



IS SHORT COURSE PALLIATIVE RADIOTHERAPY TIME CONSERVING COMPARED TO STANDARD COURSE PALLIATIVE RADIOTHERAPY IN BONE METASTASIS?

Oncology

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ABSTRACT

Bone is one of the most common sites for metastases in primary cancers. The different pain relieving strategies are radiotherapy, opioid analgesics, bisphosphonates etc. There are various fractionation schemes for palliative radiotherapy to the bone. The aim of palliative radiotherapy in bone metastases must be maximum pain relief with minimum mortality within shortest period of hospital stay. We have done a retrospective study to compare the time interval for pain relief in 30Gy/10# vs 20Gy/5# of palliative radiotherapy to bone metastases.

KEYWORDS

Bone, metastases, palliative radiotherapy

INTRODUCTION

The WHO has defined palliative care as “an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification, assessment and treatment of pain and other problems, physical, psychosocial, and spiritual”^[1]. Bone is one of the most common site for metastases in primary cancers of the lung, breast, prostate, thyroid etc^[2]. The axial skeleton is a common site for metastases compared to the appendicular skeleton. The most common symptom of bone metastases is pain. The different pain relieving strategies are radiotherapy, opioid analgesics, bisphosphonates etc^[3]. There are various fractionation schemes for palliative radiotherapy to the bone. The standard scheme is 30Gy/10#^[4]. A patient's discomfort and transportation limitation requires the use of hypofractionated courses, when feasible. However is 20Gy/5# scheme equally effective in palliating the pain? We have done a retrospective study to compare the time interval for pain relief in 30Gy/10# vs 20Gy/5# of palliative radiotherapy to bone metastases.

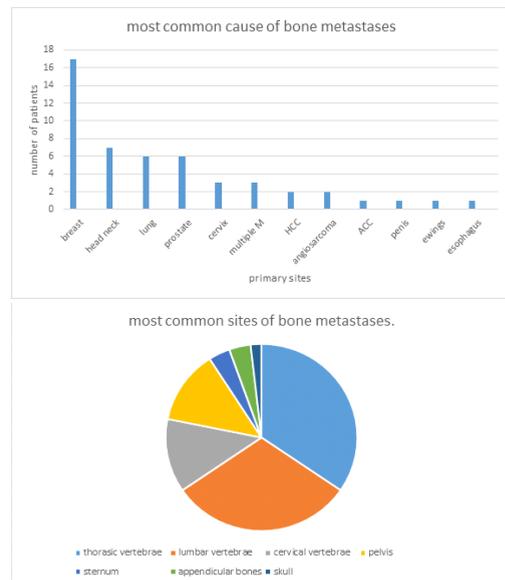
MATERIALS AND METHODS

This is a single center retrospective comparative non randomised study. A total of 51 patients with bone metastases from different primary malignancies were studied. Both male and female patients with ECOG 0-3 and any site of bone metastases were included. Patients with ECOG 4 and those previously treated with palliative radiotherapy to same site were excluded from the study. Bone metastasis was confirmed with X-rays, CT-scan, MRI and bone scan. The study was divided in two arms, ARM-A was palliative radiotherapy to the site of bone metastases with 30Gy/10#, 2Gy per fraction over 2 weeks, 5#/week with 26 patients and ARM-B was palliative radiotherapy to the site of bone metastases with 20Gy/5#, 4Gy per fraction over 1 week with 25 patients. The patients were treated on a Cobalt-60 machine with 2D treatment planning. Simulation was done with the help of solder wires and X-rays. For vertebral metastases a margin with one vertebra above and below the metastatic site was taken in field. For appendicular and pelvic bones a margin of 2cms around the metastatic site was taken in field of radiation. All patients were treated on IPD (Inpatient Department) basis. for close monitoring of pain relief during therapy. Assessment of time taken until pain relief was done with the use of visual analogue scale (VAS) and tapering of pain medications according to WHO pain management ladder pattern. Patients were followed up for pain assessment on days 7, 15 and 30 post radiation. The endpoint of study was overall response to pain in 30 days.

RESULTS

Total 51 patients were studied out of which 24 were male and 27 females. The youngest patient was 24yrs old and oldest was 77yrs old. The median age was 51years. The different primary malignancies for the metastases were breast cancer (17), head and neck cancer (7), lung cancer (6), prostate cancer (6), cervical cancer (3), multiple myeloma (3), hepatocellular carcinoma (2), angiosarcoma (2), one each cases of thyroid cancer, adrenocortical tumor, ca penis, ca esophagus and Ewing's sarcoma. The most common site for metastases was thoracic vertebrae (19) followed by lumbar vertebrae (13), cervical vertebrae

(7), pelvic bones (7), sternum (2), appendicular skeleton (2) and skull (1). Out of the 51 patients 5 patients (ARM-A=3, ARM-B=2) had no pain relief even after 30 days of radiation therapy, 2 patients (1 in each ARM) were lost to follow up and 1 patient (ARM-A) died during treatment. Out of the remaining 43 patients the mean time for pain relief in ARM-A was 7 days, minimum 3 days and maximum 15 days, in ARM-B the mean time was 6 days, minimum 5 days and maximum 15 days. On 30 days follow up we found that pain control was better in ARM-A than ARM-B.



DISCUSSION

When the initial objective of radiation therapy is palliation, possible serious complications or even slowly self-limiting adverse effects of treatment are no longer acceptable. Overall treatment time must be short, cost must be minimized and convenience of treatment must be considered^[5]. The aim of palliative radiotherapy in bone metastases must be maximum pain relief with minimum mortality within shortest period of hospital stay^[6]. Patients with metastatic disease in bone have a poor quality of life mainly due to pain and reduced mobility. A prolonged hospital stay will only worsen their quality of life. We also use analgesics along with radiotherapy to control pain. These analgesics are mainly NSAID's and codeine causing gastrointestinal toxicity, nephrotoxicity and constipation^[7]. External beam radiotherapy constitutes the most effective and well tolerated treatment for painful bone metastases^[8]. Numerous prospective randomized trials have documented partial pain relief of 60% to 80% and complete pain relief of 30% to 50% in patients 3 to 4 weeks after initiation of external beam palliative radiotherapy^[9]. In our study we found that the time span required for pain relief was almost same in both the arms (6 days for short course and 7 days for long course). The

immediate pain relief was better in the short course arm but on follow up of 30 days the long course arm patients fair better in pain relief. We cannot comment upon the need for retreatment as the follow up period for our patients was only 30 days. The short course radiotherapy should be preferred in patients with poor performance status, extensive metastatic burden and life expectancy less than 6 months to prevent the long term side effects of hypofractionated radiotherapy. Hypofractionated treatments may correlate with a higher risk of late toxicity, careful selection of palliative patients with limited life expectancies minimizes those risks. The reduced hospital stay and less number of fractions also reduces the burden on the treatment unit and the institute where we fall short of resources and have a large number of patients to treat.

CONCLUSION

Patients treated with primary radiotherapy generally respond to multi treatment regimens such as 30Gy in 10 fractions, although recent studies have suggested that patients with short life expectancy might fare well with a single 8-Gy dose ^[10]. Short course palliative radiotherapy can be preferred in patients with shorter life span, extensive metastasis, and to improve quality of life by reducing the hospital stay.

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