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Research Article

Profile of Palliative Patients Undergoing Radiotherapy

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Abstract

Introduction: Palliative Care is an approach that improves the quality of life of the Patients and their families facing the problem associated with life threatening illness through the prevention and relief of symptoms by means of early identification and impeccable assessment and treatment of Pain and associated problem, physically psychologically and spiritually. Radiotherapy has a role in Palliative to relieve pain and other symptoms. It is a time efficient, well tolerated, successful, cost-effective treatment for oncology palliative care.

Materials and Methods: This study is an Institutional based randomized study conducted at Radiation Oncology Department in State Cancer Institute Indira Gandhi Institute of Medical Science, Patna, Bihar.

Result: A total of 293 patients were included in this study. Patients who received radiotherapy at our Institute from Jan 2022 to Jan 2023 were included and analysed, carcinoma lung was commonest in the males and carcinoma breast was the commonest in the females.

Conclusion: In the advance stage of cancer, palliative radiotherapy can provide effective, symptomatic relief with the less side effects.

Keywords: Palliative Care; Palliative Radiotherapy; Carcinoma

Background Information

World Health organization defined the palliative care is an approach that improves the quality of life of the Patients and their families facing the problem associated with life threatening illness through the prevention and relief of symptoms by means of early identification and impeccable assessment and treatment of pain and associated problem, physical, psychological and spiritual. Palliative care includes the care of dyeing, extended care of cancer patients with the advanced and metastatic disease [1,2]. Radiotherapy has a role in palliation to relieve pain and other symptoms. It is a time efficient, well tolerated, successful, cost-effective treatment for oncology palliative care [1]. Usually Palliative care required in 30 - 50% of all the cancer patients [1,3,4]. Palliative Radiotherapy can be advisable to control pain, bleeding, dyspnoea, blockage of hollow viscera, fugitive and ulcerative lesion and to relieve pressure symptoms [5]. Radiotherapy is a safe, cost effective palliation [6,7]. Various radiotherapy schedule is available to consider according to feasibility and requirement for patients, 30 Gy in 10 fractions, 24 Gy in 6 fractions, 25 Gy in 5 fractions, 8 Gy in single fraction [2].

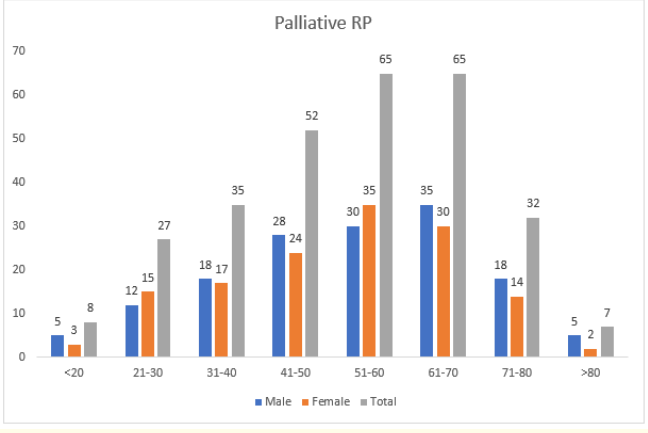
Materials and Methods

This retrospective study was conducted at Radiation Oncology Department in State Cancer Institute, Indira Gandhi Institute of

Medical Science, Patna, Bihar. In this study we have included 293 patients from various cities across our state suffering from cancer attached our department for treatment during the year Jan-Dec 2022.

Results

A total of 1737 patients received radiotherapy in which about 17% of the total cases received palliative radiotherapy. We analysed the data of patients who received radiotherapy at our Department. 182 patients were males and 111 patients were females, Commonest age group was 50 - 71 years in Males 50 - 60 years in the females.



Graph 1: Distribution of patients according to age-group.

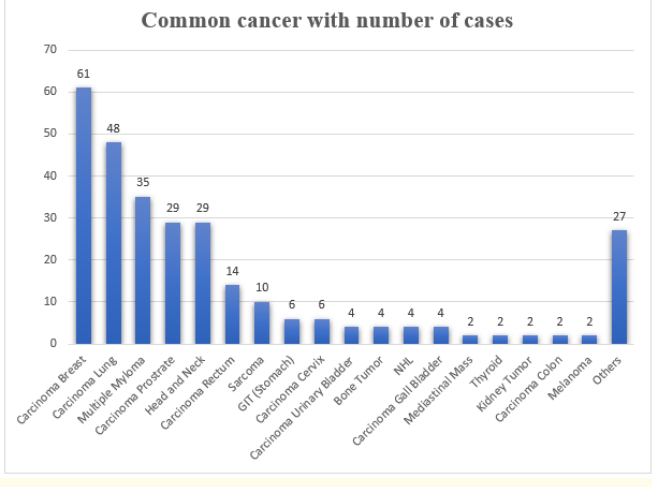
Age	Male	Female	Total
< 20	5	3	8
21 - 30	12	15	27
31 - 40	18	17	35
41 - 50	28	24	52
51 - 60	30	35	65
61 - 70	35	30	65
71 - 80	18	14	32
> 80	5	2	7
Total	151	140	291

Table 1: Distribution of patients according to age group.

61 cases of carcinoma breast, 48 cases of carcinoma Lung, 35 cases of multiple myeloma, 29 cases of carcinoma prostrate, 29 cases of Head and Neck carcinoma, Sarcomas 10 cases, 4 cases of carcinoma urinary bladder, 14 cases of carcinoma rectum.

Disease	No. of Cases
Carcinoma Breast	61
Carcinoma Lung	48
Multiple Myloma	35
Carcinoma Prostrate	29
Head and Neck	29
Carcinoma Rectum	14
Sarcoma	10
GIT (Stomach)	6
Carcinoma Cervix	6
Carcinoma Urinary Bladder	4
Bone Tumor	4
NHL	4
Carcinoma Gall Bladder	4
Mediastinal Mass	2
Thyroid	2
Kidney Tumor	2
Carcinoma Colon	2
Melanoma	2
Others	27
Total	291

Table 2: Total number of patients according to disease.

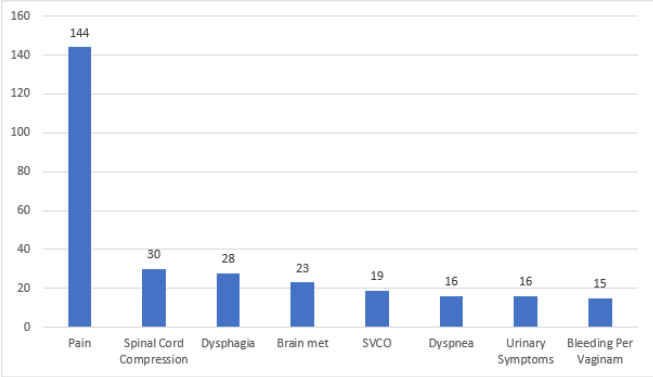


Graph 2: Distribution of common cancers with total number of cases.

Metastatic distribution of diseases. 64 cases of Brain Metastatic, 148 cases of bone metastasis, 6 cases of urinary bladder carcinoma for bleeding control, Local radiotherapy for symptomatic relief.

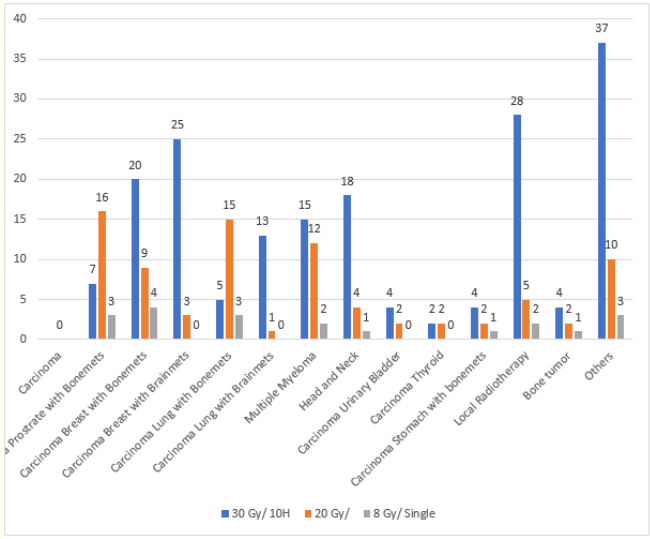
Indication	No. of Cases
Pain	144
Spinal Cord Compression	30
Dysphagia	28
Brain met	23
SVCO	19
Dyspnea	16
Urinary Symptoms	16
Bleeding Per Vagina	15

Table 3: Symptoms with number of cases.

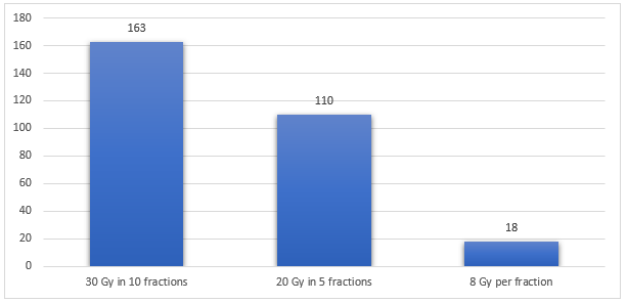


Graph 3: Graph of symptoms with number of cases.

Relief given to carcinoma head and neck, carcinoma lung, mediastinal lymph nodes. Various schedule of radiotherapy in the terms of fractionalisation 18 patients were received single fraction, 163 patients were received 30 GY in 10 fraction schedule which was commonest, 20 GY in 5 fraction schedules received by 110 cases. Imaging technique use for diagnosis were MRI, CECT, PET-CT, X-Ray, bone scan to detect various site of metastasis. Carcinoma prostate and carcinoma lung were commonest among the males and carcinoma breast was the commonest among the females.



Graph 4: Cases of cancer with received radiation with total number of patients.



Graph 5: Total number of patients according to radiotherapy schedule.

Sl. No	Carcinoma	30 Gy/ 10H	20 Gy/ 5H	8 Gy/ Single	Total	Percentage
1	Carcinoma Prostrate with Bonemets	7	16	3	26	9.12%
2	Carcinoma Breast with Bonemets	20	9	4	33	11.58%
3	Carcinoma Breast with Brainmets	25	3	0	28	9.82%
4	Carcinoma Lung with Bonemets	5	15	3	23	8.07%
5	Carcinoma Lung with Brainmets	13	1	0	14	4.91%
6	Multiple Myeloma	15	12	2	29	10.18%
7	Head and Neck	18	4	1	23	8.07%
8	Carcinoma Urinary Bladder	4	2	0	6	2.11%
9	Carcinoma Thyroid	2	2	0	4	1.4%
10	Carcinoma Stomach with bonemets	4	2	1	7	2.46%
11	Local Radiotherapy	28	5	2	35	12.28%
12	Bone tumor	4	2	1	7	2.46%
13	Others	37	10	3	50	17.54%
Total		182	83	20	285	100%

Table 4: Cases of cancer with received radiation with total number of patients.

30 Gy in 10 fractions	20 Gy in 5 fractions	8 Gy per fraction
163	110	18

Table 5: Total number of patients according to radiotherapy schedule.

Discussion

In the advance stage of cancer palliative radiotherapy can provide effective, symptomatic relief with the less side effects [6,7]. In our study the commonest site was carcinoma breast and head and neck cancer. Carcinoma Lung was 3rd commonest. Carcinoma prostrate and multiple myeloma were 4th and 5th position. In the view of metastatic site, bone metastasis (27.8%) was the commonest site and brain metastasis was 15.4%, 2nd commonest site of metastasis. Radiotherapy to local site given in 9.6% of multiple myeloma cases, 12.7% cases of head and neck region, 2% cases of the lung cancer, mediastinal tumours, carcinoma cervix, carcinoma urinary bladder, bone tumours, sarcomas, GIT tumours. Genito urinary cancer study done by Sharma., *et al*. shown most common cancer of head and neck (60%) area followed by gastro intestinal (14%) tumours and lung cancer (11%) [8] head and neck cancers are most common cancer in developing countries [9,10] most of the patients presented in advanced stage which leads to extensive loco regional disease, poor nutritional status, comorbid conditions, curative extent of treatment becomes difficult in these patients.

In India about 70 - 75% cases of head and neck cancer present in advance stage and majority of cases with un-operable stage [11], Palliation of these patients for relieving symptoms like painful ulcer, throat pain dysphasia and breathing difficulty with minimal toxicities. In India improvement in quality of life and cost benefit issues are more considerable than increases in life expectancy [12]. We used 30 Gy in 10 fraction schedules in 18 patients and 20 Gy in 5 fractions in 8 patients and single fraction in 2 patients. 28 patients received radiotherapy at local area for symptomatic relief and 9 patients were received radiotherapy for bone metastasis. Another study was done by Singhal., *et al*. which have shown commonest cancer as head and neck area 44%, lung cancer in 17%, cervical cancer 14%, carcinoma breast 6% and carcinoma colon in 5% [13]. Study conducted by Nayan., *et al*. have shown commonest cancer of head and neck area 28.7%, breast 15.9% and lung 15.2% [14].

Single fraction of 8 Gy was received by 18 patients for symptomatic relief. About 10 patients were of with bone

metastasis. About 88 patients were treated by 20 GY in 5 fractions in which 62 patients were treated for bone metastasis including multiple myeloma. About 184 cases were treated with 30 Gy in 10 fractions in which most of the cases were of bone metastasis, about 98 cases were treated with 30 Gy in 10 fractions for the treatment of local symptoms, like bleeding, dyspnoea, pain, haemorrhage, infections including head and neck cancer, sarcomas bone tumour, gastrointestinal tumours, genito urinary tumours and others. About 68% of the patients achieved symptomatic relief of pain in the bone metastatic cases. About 54% of the bone metastasis cases, about 54% of the brain metastasis achieved symptomatic relief with headache, vomiting, disorientation. These patients were also supported with the medication to reduce intracranial pressure with steroids, antiemetics and diuretics. Bony metastatic patients were supported by painkiller, steroids, antacids, morphine and buprenorphine patches. Study done by Van ooreachat., *et al*. shown significant improvement of wellbeing in 35%, pain relief in 66%, dyspnoea 61% and neurological symptoms in 60% cases. For pain relief in bony metastasis cases zoledronic Acid has significant role to improve the quality of patients with acceptable safety profile for long term use [15,16]. Due to advancement of diagnostic technology and treatment, total number of cancer survivors are increasing and presentation with bone metastasis is also increasing [17]. Incidence of bone metastasis depends upon the primary site of the disease, most common carcinoma which is primary presented with bone metastasis is carcinoma prostate followed by lung carcinoma, kidney cancer, breast cancer and carcinoma colon [18-20]. By 2040 approximately 3,79,000 people will die due to prostate cancer globally, survival has improved due to early diagnosis by using serum prostate specific antigen and new advancement of the diagnostic goals [21]. Generally, bone metastasis is associated with the bone pain, fracture and spinal cord compression. Hypercalcemia significantly reduces the quality of life and prognosis [22]. Bone metastasis in carcinoma prostrate causes osteogenic changes leads to more brittleness of bone than normal bone. In bone metastasis caused by the breast carcinoma is mixed type of changes in bone, that is osteolytic and osteoblastic type [23]. In our study 36.3% cases of prostate cancer presented with bone metastasis.

About 30% - 40% of the lung cancer patient is presented with bone metastasis, median survival time reported is 7 months [24]. It is the 3rd most common cancer spread to bone, bone metastasis in lung cancer patients are associated with the reduction in the quality of life [25]. Study done by Tsyua., *et al*. [26] shown commonest site of lung metastasis was in spine in 50% patients, ribs 27.1%, ilium 10%, sacrum 7.1%, femur 5.7% appendicular bone metastasis shown worst prognosis than the axial bone metastasis [27]. Commonest symptoms of the bone metastasis with the lung cancer were pain in 80% of the patients [28]. Sometimes bone condensation may increase or appear in lytic lesion called osteoblast flare may be associated with the therapy response or healing response after cytotoxic chemotherapy. Pain originates from bone with the bone fracture, direct increase of endosteum pressure, periosteum disorientation, nerve route compression (Due to the vertebral collapse) or due to the muscle spasm at bony lesion area [29]. Periosteum, blood vessel, cortex and bone marrow do not have any nerve injury. Pain occurs due to the stimulation of receptors in endosteum and periosteum [30]. Periosteal distortion is occurred due to the pressure created by the enlargement of the tumour mass or due to the inflammatory changes and edema. Bone pain mechanism is mainly somatic nociceptive, while in some cases neuropathic and visceral stimulation may occur. Sometimes incidental pain or movement related pain occurs. Tricyclic anti-depressant is used for neuropathic pain [31], 40% - 50% of the brain metastasis occurs due to Lung Cancer [32]. About 25% to 40% of non-small cell lung carcinoma (NSCLC) patient develops brain metastasis while about 10% of small cell lung carcinoma (SCLC) patient develops brain metastasis [33]. Globally breast cancer is the most common cause of cancer related mortality among the females. Breast Cancer cases develops metastasis in 30% cases [1,34] out of which 10% -15% cases develop brain metastasis [35], 25% patients develops brain metastasis during their follow up time [36]. Common palliative radiotherapy schedule in our study were 30 Gy/10 in 178 cases. Addition of dexamethasone reduces the pain flare by 50% [37]. The timing between diagnosis and starting of treatment, best results can be achieved [38]. 42 cases were treated with whole brain radiotherapy in our study, 38 cases with 30 Gy in 10 fraction schedule and 4 cases with 20 Gy in 5 fractions schedule. Study conducted by Akhtar., *et al*. shown more controlled and better quality of life shown in patients with 30 Gy in 15 fractions schedule followed by 20 Gy boost to primary site versus 30 Gy in 10 fractions whole brain radiotherapy in patients of < 3 metastatic site with difference of not more than

2cm each other between 2 metastatic sites [39]. 105 cases in our study received spinal radiotherapy and 48 patients presented with spinal cord compression caused by extra osseous extension of tumor from bones, radiotherapy is the treatment of choice and effective management [40]. 93 patients were treated with 30 Gy in 10 fraction, 62 patients treated with 20 Gy in 5 fractions, 12 patients were treated in a single fraction. 28 patients were received radiotherapy at local area for symptomatic relief and 9 patient were received radiotherapy for bone metastasis.

Conclusion

Hypo fractionated radiotherapy is used for palliation for time saving, which is effective morality with minimum toxicity. Single fraction versus multi fractionation schedule of palliative radiotherapy can be adopted according to the need and general condition of the patient tolerance with radiotherapy. It is also established by many studies in bone metastasis. Hypofractionation is also useful in advanced and metastatic disease for pain and symptomatic relief.

Bibliography

1. Kapoor A., *et al*. "Analysis of patterns of palliative radiotherapy in North West India: A regional cancer center experience". *The Indian Journal of Palliative Care* 21 (2015): 168-173.

2. Lutz ST., *et al*. "Role of radiation therapy in palliative care of the patient with cancer". *Journal of Clinical Oncology* 32 (2014): 2913-2919.

3. Bourgier C., *et al*. "What type of hypofractionated radiotherapy of primary tumors in palliative care?" *Cancer Radiotherapy* 19 (2015): 442-445.

4. Van Oorschot B., *et al*. "Palliative adiotherapy- New Approaches". *Seminars in Oncology* 38 (2011): 443-449.

5. Nayan Navin., *et al*. Clinical Profile of Cancer Patients of North East India Receiving Single Fraction Palliative Radiotherapy: A Study from Regional Cancer Centre Authors' affiliation (2019).

6. Jones JA and Simone CB. "Palliative radiotherapy for advanced malignancies in a changing oncologic landscape: Guiding principles and practice implementation". *Annals of Palliative Medicine* 3 (2014): 192-202.

7. Holt TR and Yau VK. "Innovative program for palliative radiotherapy in Austrailia". *Journal of Medical Imaging and Radiation Oncology* 54 (2010): 76-81.

8. Sharma S., *et al*. "Palliative radiotherapy: Current status and future directions". *Seminars in Oncology* 41 (2014): 751-763.

9. Trivedi NP., *et al*. "Head and neck cancer in India: Need to formulate uniform national treatment guideline?" *Indian Journal of Cancer* 49 (2012): 6-10.

10. Yeole BB., *et al*. "Survival from head and neck cancer in Mumbai (Bombay), India". *Cancer* 89 (2000): 437-444.

11. Carvalho AL., *et al*. "A comparison of radiotherapy or radiochemotherapy with symptomatic treatment alone in patients with advanced head and neck carcinomas". *European Archives of Oto-Rhino-Laryngology* 257 (2000): 164-167.

12. Agrawal JP., *et al*. "Hypofractionated, palliative radiotherapy for advanced head and neck cancer". *Radiotherapy and Oncology* 89 (2008): 51-56.

13. Singhal K., *et al*. "Pattern of Palliative care, Pain management and referral trends in patients receiving radiotherapy at a tertiary cancer center". *Indian Journal of Palliative Care* 15 (2009): 148-154.

14. Van Oorschot B., *et al*. "Palliative radiotherapy-New approaches". *Seminars in Oncology* 38 (2011): 443-449.

15. Polascik TJ and Mouraviev V. "Zoledronic acid in the management of metastatic bone disease". *Therapeutics and Clinical Risk Management* 4.1 (2008): 261-268.

16. Weinfurt KP., *et al*. "The Significance of skeletal-related events for the health-related quality of life of patients with metastatic prostate cancer". *Annals of Oncology* 16.4 (2005): 579-584.

17. Shibata J., *et al*. "Diagnosis and treatment of bone metastasis: comprehensive guideline of the Japanese Society of Medical Oncology, Japanese Orthopedic Association, Japanese Urological Association, and Japanese Society for Radiation Oncology". *ESMO Open* I.2 (2016): e000037.

18. Hernandez RK., *et al*. "Incidence of bone metastases in patients with solid tumors: analysis of oncology lectronic medical records in the United States". *BMC Cancer* 18.1 (2018): 44.

19. Coleman RE. "Skeletal complications of malignancy". *Cancer* 80.8 (1997): 1588-1594.

20. Wood SL and Brown JE. "Personal medicine and bone metastases:Biomarkers, micro-RNAs and bone metastases". *Cancers* 8 (82020: 2109.

21. Rawla P. "Epidemiology of prostate cancer". *World Journal of Clinical Oncology* 10.2 (2019): 63-89.

22. Norgaard M., *et al*. "Skeletal related events, bone metastasis and survival of prostate cancer: a population based cohort study in Denmark (1999 to 2007)". *The Journal of Urology* 84.1 (2010): 162-167.

23. Brown JE., *et al*. "Bone turnover markers as predictors of skeletal complications in prostate cancer, lung cancer, and other solid tumors". *Journal of the National Cancer Institute* 97.1 (2005): 59-69.

24. Coleman R. "Metastatic bone disease: clinical features, pathophysiology and treatment strategies". *Cancer Treatment Reviews* 27 (2001): 165-176.

25. Berenson J., *et al*. "Managing bone complications of solid tumors". *Cancer Biology and Therapy* 5 (2006): 1086-1089.

26. Tsuya A., *et al*. "Skeletal metastases in non small cell lung cancer: a retrospective study". *Lung Cancer* 57 (2007): 229-232.

27. Sugiura H., *et al*. "Predictors of survival in patients with bone metastasis of Lung Cancer". *Clinical Orthopaedics and Related Research* 466 (2008): 729-736.

28. Kosteva J and Langer C. "The Changing landscape of medical management of skeletal metastases in nonsmall cell lung cancer". *Current Opinion in Oncology* 20 (2008): 155-161.

29. Ripamonti C and Fulfaro F. "Malignant bone pain; pathophysiology and treatments". *Current Review of Pain* 4.3 (2010): 187-196.

30. Ripamonti U. "Smart biomaterials with intrinsic osteoinductivity: geometric control of bone differentiation". In Bone Engineering (edition. JE Davis) (2000): 215-222.

31. Fallon M. "Neuropathic pain in cancer". *British Journal of Anaesthesia* 111 (2013): 105-111.

32. Schouten L., *et al*. "Incidence of brain metastases in a cohort of patients with carcinoma of the breast, colon, kidney, and lung and melanoma". *Cancer* 94 (2002): 2698-2705.

33. Castrucci W and Knisely J. "An update on the treatment of CNS metastases in small cell lung cancer". *Journal of Cancer* 14 (2008): 138-146.

34. A Soni., *et al*. "Breast cancer subtypes predispose the site of distant metastases". *American Journal of Clinical Pathology* 143.4 (2015): 471-478.

35. UY Arslan., *et al*. "Breast Cancer subtypes and outcomes of central nervous system metastases". *The Breast* 20.6 (2011): 562-567.

36. IJ Fidler. "The biology of brain metastases: challenges for therapy". *The Cancer Journal* 21.4 (2015): 284-293.

37. Westhoff PG., *et al*. "Dexamethasone for the prevention of a pain flare after palliative radiotherapy for painful bone me- tastases: A multicenter double blind placebo controlled randomized trial". *BMC Cancer* 14 (2014): 347.

38. Feyer PC and Steingraeber M. "Radiotherapy of bone metastasis in breast cancer patients-Current approaches". *Breast Care* 7 (2012): 108-112.

39. Akhtar MS., *et al*. "Quality of life and symptoms control in brain metastasis after palliative whole brain radiotherapy using two different protocols". *Journal of College of Physicians and Surgeons Pakistan* 22 (2012): 311-316.

40. Souchon R., *et al*. "DEGRO practice guidelines for palliative radiotherapy of metastatic breast cancer: Bone metastases and metastatic spinal cord compression (MSCC)". *Strahlentherapie und Onkologie* 185 (2009): 417-424.