

platelet engraftment has been known as preferred method for mobilization. Peripheral blood stem cells can be extracted from the autologous or allogeneic donor. Mobilization of the stem cells for autologous stem cell transplant is traditionally done using growth factors alone or in combination with chemotherapy, with or without an additional mobilizing agent. A significant number of hematological malignancy patients are poor mobilizers, (i.e., they are unable to achieve the minimal target cell dose during their first round of mobilization). Therefore, a prediction for a successful stem cell mobilization ideally should be made before initiating any apheresis procedure to spare those with a low rate of success from the risks associated with apheresis procedure. Preapheresis CD34 cell count can predict postapheresis yield and hence, can help to reduce the collection sessions. Reduction of apheresis sessions decreases the discomfort, inconvenience, time, and monetary expenses.

**Objectives** This study was aimed to analyze preapheresis and postapheresis CD34+ cell counts.

**Materials and Methods** Patients of any age and gender with diagnosis of hematological malignancies admitted for autologous stem cell transplantation for hematological malignancies (including Hodgkin lymphoma, non-Hodgkin lymphoma, and multiple myeloma) and germ cell tumors in our institute from July 2008 to July 2016 were included in the study. The post-G-CSF CBC, preapheresis CBC, CD34+ cell counts, and postapheresis CBC, CD34+ cell counts, mononuclear cell counts to predict the outcome of amount of yield. The effect on engraftment will be measured according to the defining criteria of achieving a sustained peripheral blood neutrophil count of  $>500 \times 10^6/L$  (Wolff 2002) and a platelet count of  $>20 \times 10^9/L$  (Teltschik et al. 2016) independent of platelet transfusion for at least 7 days. Collection of stem cells was done using apheresis machine (COBE SPECTRA). Complete peripheral blood counts using automated analyzers. Peripheral blood CD34 + cell counts and postapheresis CD34+ cell count using BD FACSCANTO II flow cytometer. To calculate postapheresis yield, the related CD34 count measured by flow cytometer was multiplied by the apheresis product volume and divided by the recipient's body weight (kg). Number of CD34+ cells collected = (CD34 cell concentration in final product)  $\times$  (final product volume).

**Results** A total of 100 patients who underwent a total of 320 apheresis sessions were included in the study. There were 78 males and 22 females. We also found a significant correlation between preapheresis CD34 + cell count and postapheresis CD34 percentage on days 1, 2, and 3 of the apheresis sessions. In our study, to obtain more than  $1.31 \times 10^6$  cells (median = 1.04, range: 0.15–4.70), an absolute count of pre apheresis CD34 + cells  $\geq 14$  cells would be necessary. A target of CD34 + cells  $\geq 2 \times 10^6/kg$  was obtained in majority of patients if a concentration of  $\geq 25$  CD34 + cells was present in postapheresis collection.

**Conclusion** Compiling our results with the previous published data, we conclude that there is a strong correlation between preapheresis absolute CD34 + cell counts and postapheresis CD34 + cell count. Our study also suggests that the minimum absolute cell count of  $>10$  cells/ $\mu L$  is required, to achieve a target of  $>2-5 \times 10^6$  cells for postapheresis yield.

**Keywords:** autologous stem cell transplantation, preapheresis, CD34 + cell count

## Epidemiology of Adolescent and Young Adult Cancers in a Tertiary Hospital in South India

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### Abstract

**Introduction** There has been an increase in the incidence of malignancies in young Indians, and there is no data reflecting the trend and profile of adolescent and young adult (AYA) cancers.

**Objectives** This study was aimed to ascertain the epidemiology of AYA cancers in a tertiary care center in south India and the trend of AYA cancers during the past 9 years.

**Materials and Methods** All patients aged 15 to 39 years with the diagnosis of cancer who were registered and received treatment with M.S. Ramaiah Hospital during a 9-year period from January 2011 to December 2019 were included. Basic demographic information on age, gender was available along with address and contact information. Using cancer site and morphology codes, the cancers were grouped by the ICD-O coding system of AYA cancers and their clinical information on disease and treatment status were collected retrospectively and analyzed.

**Results** Of the total 946 registered AYA cancer patients, majority of AYA cancer were in age group of 35 to 39 years (39%) and females (58%). When analyzing the data and dividing the AYA population into early (15–24 years) and late (25–39 years), we found that whereas the majority of the patients had hematolymphoid malignancies (48%) in the early group (15–24 years), the late group (25–39 years) had more carcinomas (68%). The percentage distribution of AYA cancers among the study population, lymphoma and leukemia contribute 11% and 15%, respectively, to the patient load and still the carcinomas formed the bulk (58%) of the population. It is interesting to know that breast, genitourinary, and gastrointestinal (GI) malignancies constituted 17.75%, 14.16%, and 14.69% individually.

**Conclusion** AYA oncology consists of a heterogeneous population and the profile differs by geography, sex, and other factors. There has been limited improvement in the past decade but there is a lot more to be done. To assess the problem, we have to identify and characterize the problem and look at the epidemiology of this population. This will require multicenter and international studies with focus on improving outcomes as in pediatric inspired ALL protocols. The trials should be started at local levels to ensure maximum participation. We need to generate data on epidemiology and channel our resources properly to save this precious but so called lost tribe of oncology.

**Keywords:** AYA oncology, India, epidemiology

## Weekly Etoposide and Platinum in Small-Cell Lung Cancer: Hope and Scope for Fragile Patients

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### Abstract

**Introduction** Small-cell lung cancer (SCLC) is an aggressive and chemo-sensitive disease. Many patients present in an advanced stage and with a poor performance status (PS). In such a condition, the treatment dilemma due to poor condition advocates alternative treatment approach rather than standard chemotherapy. One way of usual practice is to split the chemotherapy into a weekly schedule. However, there is limited data regarding the actual benefit of weekly chemotherapy. We hypothesize that a weekly chemotherapy with etoposide/platinum combination will be feasible and safe in patients of advanced-stage SCLC with poor PS.

**Objectives** This study was aimed to determine whether weekly etoposide/platinum chemotherapy is a safe option for patients with advanced stage, poor PS, and SCLC who are otherwise unfit for systemic anticancer therapy.

**Materials and Methods** We retrospectively analyzed the data of SCLC patients presented to our center from July 2018 to September 2020. We analyzed that treatment, survival, and clinical benefit data. We also analyzed the benefit of weekly etoposide/platinum in otherwise unfit for chemotherapy.

**Results** One hundred and fifty patients of lung cancer presented to our department between July 2018 and September 2020; SCLC constituted 34% (53 cases). In SCLC patients, the median overall survival was 2.5 months. Fourteen (26%) patients with SCLC were unable to start any oncological intervention. Ten (19%) patients could receive

only one cycle of standard 3 weekly chemotherapy. Five patients with an advanced-stage SCLC and an ECOG-PS of 4, otherwise unfit for any systemic anticancer therapy, were started on weekly chemotherapy with etoposide (60–80 mg/m<sup>2</sup>) and carboplatin (AUC 2). Four patients demonstrated a partial response (PR) while one demonstrated stable disease (SD) after 9 weeks of therapy. Improvement in PS was noted in all patients. Median progression-free survival (PFS) and overall survival (OS) were 137 and 164 days, respectively. Two patients died of disease progression, one died of massive pulmonary embolism, while two were alive and continuing on the same protocol.

**Conclusion** The weekly etoposide and platinum chemotherapy is a practical and feasible treatment option in patients who are otherwise fragile and unfit for standard-dose chemotherapy.

**Keywords:** small-cell lung cancer, lung cancer, poor performance status, weekly etoposide/platinum

## A Descriptive Study to Assess the Association of Geriatric Score with Observed Chemo Toxicity in Cancer Patients Older than 60 Years

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### Abstract

**Introduction** Cancer is the leading cause of death worldwide with elderly patients being predominantly affected. There seems to be a bias against administering chemotherapy to elderly patients with fewer elderly patients receiving chemotherapy as compared with their stage-matched younger patients because of concerns about their capacity to endure treatment. To make personalized treatment decisions and to anticipate serious adverse effects, a toxicity prediction tool that can be computed at the bedside is the need of the hour. This well-validated score has not been tested in the Indian population. So, we decided to test the same score in our patients and try to correlate the score with the observed toxicity.

**Objectives** This study was aimed to determine geriatric functional status by means of a standardized geriatric score and to correlate geriatric score with observed chemo toxicity.

**Materials and Methods** Fifty consecutive elderly patients (age > 60 years) with a diagnosis of cancer and scheduled for chemotherapy were recruited. These patients were evaluated using the geriatric assessment tool which is based on functional, nutritional, and psychological status. After that patient's pretherapy, chemo toxicity score or geriatric score was calculated using a published well-validated tool that consisted of 11 prechemotherapy variables as follows:

- a) Age of patient,
- b) Cancer type
- c) Planned chemotherapy dose,
- d) Planned number of chemotherapy drugs
- e) Hemoglobin,
- f) Creatinine clearance
- g) Geriatric questions like -
- i. How is your hearing?
- ii. Number of falls in past 6 months?
- iii. Can take your own medicines?
- iv. Did your health limit you in walking one block during past 4 weeks?
- v. How much of time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc.)

The patients were then followed from the beginning to the end of six cycles of their chemotherapy regimen. Toxicities were noted after each clinical encounter by using the NCI-CTCAE, version 3.0.25.

**Results** General characteristics: the mean age of participants was 66 years (standard deviation [SD] = 4.6 and range: 60–85 years). Of them,

60% received polychemotherapy and 82% received standard doses of chemotherapy. The mean score on activities of daily living was 66.7, comorbidity score was 2.7, the psychological scale was 63.8, the social-activity scale was 54.3, and social-support scale was 64.1. The mean pretherapy toxicity score is 7.24 according to the toxicity calculator. At least one grade 3 to 5 toxicity occurred in 30% of the patients (66% of grade 3, 20% of grade 4, and 13.3% of grade 5). The correlation between the predicted score and observed graded toxicity score by Pearson's scale ( $\alpha = 0.05$ ) was 0.63.

**Conclusion** The prediction model is easy to use, thus increasing the feasibility of incorporation in daily practice is important. It may enable oncologists to better assess the risk/benefit ratio and to adjust the treatment accordingly.

**Keywords:** geriatric, chemotherapy toxicity, myCARG

## Comparison of Various Radiotherapy Dose Fractionation Schedules in Palliation of Bone Metastasis

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### Abstract

**Introduction** Bone metastasis is a common manifestation of malignancy. Bone metastases causes various morbidities and affect the quality of life. External beam radiotherapy is the mainstay of treatment of uncomplicated painful bone metastases. Different radiotherapy fractionation schedules are in practice for palliation of painful bone metastases.

**Objectives** This study was aimed to compare and report the outcomes of various fractionation schedules of radiation therapy (RT) in terms of pain relief and quality of life in patients with painful bone metastases.

**Materials and Methods** Eighty patients were randomized into four treatment arms with different RT fractionation schedules, namely, 8 Gy in 1 fraction, 20 Gy in 5 fractions, 24 Gy in 6 fractions, and 30 Gy in 10 fractions. Patients were assessed for pain by visual analog scale (VAS), performance status and quality of life before initiating the treatment, on the day of completion of treatment, and 1 week, 1 month, and 3 months of treatment completion.

**Results** Majority of the metastases constituted from breast followed by lung cancer. Of these, 27.5% had metastases to the thoracic vertebra, 26.25% to the lumbar vertebra, 22.5% to the pelvis, 8.75% to the sternum, 6.25% each to cervical vertebra and femur, and 1.25% each to humerus and ribs. The mean VAS score prior to start of RT was 5.31, 5.21, 5.54, and 4.87 in arms A, B, C, and D, respectively. At the end of treatment, the scores were 3.0, 3.29, 2.77, and 2.47, respectively. At the end of 3 months, the scores were 1.54, 0.57, 0.54, and 0.60, respectively. The pain reduction was significant in all the four arms ( $p < 0.05$ ). Also, 25% of the patients' arm A had complete pain relief, whereas 45% of patients in arms B, C, and D had complete pain relief. In arm A, the performance status failed to improve at 3 months when compared with 1-week post-RT but the improvement was significant in the remaining three arms. There was improvement in the quality of life in all the arms, both in terms of function and symptoms. The mean score of symptomatic quality of life based on the EORTC BM22 module prior to start of RT was 38.14, 34.91, 28.85, and 29.17 in arms A, B, C, and D, respectively. There was a significant drop to 9.29, 6.55, 5.13, and 6.11 at 1-month posttreatment in the four arms, respectively. The outcomes in terms of functional quality of life showed a similar trend.

**Conclusion** This study demonstrated that pain reduction by various RT fractionation schedules were similar, and no statistically significant difference was noted. Performance status and quality of life improved in all the four treatment arms post-RT.

**Keywords:** radiotherapy, bone, metastatic, palliation