase the coordination between the various medical professionals and other communities in face of an nuclear or radiological emergency
- To promote cooperation and sharing of knowledge and expertise amongst the various scientific communities and agencies

TARGET AUDIENCE

To increase the efficacy of the programme and make its effect widespread, all medical professionals, medical/ radiation physicists, radiation safety professionals, radiological emergency response professionals, radiobiologists, nursing and paramedical professionals, radiation & biomedical professionals, nuclear scientists, educationalists and esteemed scholars, students, volunteers, representatives of the public, media persons are welcomed to the conference.

Conferences

MAX HEALTHCARE
Care for life

PRODVANCE 2018

North Chapter
A Career Orientation initiative for young radiation oncologists
organized by Indian College of Radiation Oncology **(ICRO)**,
wing of
Association of Radiation Oncologists of India **(AROI)**

10 &11

NOV. 2018

Max Super Speciality Hospital, Bathinda

Conferences

SAVE THE DATE

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www.apolloptcog.com | protontherapy@apollohospitals.com

01st INTERNATIONAL PROTON THERAPY EDUCATIONAL PROGRAM

Organised jointly by: PTCOG and APCC

02nd – 03rd November 2018
ITC Grand Chola, Chennai, INDIA

Organised jointly by:

Apollo PROTON Cancer Centre

Particle Therapy Co-operative Group

Conferences

This educational programme is supported by an Unconditional grant from

INTAS

Course Director

Prof Manoj Gupta
Prof & Head
Department of Radiation Oncology
AIIMS Rishikesh
Mobile: 9418176067,9816127344
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Organized by:

Department of Radiation Oncology
AIIMS Rishikesh, Uttarakhand
249203

AROI

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Dr P Vijaya Anand Reddy
Director Apollo Cancer Hospital
Hyderabad

Secretary
Dr G V Giri
Dept. of Radiation Oncology
Kidwai Memorial Institute

President Elect
Dr. Rajesh Vashistha
Senior Consultant Radiation Oncology
Max Super Specialty Hospital Dehradun

ICRO

Chairman
Dr S N Sinha
Professor & Head
Dept. of Radiotherapy
AIIMS, Gorakhpur, Uttarakhand

Secretary
Dr Satyajit Pradhan
Professor
Dept. of Radiotherapy &
Radiation Medicine
Institute of Medical Sciences
BHU, UP

Course Coordinator

Course Cordinator
Dr Rajesh Pasricha
Additional Professor
Department of Radiation Oncology
AIIMS Rishikesh
Mobile-7055701703
E mail:rajesh.r@aiimsrishikesh.edu.in

Indian College of Radiation Oncology (ICRO)

Wing of

Association of Radiation Oncologists of India (AROI)

8th AROI ICRO Radiobiology (Intas) Teaching Course (North Zone)

On

Clinical Radiobiology for Radiation Oncologist on Saturday, 17th November, 2018

Venue:

Lecture theatre: 4,4th floor
Academic Block
AIIMS Rishikesh

Application

I would like to participate in the "Clinical Radiobiology for Radiation Oncologists" on 17th November 2018

Name: Designation: Consultant / Student

Qualification. DMRT ☐ MD ☐ DNB ☐

Year.....

AROI Membership No.....

Mobile No.....

E-mail:

Name & Address of Institution

.....

.....

.....

City:..... State:.....

Pincode: .....

Signature:

Course Aim

- To understand radio-biological Principles.
- To know its clinical applications and implications

Course Eligibility

- 1st, 2nd & 3rd year MD/DNB/DMRT (Radiation Oncology) post graduate students.
- Senior Residents & Professional Radiation Oncologists.
- AROI Membership is mandatory.
- Travel & Accommodation to be borne by participants.
- The course is FREE without any programme FEE

Programme Schedule

8.30 am	Registration
9.15 - 9.30 am	Inauguration
9.30 - 11.15 am	Modules 1,2,:Interaction with matter & Radiation Injury to Cells,Mechanism of Cell survival curve, Exponential relationship, D10 & D0, Multi Model, L-Q Model)
11.15 - 11.30 am	Tea
11.30 - 1.15 pm	Module 3 (Clinical Applications of L-Q Models, Normal Tissue injury with emphasis to spinal cord BED and its clinical applications, Altered fraction and its radiobiological basis)
1.15 - 2.00 pm	Lunch
2.00 - 3.15 pm	Module 4 (Radiobiology of Hypofractionation,SRS & SBRT,facors affecting cell survival curve, HRS &IRR,Dose rate effect,Oxygen effect,Radiobiology of fractionated RT, Intrinsic Sensitivity and SF2)
3.15 - 3.30 pm	Tea
3.30 - 4.45 pm	Module 5 (4Rs of Radiobiology, Role of 4 Rs in SRS & SBT, TCP, NTCP, Therapeutic ratio LET and RBE)
4.45 pm	Valedictory

INTERNATIONAL FACULTY

Jay Flanz, PhD
Massachusetts General Hospital, USA

Eugen Hug, MD
MedAustron, Austria

Tony Lomax, PhD
Paul Scherrer Institute, Switzerland

Håkan Nyström, PhD
Danish Centre for Particle Therapy, Denmark

Ramesh Rengan, MD
Seattle Cancer Care Alliance, USA

Niek Schreuder, PhD
Provision Center for Proton Therapy, USA

Damien Weber, MD
Paul Scherrer Institute, Switzerland

Petra Witt Nyström, MD
Danish Centre for Particle Therapy, Denmark &
The Skandion Clinic, Sweden

Minish Mehta
Baptist Health, South Florida

Conference Managed by MICE IDEAS

Conference Secretariat: A-1107, Siddhi Vinayak Tower, Near Kataria Motors, Behind DCP Office, Makarba, Off. S.G. Highway, Ahmedabad - 380 051
Mr Rajesh Sharma: M. +91 93740 73512 O. +91 79 – 2970 2599 E. rajesh@miceideas.in

Quiz

Colorectal Malignancies/ QUIZ

1. The biologic "footprint" of an MMR defect is the accumulation of abnormalities in short sequences of nucleotide bases that are repeated dozens to hundreds of times within the genome; these are called microsatellites. In contrast to microsatellite-stable CRCs, sporadic tumors with MSI-H have characteristic clinicopathologic features.

Which of the following statements is INCORRECT about MSI-H CRC?

A. A tumor is called MSI-H when at least 2/5 loci (40 percent) are affected by instability
B. Predicts poor response to 5-FU chemotherapy
C. The presence of MSI-H in Lynch syndrome further worsens the prognosis
D. High grade, right sided colon cancers usually

2. Eight clinical factors (Serum CEA, Tumor Regression Score, CRM, LVI, PNI, MSI, KRAS and NRAS mutation status, BRAF mutation) are judged to be clinically significant in colorectal carcinoma. Although several scoring systems for tumor regression have been advocated, Modified Ryan four point tumor regression score is used commonly. What would be the score according to this scoring system for a gross tumor that has shown NO RESPONSE to neoadjuvant treatment?

A. 0
B. 1
C. 2
D. 3

3. Which of the following subset patients will have worse prognosis? (MSS: Microsatellite Stability)

A. MSI with BRAF mutation
B. MSI without BRAF mutation
C. MSS with BRAF mutation
D. MSS without BRAF mutation

4. Which of the following is N1c for colon cancer?

A. One regional node is positive
B. Two or three regional nodes are positive
C. Four to six regional nodes are positive
D. Subserosal tumor deposits

5. Which of the following statements about IMMUNOSCORE colon is FALSE?

A. Predicts risk of relapse in early colon cancer
B. Measures the density of CD3+ and CD8+ T lymphocyte populations in the center and at
periphery of tumor
C. Patients with low immunoscore have prolonged disease free survival
D. None of the above

Quiz

Colorectal Malignancies/ QUIZ

6. Which of the following agents used in the treatment of colon cancer is NOT a VEGF inhibitor?

A. Panitumumab
B. Regorafenib
C. Aflibercept
D. Ramucirumab

7. The Amsterdam criteria (3-2-1 rule) are a set of diagnostic criteria used to help identify families which are likely to have Lynch syndrome, also known as hereditary nonpolyposis colorectal cancer (HNPCC). Which of the following is INCORRECT statement about Amsterdam criteria?

A. Histologically verified CRC in at least 3 family members, one being a first degree relative
of the other two members
B. CRC involving at least 2 successive generations
C. At least 1 family members being diagnosed by 40 years
D. Familial adenomatous polyposis (FAP) must be excluded

8. Which of the following is APPROPRIATE statement/ frequency of recommended colorectal cancer screening guideline (American Cancer Society) for asymptomatic avaerage risk individual?

A. Begins at age 40 years
B. Colonoscopy every 5 years
C. Virtual colonoscopy every 10 years
D. FOBT (every 3 y) PLUS flexible sigmoidoscopy (every 5 y)

9. **This phase III, 2 x 2 noninferiority trial evaluated the substitution of oral capeciatabine for infusional 5-FU as well as intensification of radiosensitization by adding oxaliplatin in stage II and III rectal carcinoma. Results were summarized as follows:**

"Continuous infusion 5-FU produced outcomes for local-regional control, DFS, and OS similar to those obtained with oral capecitabine combined with radiation. This study establishes capecitabine as a standard of care in the pre-operative rectal setting. Oxaliplatin did not improve the local-regional failure rate, DFS, or OS for any patient risk group but did add considerable toxicity."

Identify this trial.

A. Intergroup 0114
B. NCCTG (North Central Cancer Treatment group)
C. NSABP R-04
D. X-ACT

Quiz

Colorectal Malignancies/ QUIZ

10. Which of the following statements about treatment of colon cancer is INAPPROPRIATE?

A. Do not use anti-EGFR Rx is RAS mutant carcinomas; also likely ineffective in BRAF mutants
B. Do not use dual Ab (anti-EGFR and anti-VEGF) Rx
C. Right sided CRC have poor prognosis and anti-EGFR Rx is ineffective even in RAS wild type
D. MSI-H predicts resistance to PD-1 blockade

11. Identify the INCORRECT statement regarding Papillon contact brachytherapy.

A. 100 kV x-rays
B. 30 Gy per sitting
C. Superficial tumors <3 cm suitable
D. 100% dose prescribed at surface

12. Which of the following statement regarding CEA is INCORRECT?

A. Useful for screening of CRC
B. Independent prognostic factor
C. Levels are inversely proportional to grade
D. Liver dysfunction increases CEA levels

13. Which amongst the following has least malignant potential?

A. Turcot syndrome
B. Peutz-Jeghers syndrome
C. Gardner Syndrome
D. Oldfield syndrome

14. Patients with clinical T3, T4 or node positive disease were included in the German phase III study of neoadjuvant radiation therapy (5040 cGy) with concurrent chemotherapy (5-FU, weeks 1 and 5, 5 days per week, 1000 mg/m2).
Compared to adjuvant chemoradiation, neoadjuvant chemoradiation resulted in all EXCEPT:

A. Reduced rate of local recurrence
B. Improved 5-y overall survival
C. Higher rate of sphincter preservation
D. Significant reduction in lymph node positivity rate

15. What is the minimum number of lymph nodes that should be examined for patients entered on node negative rectal cancer trial?

A. 8
B. 10

Colorectal Malignancies/ QUIZ

C. 12
D. 15

16. Concurrent administration of chemotherapy with conventional fractionation radiotherapy improves outcomes. Which of the following parameters are NOT improved?

A. Local control
B. Complete pathological response rate
C. Disease free survival
D. None of the above

17. All of the following factors will potentially increase normal-tissue damage from radiation EXCEPT:

A. Low radiation energy
B. Obesity
C. Long overall treatment time
D. Hypertension

18. Which of the following statements regarding rectal cancer radiotherapy is FALSE?

A. Lyon R90-01 study is the only trial to report on the optimal interval for surgery post RT
B. External iliac nodes are usually not involved unless invasion of pelvic organs
C. Upper border of AP/PA field is at L4/5 junction
D. Perineum is generally not included in the treatment portal for preoperative radiotherapy

19. INCORRECT about sacral insufficiency fracture (SIF):

A. An uncommon late complication of pelvic radiation therapy
B. Denis classification is useful for dercribing SIF
C. Bone scan is better than MRI in diagnosing SIF
D. It is also known as fatigue fracture

20. Identify the INCORRECT statement regarding rectal cancer radiotherapy:

A. Most common toxicity of pelvic chemoradiation is gastrointestinal
B. Preoperative chemoradiation may lead to pCR in approximately 20%
C. PROSPECT trial is addressing the feasibility of selective (rather than routine) pelvic radiotherapy after preoperative chemotherapy
D. Local recurrence rate for rectal tumors within 5 cm of anal verge are better with short course radiotherapy than long course chemoradiation

Residents are encouraged to send their answers on a word file attachment latest by 15th November, 2018. All correct entries will be acknowledged in the next issue of the newsletter. Entries are invited to : dr.gautamsharan@gmail.com

Achievement

North zone President & Secretary

Dr. Rakesh kapoor

Dr. Deepak Abrol

Achievement

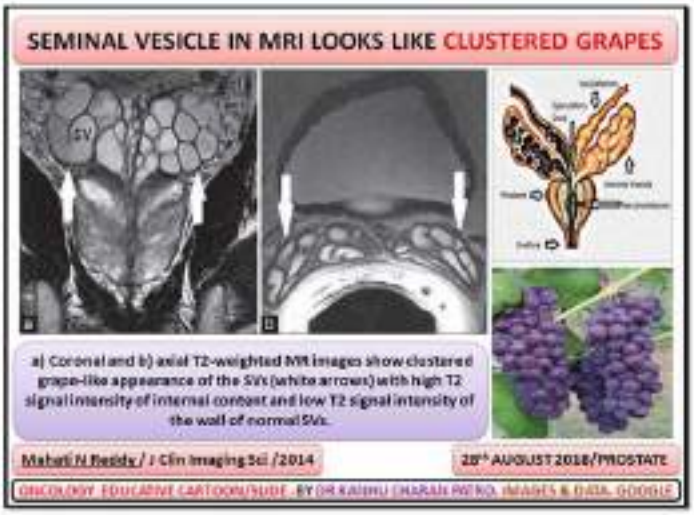
BRIEF PROFILE (DR. M.L.B. BHATT)

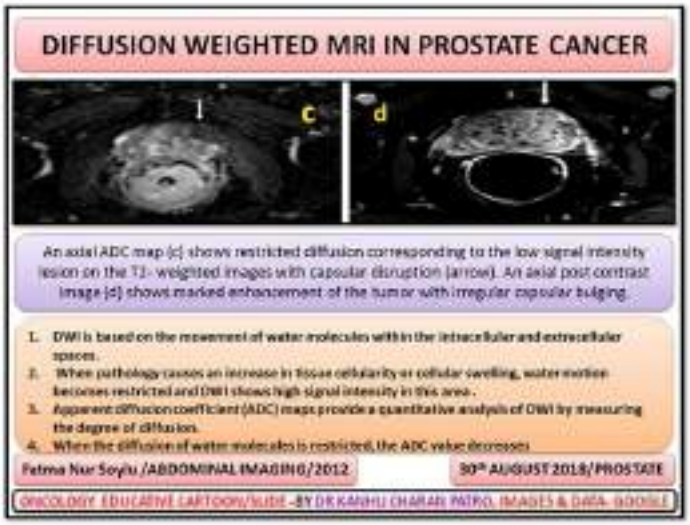
Prof. Madan Lal Brahma Bhatt is an eminent Radiation Oncologist and is currently working as Vice Chancellor and Professor of Radiotherapy, King George's Medical University Lucknow. Prof M.L.B. Bhatt has been selected for the award of prestigious Dr. B.C. Roy National Award in the category of Eminent Medical Teacher for the year 2017.

He served in Army Medical Corps from 1984 to 1989 as Captain where he did commendable service in Operation Meghdoot in high altitude regions of Jammu and Kashmir. He also served as Medical Superintendent, Gandhi Memorial and Associated Hospital in year 2006 -2007 and as Head of the Department of Radiotherapy, KGMU from November 2014 to April 2017. He served as Professor and Head, Department of Radiation Oncology, at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow From October 2012 to November 2014. And also served as Medical Superintendent in RMLIMS Hospital, Lucknow in 2014. Earlier, He had served in Short Service Commission as CAPTAIN in Army Medical Corps, under DG, Armed Forces Medical Services, New Delhi from 1984 to 1989, and as Lecturer at JNM Collage, Aligarh Muslim University from 1996 to 2002.

WHAT IS DOUBLE TROUBLE?

- Most of the post op prostate patients require radiation
- Why we should choose surgery, where hypofractionation radiation of 20 days available with equal results with conventional radiotherapy?
- It is double trouble when we add radiotherapy after surgery as dual toxicity.
- Let's discuss in detail





DAYS TO BECOME UNDETECTABLE

PSA Half Life of 3 days

Surgery	6	12	Percentage
3 days	3	6	50%
6 days	1.5	3	25%
9 days	.75	1.5	12.5%
12 days	.375	.75	6.25%
15 days	.1875	.375	3.125%
18 days	.0937	.1875	1.5625%
21 days	.0468	.0937	.0781%
24 days	.0234	.0468	.0390%
27 days	.0117	.0234	.0195%
30 days	.0059 (<0.01)	.0017	.00098%
33 days	.0029 (<0.01)	.0059 (<0.01)	.00049%

Takes 4 to 5 weeks to reach undetectable (<0.01) so most people wait 6 to 8 weeks after surgery to check the PSA level

Oesterling JE/ J Urol. 1988

18th JULY 2018/PROSTATE

ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

ROACH FORMULA STILL HOLDS GOOD IN PROSTATE CANCER

1. **Seminal vesicle involvement** - PSA +()Gleason -6] x 10)
   Cutoff is 13%. If <13%, risk 7%; If >=13%, risk 37%.
2. **Lymph node involvement** - 2/3 x PSA + ()Gleason-6) x 10)
   Cutoff is 15%. If calculated risk is <15%, actual risk 6%; If >=15%, actual risk 46%.
3. **Extracapsular extension** - 1.5 x PSA + ()Gleason-3) x 10)
   Approximates actual risk.

ROACH FORMULA EVALUATION BEFORE SURGERY GUIDING ABOUT EXTENT OF SURGERIES, AVOIDS UNNECESSARY SURGERIES AND ACCURATE TARGET DELINEATION IN RADIOTHERAPY

The beauty of using this type of equation in men with clinically localized prostate cancer to predict risk of developing extracapsular extension, lymph node involvement, and non-organ confined disease, said Dr. Roach, is that it can be applied equally well to surgically treated and radiotherapy patients. Knowing that a patient has a significant risk of failing radiation obligates us to look for more, he added.

Mark roach/ Cancer Network/1997

28th AUGUST 2018/PROSTATE

ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

YALE FORMULA PREDICTS BETTER THAN ROACH FOR LYMPH NODE

- ✓ YALE FORMULA
- ✓ For prediction of %LN+ risk is→ [GS – 5] [PSA/3 + 1.5 T]
- ✓ Where T = 0, 1, and 2 for cT1c, cT2a, and cT2b/cT2c.

The YF performed better than the RF and was best at differentiating patients at high risk for LN+ disease

Many investigators have created tools for predicting extraprostatic disease and lymph node (LN) involvement. One widely used tool is a linear formula created by Roach et al. the Roach formula (RF), which defines the risk of pelvic LN as follows: (% pelvic LN risk = prostate-specific antigen [PSA]2/3 + (Gleason − 6)10). There has been significant stage migration in prostate cancer over the past decade since the creation of the RF. To provide clinicians with a practical approach to estimating LN risk that was developed from a population-based sample of patients who reflect the vast majority of patients diagnosed in the modern PSA era, and whose care reflects current patterns of care, we developed and validated a new predictive formula using the SEER database. A fast, accurate, and easy-to-use formula would be helpful in discussing LN risk with patients and in the conceptualization of LN risk for future clinical trials.

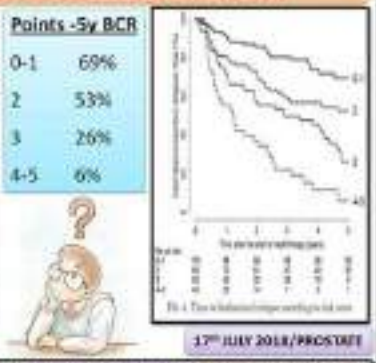
JAMES B. YU/ URO09/2011

27th AUGUST 2018/PROSTATE

ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

POST OP PROSTATE - NEED OF RT?
MAYO CLINIC SCORING SYSTEM

Points	5y BCR
0-1	69%
2	53%
3	26%
4-5	6%



MAYO CLINIC WEBSITE

17th JULY 2018/PROSTATE

ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

EORTC-22911-[10 YEAR F/UP]
RADIOTHERAPY FOR POST OP PROSTATE

POST OP PROSTATE, ECE+, CM+, SV+,T3N0M0

	ARM-1	ARM-2	HR	P VALUE
	RT	WAIT/WATCH		
n	502	503		
ARM	ADT-RT	ADT		
bPFS	61.8%	39.4%	0.49	0.0001
AE	70.8%	59.7%		0.001

MEDIAN FOLLOW-UP OF 10.6 YEARS

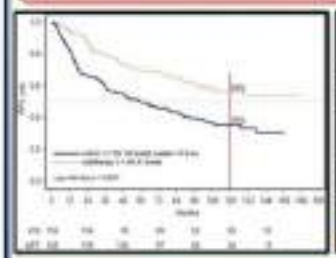
To conclude, our results suggest that postoperative irradiation significantly improves biochemical progression-free survival and local control, and might improve clinical progression-free survival in patients younger than 70 years and those with positive surgical margins, although it might have a possible detrimental effect in patients aged 70 years or older

BOLLA et al/LANCET/2012

16th JULY 2018/PROSTATE

ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

ARO 96-02/AUO AP 09-95-[10 YEAR DATA]
POST OP PROSTATE- ADJ RT VS WAIT & SEE



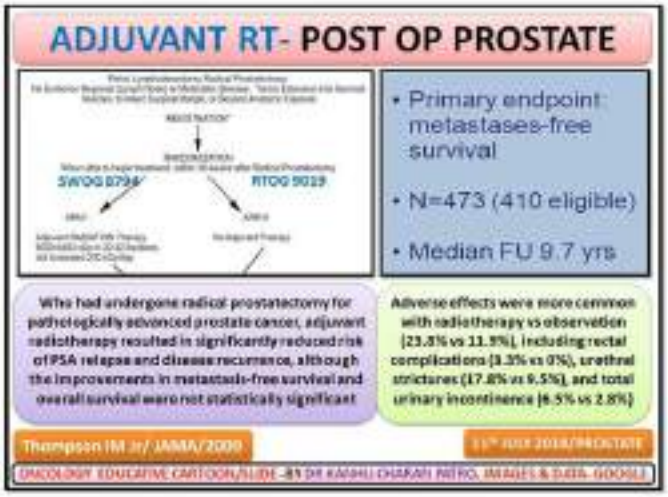
Compared with wait and see policy, ART reduced the risk of biochemical progression with a hazard ratio of 0.52 in pT3 PCa. With only one grade 3 case of late toxicity, ART was safe. Subgroup analysis shows a significant advantage from ART for men with positive surgical margins and tumor stage pT3a/b

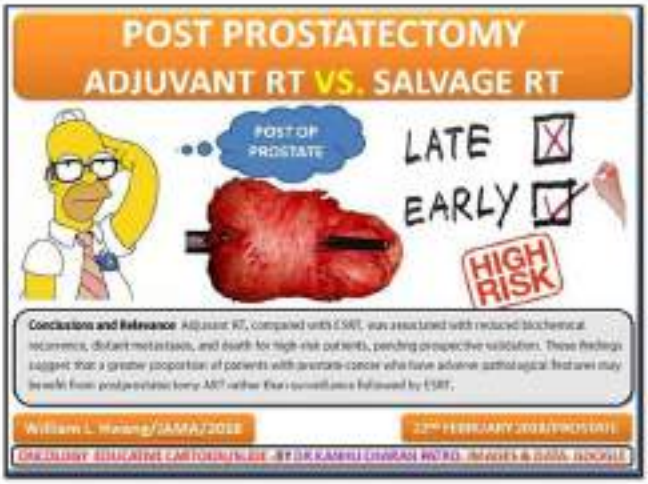
Thomas Wiegel /EUROPEAN UROLOGY 66 /2014

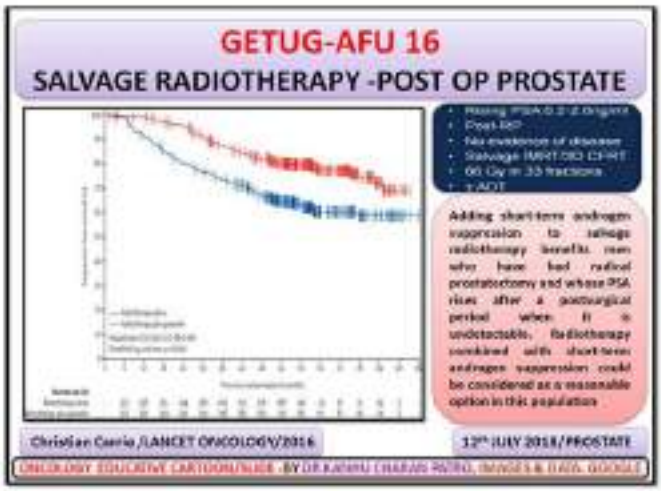
14th JULY 2018/PROSTATE

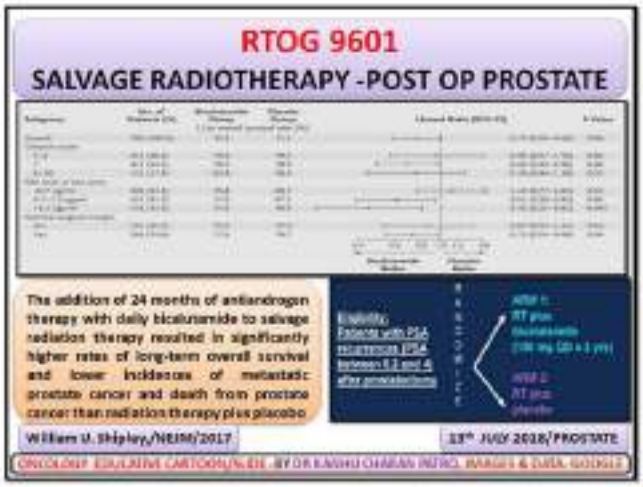
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

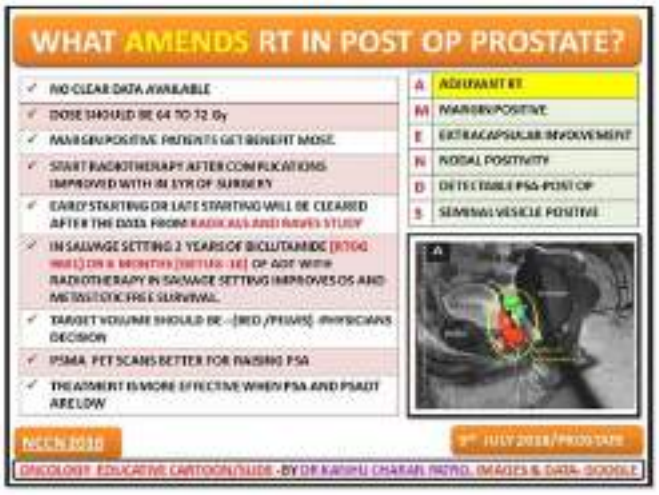

Cartoons


ADJUVANT RT- POST OP PROSTATE
SWOG 8794
RTOG 9019
• Primary endpoint: metastases-free survival
• N=473 (410 eligible)
• Median FU 9.7 yrs
Who had undergone radical prostatectomy for pathologically advanced prostate cancer, adjuvant radiotherapy resulted in significantly reduced risk of PSA relapse and disease recurrence, although the improvements in metastasis-free survival and overall survival were not statistically significant
Adverse effects were more common with radiotherapy vs observation (23.8% vs 11.9%), including rectal complications (3.3% vs 0%), urethral strictures (17.8% vs 9.5%), and total urinary incontinence (8.5% vs 2.8%)
Thompson IM Jr/ JAMA/2009
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

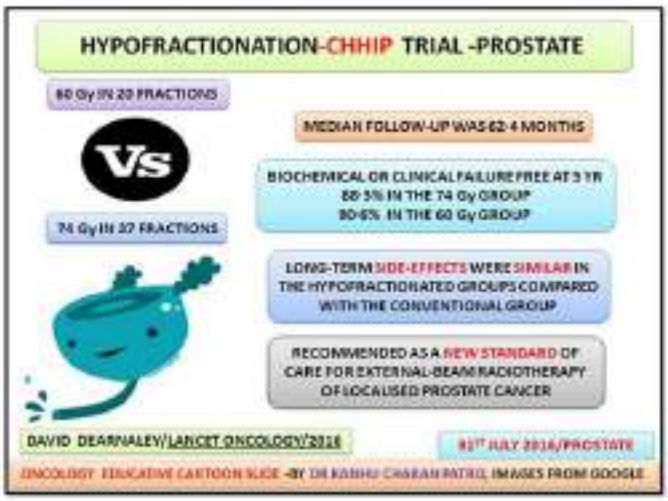

POST PROSTATECTOMY
ADJUVANT RT VS. SALVAGE RT
POST OP PROSTATE
LATE
EARLY
HIGH RISK
Conclusions and Relevance Adjuvant RT, compared with ESRT, was associated with reduced biochemical recurrence, distant metastases, and death for high-risk patients, pending prospective validation. These findings suggest that a greater proportion of patients with prostate cancer who have adverse pathological features may benefit from postprostatectomy RT rather than surveillance followed by ESRT.
William L. Hwang/JAMA/2016
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

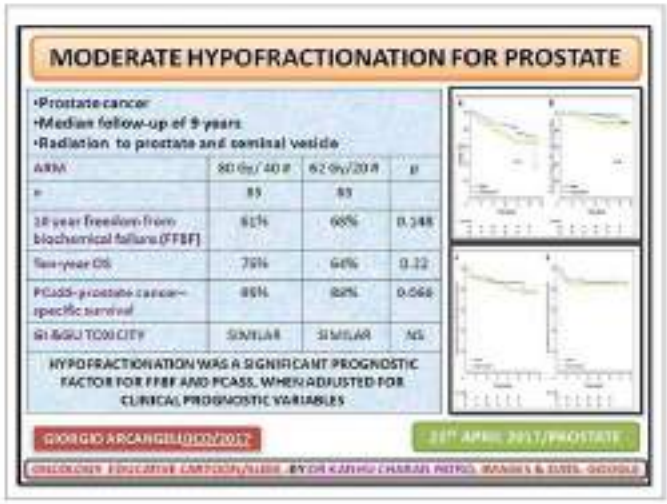

GETUG-AFU 16
SALVAGE RADIOTHERAPY -POST OP PROSTATE
Adding short-term androgen suppression to salvage radiotherapy benefits men who have had radical prostatectomy and whose PSA rises after a postsurgical period when it is undetectable. Radiotherapy combined with short-term androgen suppression could be considered as a reasonable option in this population
Christian Carrie /LANCET ONCOLOGY/2016
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE


RTOG 9601
SALVAGE RADIOTHERAPY -POST OP PROSTATE
The addition of 24 months of antiandrogen therapy with daily bicalutamide to salvage radiation therapy resulted in significantly higher rates of long-term overall survival and lower incidences of metastatic prostate cancer and death from prostate cancer than radiation therapy plus placebo
William U. Shipley/NEJM/2017
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE


WHAT AMENDS RT IN POST OP PROSTATE?
NO CLEAR DATA AVAILABLE
DOSE SHOULD BE 64 TO 72 Gy
MARGIN POSITIVE PATIENTS GET BENEFIT MORE
START RADIOTHERAPY AFTER COMPLICATIONS IMPROVED WITH IN 1YR OF SURGERY
EARLY STARTING OR LATE STARTING WILL BE CLEARED AFTER THE DATA FROM RADICALS AND RAVES STUDY
TARGET VOLUME SHOULD BE --(RED /PSMA) -PHYSICIANS DECISION
PSMA PET SCANS BETTER FOR RAISING PSA
TREATMENT IS MORE EFFECTIVE WHEN PSA AND PSADT ARE LOW
A ADJUVANT RT
M MARGIN POSITIVE
E EXTRACAPSULAR INVOLVEMENT
N NODAL POSITIVITY
D DETECTABLE PSA-POST OP
S SEMINAL VESICLE POSITIVE
NCCN 2018
ONCOLOGY EDUCATIVE CARTOON/SLIDE -BY DR KANHU CHARAN PATRO, IMAGES & DATA- GOOGLE

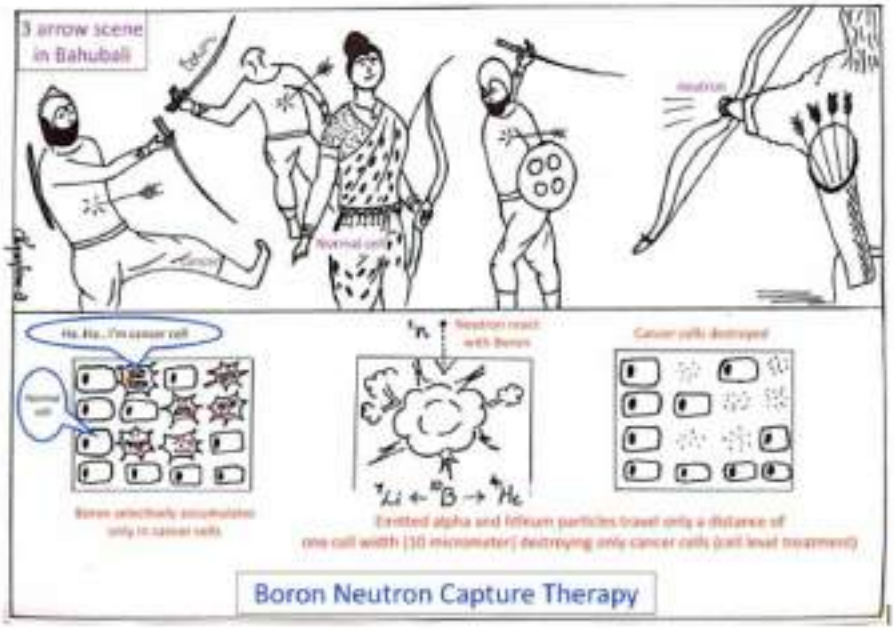

HYPOFRACTIONATION-HYPRO TRIAL -PROSTATE
T1b-T4 N0-M0-PROSTATE CANCER
MEDIAN FOLLOW-UP WAS 60 MONTHS
THE DUTCH CANCER SOCIETY.
820 patients
39 fx of 2 Gy IN 8 WKS
HYPOFRACTIONATION WITH 19fx OF 3.4 Gy 4-5 WEEKS (3 fx /WK)
TREATMENT FAILURE-SAME
80 (20%) IN THE HYPOFX ARM
89 (22%) IN THE CONVENTIONAL ARM
LATE GENITOURINARY & GASTROINTESTINAL TOXICITY
HYPOFRACTIONATION WAS NON-INFERIOR WHEN COMPARED WITH STANDARD fx
LUCA INCROCCI /LANCET ONCOLOGY/2018
ONCOLOGY EDUCATIVE CARTOON SLIDE -BY DR KANHU CHARAN PATRO, IMAGES FROM GOOGLE

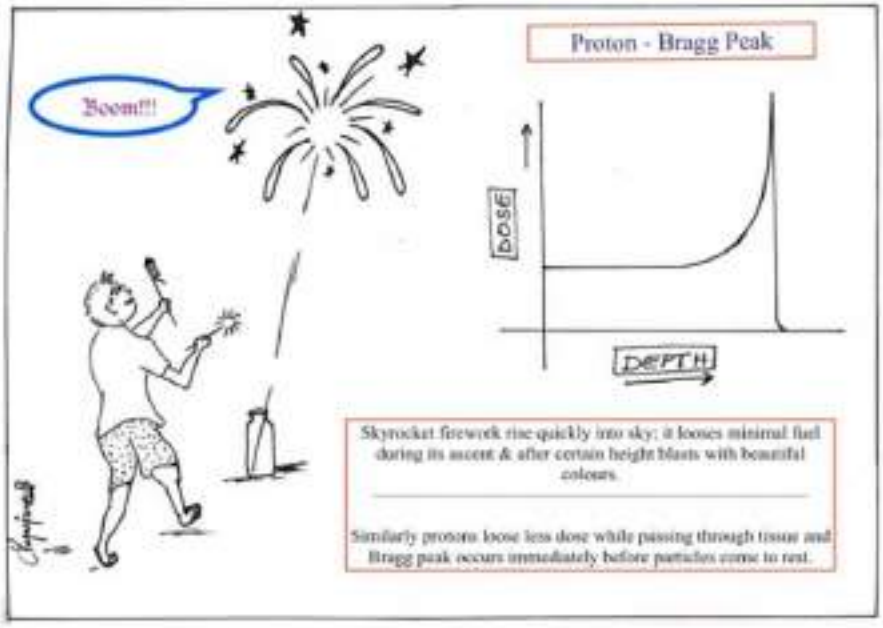




CONCLUSION

- Surgery also a mode of treatment
- Careful selection is the key point
- Side effects of surgery takes more time to recover.
- Hypofractionation radiotherapy is the best i feel.
- Do not invite double trouble because you may not able to troubleshoot always .


3 arrow scene in Bahubali
Ha..Ha..I'm cancer cell
Normal cell
Boron selectively accumulates only in cancer cells
Neutron react with Boron
Cancer cells destroyed
Emitted alpha and lithium particles travel only a distance of one cell width (10 micrometer) destroying only cancer cells (cell level treatment)
Boron Neutron Capture Therapy


Boom!!!
Proton - Bragg Peak
DOSE
DEPTH
Skyrocket firework rise quickly into sky; it looses minimal fuel during its ascent & after certain height blasts with beautiful colours.
Similarly protons loose less dose while passing through tissue and Bragg peak occurs immediately before particles come to rest.

Fellowship & Best Paper

FELLOWSHIPS	
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AROI Kirloskar Fellowship for members over 50	
Dr Francis V James	RCC/Thiruvananthapuram
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Dr. Supriya Mallick	
BEST PAPER - DR. M S GUJRAL GOLD ME	
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Dr. Lokeswari	PGIMER chandigarh
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Dr.Poornachandra tejaswi,	Kidwai cancer institute Bangalore
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This list is updated based on the feedback of AROI secretariat at the time of e-publishing the newsletter and not exhaustive. Any omission/ error may be brought to the notice of AROI office and not to the editor

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