ORIGINAL ARTICLE

PALLIATIVE RADIOTHERAPY IN THE MANAGEMENT OF ADVANCED PEDIATRIC MALIGNANCIES

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ABSTRCT

Purpose: To evaluate the role of palliative radiotherapy in the management of advanced pediatric malignancies.

Methods: Patients coming to the department of radiotherapy S.M.S Hospital were included in the study. Out of 40 patients 36 pediatric patients were selected between Nov 2010 to Nov 2012. 4 Patients were excluded from the study. Inclusion Criteria (1) Advanced Pediatric Malignancy (2) Age 1 to 20 yrs (3) Consents of parents (4) Symptomatic Patients.Exclusion Criteria (1) Early stage Disease (2)Asymptomatic Patients(3)Age <1 yrs and >20 yrs(4)No Consent All of theses 36 children received palliative external beam radiotherapy by cobalt 60. . The two dose schedules were used (1) 625cGy in 3 fractions (2) 30 Gy in 10 fractions.

Results: There were 26 boys and 10 girls in the age group of 1 to 19 years, with a median age of 14 years (range of 1-19 years). Predominant symptoms were swelling, pain, bleeding, and weakness of limbs. The median duration of symptoms was 80 days (range of 4-40 days). The histological diagnosis was malignant round cell tumors (17); retinoblastoma (6); neuroblastoma (5); and Ewing's sarcoma (8). All patients presented with advanced stages of disease. Out of 36 patients 18 (50%) had disseminated disease at presentation. Some patients underwent surgery and chemotherapy and all patients received palliative radiotherapy. Three patients showed complete resolution, 18 patients showed good, while 14 patients had little, 1 did not have any relief in their symptoms. At the completion of treatment, 16 patients had partial response, 8 patients had progressive disease, 10 had stable disease and 2 patients had complete response.

Conclusions: So the role of radiotherapy is very important as palliative modality in children with locally advanced lesions.

Keywords: Palliative Radiotherapy, Paediatric Malignancies

ABBREVIATIONS
CR- Complete Response
PR-Partial Response
SD-Stable Disease
PD-Progressive Disease
cGy-Centigray
RT- Radiotherapy

INTRODUCTION

Radiotherapy plays an important role in the management of many patients with cancer, in both treatment intended for cure and treatment in which the primary intent is palliation of symptoms. In fact, radiotherapy for palliative purposes can represent up to 30%–50% of the radiotherapy workload in some radiation oncology department. (1,2).Literature pertaining to palliative care in children with cancer is less available. Although cancer is not as prevalent in children as it is in adults, it is the second leading cause of death, after accidents, and the leading cause of death from non-accidental causes (3).Worldwide, the annual number of new cases of childhood cancer exceeds 200,000 and more than 80% of these are from the developing world. Seven out of 10 children with cancer in the resource-rich countries are cured. Childhood cancers are rare, compared to adult cancers.(4)

Parkin et al conducted a study on the incidence of childhood malignancies and found that the incidence of childhood malignancies was about 2%in developed countries and 3% in developing countries(5).

Approximately 25% of childhood malignancy patients die from their disease(6) .The prognoses in children suffering from symptomatic metastasis is extremely poor. Although there is evidence to suggest that radiotherapy is effective in the palliation of metastasis to bone, brain, and liver, and of painful soft-tissue sites in children (7-10)information about the use of palliative radiotherapy for symptom management in children is

scarce. Short courses of radiotherapy can be helpful for palliative treatment in these children. Brain and bone metastasis are more efficaciously treated by short course radiation therapy(11). Repeat courses of radiotherapy can be given if the symptoms are intractable or recur. In spite of overall efficacy of radiotherapy for palliation of symptomatic metastatic disease, the information with respect to paediatric tumoursis limited.

METHODS

Patients coming to the department of radiotherapy S.M.S Hospital were included in the study. Following inclusion and exclusion criteria were used to select patients. Inclusion Criteria: Advanced Pediatric Malignancy, Age 1 to 20 yrs, Consents of parents and Symptomatic Patients.

Exclusion Criteria: Early stage Disease, Asymptomatic Patients, Age <1 yrs and >20 yrs, and No Consent.

Out of 40 Patients of pediatric malignancy attending department of radio therapy, 36 pediatric patients were selected between Nov2010 to Nov 2012. Four Patients were excluded from study due one of the above mentioned criteria.

Thorough clinical and laboratory investigations were done. All patients presented with advanced stages of disease. All of these 36 children received palliative external beam radiotherapy for symptomatic relief. Predominant symptoms were swelling due to tumor , pain, bleeding, and weakness of limbs. The two dose schedules were used 1. 625cGy in 1 fraction and 2. 30 Gy in 10 fractions.

RESULTS

The histology of these children were malignant round cell tumors (17), retinoblastoma (6), neuroblastoma (5), Ewing's sarcoma (8). There were 26 boys and 10 girls in the age group of 1 to 19 years, with a median age of 14 years (range of 1-19 years)(Table 1.).

The median duration of the symptoms was 90days (range 4–50 days). The indications for radiotherapy were (1)tumour mass ,(2) pain , (3)cord compression ,(4)bleeding,(5)superior vena cava obstruction. All of these36 children received palliative external beam radiotherapy for symptom control using a Co-60 teletherapy unit.

Some patients underwent surgery and chemotherapy and all patients received palliative radiotherapy . The symptomatic relief was complete in 3 patients.18 patients showed good, while 14 patients had little, 1 did not have any relief in their symptoms. At the completion of treatment, 16 patients had partial response, 8 patients had progressive disease, 10 had stable disease and 2 patients had complete response (RECIST Criteria version 1.1)(Table 1.).

Table 1: Patients Characteristics and Results

Patients characteristics	Patients
Age range (years)	1-19
Age Median (years)	14
Sex	
Male	26
Female	10
Tumor histology	
Malignant round cell tumor	17
Retinoblastoma	6
Neuroblastoma	5
Ewings Sarcoma	8
Response of Radiotherapy.	
CR (Complete response)	2
PR (Partial response)	16
SD (Stable Disease)	10
PD(Progressive Disease)	8
Symptomatic relief	
Complete Relief	3
Good Relief	18
Little	14
No relief	1
Background	
Urban	6
Rural	30

DISCUSSION

Radiotherapy is an effective modality in palliative treatment of cancers .Palliative radiotherapy can effectively and quickly improve symptoms and quality of life with relatively little morbidity, and often with very short courses of treatment. Palliative radiotherapy not only increase quality of life for patients, but actually reduce overall costs for end-of-life care(12) . The most significant barriers to the utilization of palliative radiotherapy involve patient and family factors, especially reluctance on the part of patients and families to engage in palliative radiotherapy. Experience in the adult palliative care population suggests that patients are sometimes reluctant to consider palliative radiotherapy because they do not want to spend precious remaining time receiving treatments or they do not understand the role of palliative radiotherapy for symptom relief regardless of the incurable nature of the tumour. Careful explanation of the fewer treatments and relatively little toxicity (1,13-14) can sometimes alleviate reluctance and encourage patients to consider palliative treatment. Whether a similar reluctance plays a role in the pediatric cancer population is unclear (15). However, our study highlights a need that radiation oncologists to be more involved in end-of-life issues for cancer patients and to work collaboratively with the pediatric oncology health care team to be able to offer palliative radiotherapy in a timely, efficient, and effective manner. Radiation oncologists dealing with pediatric patients clearly need to become more involved with symptom management for children with incurable cancers, and both ongoing research into, and development of guidelines for, the use of palliative radiotherapy in the pediatric oncology population would be helpful(16). Chow et al in his findings says “that pal-

liative radiotherapy constitutes as much as half the workload in radiotherapy departments in Canada"(17).Fractionation of radiotherapy regimens has been a matter of study in optimising the results of palliative radiotherapy in the treatment of bony metastasis. However, there is still no consensus on which fractionation scheme should be used. Different treatment traditions have developed, and a variety of current fractionation schedules, ranging from 8 Gyin one fraction to 30Gy in 10 fractions, are used in clinical practice. We used 1(6.25Gy),and 10(30Gy) fractions Regimens. One-fraction regimen is also equally effective, it would involve patients in only one attendance for treatment, and would greatly reduce the cost in terms of machine-time .

One-fraction regimen has the advantage that, unlike the Ten-fraction regimen, It involves only a single attendance for treatment and should prove to be of great value in the palliative treatment

of patients with a poor prognosis. Clinical evidence provides for larger doses of radiation in smaller number of fractions for effective palliation of pain, Furthermore, hypofractionation may release RT resources and make radiotherapy more available for other groups of cancer patients.

CONCLUSION

The role of radiotherapy is very important as palliative modality in children with locally advanced cancer. Single fraction radiotherapy as a palliative treatment of advanced disease is a better option compare to multiple fractions radiotherapy in terms of patients load and machine time.

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