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A REVIEW OF THE EFFECT OF PALLIATIVE RADIOTHERAPY IN THE MANAGEMENT OF MULTIPLE MYELOMA PATIENTS ON STANDARD CHEMOTHERAPY AT THE UCH, IBADAN.

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ABSTRACT

The study aimed at assessing the beneficial effects of radiotherapy to bony tumours of multiple myeloma-patients while on standard chemotherapy. Records of eighteen multiple myeloma patients that reported for radiotherapy between 1988 and 1999 were reviewed. Findings include mean age of 64.4 years, male: female ratio of 1:2:1, multiple tumour deposit sites ranging from 3 to 8 were irradiated in nine of the patients. The axial skeleton was the commonest site involved representing 75% of the sites irradiated. None of the patients had extramedullary tumour deposit.

The response observed include reduction/total relief of pain, healing of pathological fractures (previously reduced by plaster of Paris) and improvement in performance status and quality of life. Early identification and appropriate irradiation of bony myeloma tumour deposits in conjuction with standard chemotherapy will go a long way in reducing the morbidity, improve the quality of life and probably the survival of these patients.

KEYWORDS: ***Multiple myeloma, standard chemotherapy, effect of radiotherapy.***

INTRODUCTION

Multiple myeloma is a clonal disorder in which terminally differentiated B cells and plasma cells infiltrate the bone marrow, produce monoclonal immunoglobulins[1] and secrete osteoclast-activating factor leading to osteolysis and pathological fracture[2]. Other features include hypercalcaemia[3], renal failure, immunosuppression with recurrent infection, haemorrhagic tendency and renal impairment.

Multiple myeloma is a disease of worldwide incidence accounting for about 1% of all cancers in whites[4] and 2% in black Americans[5]. It represents 1.3% of all cancer deaths[6]. Although the incidence of multiple myeloma in Nigeria is uncertain, it is estimated to be 8 per 100,00 per year from hospital based data[7]. This figure correlates with the relatively higher incidence of multiple myeloma in black Americans than white Americans (7 per 100,00, 3 per 100,000, respectively)[8].

Plasma cell tumour can either be bony or extra-medullary. Multiple bony tumours have been documented to constitute 93%, while solitary bony tumours constitute 3% and extramedullary occurs in only 4% of the patients[9].

Radiotherapy in the treatment of solitary plasmacytoma has recorded high local control rates with overall 5-year survival rate of 82% and 57% for solitary plasmacytoma of bone (SPB) and extramedullary plasmacytoma (EMP) respectively[10,11,12].

However, for multiple myeloma, chemotherapy at standard doses is the mainstay of treatment; the palliative role of radiotherapy, in conjunction with other medical armoury of physiotherapy and orthopaedic support, as efforts at keeping the patients mobile warrant an emphasis.

This study therefore reviews the overall effect of palliative radiotherapy to the bony sites of tumour deposits (with or without pathological fractures) as adjunct therapy so as to keep the patient mobile and pain free.

PATIENTS AND METHODS

All patients studied were those that received palliative radiotherapy (between 1988 and 1999) to the sites of their bony tumour deposits during the course of their management with standard chemotherapy. All patients were diagnosed as cases of IgG myeloma. They were placed on melphalan and Prednisolone or Cyclophosphamide plus Prednisolone. Patients received an average of 10 courses of chemotherapy. Each of the patients, at different times during the course of their treatment with chemotherapy received palliative radiotherapy to sites of painful bony lesions and/or fracture sites (after immobilization). External radiation therapy was delivered through a cobalt-60 Teletherapy machine with average energy of 1.25 MeV. Dose of radiotherapy ranged between 8 Gray single fraction to 30Gray in ten fractions over a 3-week period. Information pertaining to diagnosis time of presentation for radiotherapy, age, sex, site(s) of bony lesions irradiated, dose and duration of radiotherapy were recorded and analysed.

All patients were seen and followed-up by the authors during the period of study. Eighteen patients in all were seen. A female patient was diagnosed as a case of invasive ductal carcinoma of the right breast at The Breast Clinic, 108 Harley street London WIN 2ET.

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Further investigation on the patient showed malignant plasma cells on bone marrow biopsy, diagnostic of multiple myeloma. Cell markers confirmed an IgG myeloma. She had a right segmental mastectomy and axiliary dissection on August 17th, 1995 at the same hospital.

She was then sent back to treatment in Nigerian to continue her treatment here in the UCH. She received radiotherapy to the breast cancer at the Radiotherapy Department and ten courses of Melphalan and Prednisolone at the Haematology Department of the UCH.

Also, a male patient diagnosed as a case of IgG myeloma in 1989 was found to have enlarged prostrate during a follow-up visit to the clinic. The prostatic mass was histologically confirmed as prostrate carcinoma.

RESULTS

The eighteen patients reviewed were aged between 45 to 75 years with a mean age of 64.4 year and a median age of 57 years (Table 1). The male-female ratio observed was 1:2:1. A patient with concomitant breast cancer did not receive radiotherapy to the bony lesions. Nine of the patients (i.e 50%) had multiple sites of tumour deposits that ranged from 3 to 8 sites. The remaining had single bony lesions.

Table 1: **Age Distribution of Myeloma Patients treated with Irradiation to Bony Lesions**

Age group in years	No of Patients	
	Male	Female
41 – 50	3(16.67%)	1(5.56%)
51 – 60	2(11.11%)	4(22.22%)
61 – 70	2(11.11%)	3(16.67%)
71 – 80	3(16.67%)	-

Table 2: **Skeletal Areas Irradiated in 18 Myeloma Patients on Standard Chemotherapy**

Skeletal site irradiated	No of patients with such lesions (n=18)*	
1. Lower Jaw	2	
2. Thoraco-Lumbar spine	8	
3 Thoracic spine alone	4	
4. Lumbar spine alone	5	
5. Cervical spine	2	
6. Clavicle	2	
7. Pelvis	1	
8. Shoulder joint	2	
Knee joint	1	
9 Femur (Bilateral)		2
(Unilateral)	3	
10. Humerus (Unilateral)	3	
(Bilateral)		1

**Majority of the patients had more than one site of bony lesion*

Fig. 1: To show age Distribution of Patients Treated

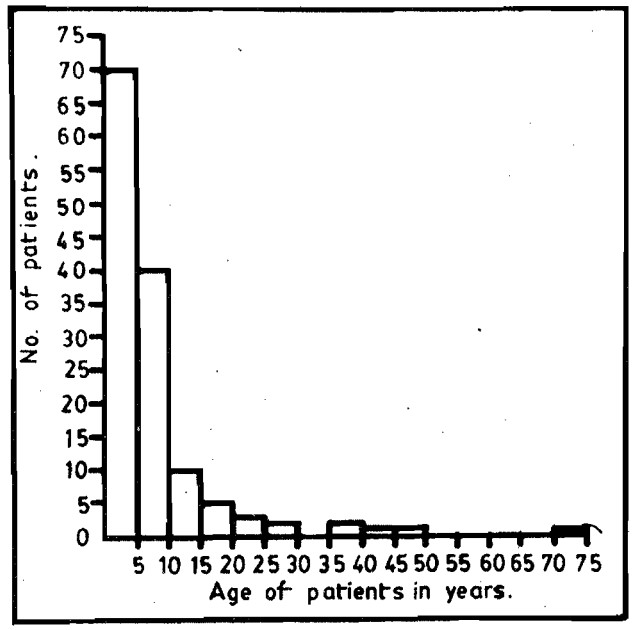

Table 2 refers to the eleven bony sites irradiated and the number of patients that had such bony lesions. The axial skeleton was commonly affected (75%). The affectation of the mandible (lower jaw) in 2 patients is of particular interest.

The dose of radiotherapy given ranged from 8 GY single fractions to 30 Gray in ten fractions.

Response to radiotherapy was assessed by reduction in the level of pain, healing of pathological fractures that had been previously immobilized with plaster of Paris (POP) and improvement in performance status of patients. All the patients had marked pain reduction (subjective assessment), improvement in performance status and were kept relatively mobile until death from disease progression or before they were lost to follow-up. The average follow-up period for the patients was 3.2 years. A female patient was followed up for 7 years before she finally died in 1995 from disease progression inspite of chemotherapy.

DISCUSSION

Although chemotherapy at standard doses is the main stay of treatment for multiple myeloma, the role of radiotherapy intervention during drug resistance and in the treatment of various sites of tumour deposits has not been extensively studied in Nigerian patients. External radiotherapy has been shown to provide important palliative role in the management of multiple myeloma in the area of pain control[13]. Very few cancer patients in Nigeria have access to radiotherapy. This is understandable because radiotherapy is available in very few centers in Nigeria (UCH, Ibadan LUTH, Lagos and recently, National Hospital for women, Abuja).

Even though only eighteen patients were reviewed; male-female sex ratio of 1:2:1 in this study[2] and equal number of

patients having single and multiple sites involvement is in accordance with previous studies[4]. Axial skeleton, as a rule, in line with other studies was more affected. Affectation of the lower jaw, which is an unusual finding was found in two patients. None of the patients had irradiation of the skull. The longest surviving patient was one female patient whose eight multiple bony lesion sites were successively irradiated, remaining mobile for 6 years until she became resistant to chemotherapy and died.

Overall the patients had marked pain reduction and improvement in performance status. All the patients were relatively kept mobile all through the course of treatment with the use of radiotherapy to bony lesions as adjuvant therapy. We therefore suggest that all sites of bony deposits be thoroughly searched for and irradiated early enough so as to further improve the quality of life of multiple myeloma patients.

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