Pegfilgrastim Use at Southcoast Centers for Cancer Care: An Educational Opportunity 2017

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Southcoast Health
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Introduction

Pegfilgrastim reduces the risk of febrile neutropenia and is indicated for primary prophylaxis when the risk of febrile neutropenia for a chemotherapy regimen approaches 20%. With national guidelines evolving, new and existing staff at SCCC periodically question pegfigrastim appropriateness. This prompted the oncology pharmacy department to propose guidelines. The pharmacy then analyzed previous usage of pegfilgrastim to get a baseline value of compliance with the proposed guidelines.

Objectives

- Validate SCCC guidelines to utilize when prescribing pegfilgrastim
- Evaluate the clinical utility of pegfilgrastim in patients receiving chemotherapy by review of patient charts
- Obtain formal approval of pharmacy guidelines; utilize to educate the staff

Methods and Materials

- The pharmacy retrospectively reviewed records for the six month period from 6/13/17 to 12/12/17
- Variables considered were: treatment goal, regimen prescribed, and patient age
- Current published guidelines suggest patients < 60 years old on palliative treatment may not be ideal candidates for growth factor unless their regimen has >20% incidence of febrile neutropenia
- Used Multinational Association of Supportive Care in Cancer (MASCC) febrile neutropenia risk index to aid in evaluation of pegfilgrastim usage at SCCC for those patients with moderate risk

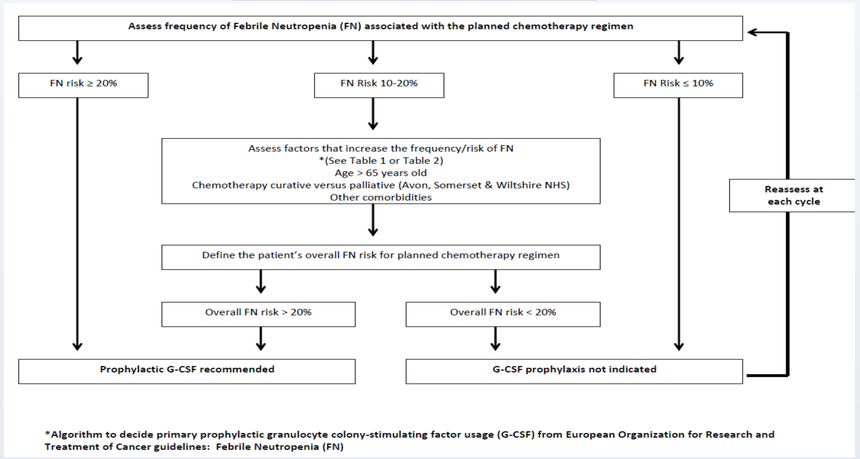
Table 1. Multinational Association of Supportive Care in Cancer (MASCC) febrile neutropenia risk index

Characteristics:	*Score*
Burden of illness: no or mild symptoms	5
Burden of illness: moderate symptoms	3
Burden of illness: severe symptoms	0
No hypotension (systolic BP >90mmHg)	5
No chronic obstructive pulmonary disease	4
Solid tumor/lymphoma with no previous fungal infection	4
No dehydration	3
Outpatient status (at onset of fever)	3
Age <60 years	2

*Patients with scores ≥21 are at low risk of complications. Points attributed to the variable "burden of illness" are NOT cumulative. The maximum theoretical score is therefore 26.

BP – blood pressure, reprinted from ASCO

Methods and Materials Continued



*Algorithm to decide primary prophylactic granulocyte colony-stimulating factor usage (G-CSF) from European Organization for Research and Treatment of Cancer guidelines: Febrile Neutropenia (FN)

Examples of Disease Settings and Chemotherapy Regimens with an Intermediate Risk for Febrile Neutropenia (10%–20%)

- ***This list is not comprehensive***; there are other agents/regimens that have an intermediate risk for the development of febrile neutropenia.
- The type of chemotherapy regimen is only one component of the Risk Assessment. See Patient Risk Factors for Developing Febrile Neutropenia (MGF-2).
- The exact risk includes agent, dose, and the treatment setting (ie, treatment naive vs. heavily pretreated patients). (See MGF-1)

Occult Primary - Adenocarcinoma
- Gemcitabine/docetaxel[29]

Breast Cancer
- Docetaxel every 21 days[30]
- CMF classic (cyclophosphamide, methotrexate, fluorouracil) (adjuvant)[31]
- AC (doxorubicin, cyclophosphamide) + sequential docetaxel (adjuvant) (taxane portion only)[32]
- AC + sequential docetaxel + trastuzumab (adjuvant)[33]
- FEC (fluorouracil, epirubicin, cyclophosphamide) + sequential docetaxel[34]
- Paclitaxel every 21 days (metastatic or relapsed)[35]
- TC[a] (docetaxel, cyclophosphamide)[36]

Cervical Cancer
- Cisplatin/topotecan (recurrent or metastatic)[37,38,39]
- Paclitaxel/cisplatin[39]
- Topotecan (recurrent or metastatic)[40]
- Irinotecan (recurrent or metastatic)[41]

Colorectal Cancer
- FOLFOX (fluorouracil, leucovorin, oxaliplatin)[42]

Esophageal and Gastric Cancers
- Irinotecan/cisplatin[43]
- Epirubicin/cisplatin/5-fluorouracil[44]
- Epirubicin/cisplatin/capecitabine[44]

Multiple Myeloma
- DT-PACE (dexamethasone/thalidomide/cisplatin/doxorubicin/cyclophosphamide/etoposide)[45]
- DT-PACE + bortezomib (VTD-PACE)[46]

Non-Hodgkin's Lymphomas
- EPOCH (etoposide, prednisone, vincristine, cyclophosphamide, doxorubicin) (AIDS-related NHL, Burkitt lymphoma, recurrent, other NHL subtypes)[47]
- EPOCH + IT chemotherapy (AIDS-related NHL, DLBCL, recurrent)[47]
- GDP (gemcitabine, dexamethasone, cisplatin) (DLBCL, PTCL, 2nd line)[48]
- GDP (gemcitabine, dexamethasone, cisplatin) + rituximab (DLBCL, 2nd line, Burkitt lymphoma, other NHL subtypes)[48]
- FMR (fludarabine, mitoxantrone, rituximab)[49]
- CHOP + rituximab (cyclophosphamide, doxorubicin, vincristine, prednisone, rituximab)[50,51] including regimens with pegylated liposomal doxorubicin[52,53] or mitoxantrone[54] substituted for doxorubicin

Non-Small Cell Lung Cancer
- Cisplatin/paclitaxel (advanced/metastatic)[55]
- Cisplatin/vinorelbine (adjuvant, advanced/metastatic)[56]
- Cisplatin/docetaxel (adjuvant, advanced/metastatic)[55,57]
- Cisplatin/etoposide (adjuvant, advanced/metastatic)[58]
- Carboplatin/paclitaxel[b] (adjuvant, advanced/metastatic)[59]
- Docetaxel (advanced/metastatic)[57]

Ovarian Cancer
- Carboplatin/docetaxel[60]

Pancreatic Cancer
- FOLFIRINOX[c]

Prostate Cancer
- Cabazitaxel[d,61]

Small Cell Lung Cancer
- Etoposide/carboplatin[62]

Testicular Cancer
- Etoposide/cisplatin[60]

Uterine Sarcoma
- Docetaxel (advanced or metastatic)[64]

Results

Overall there were 151 doses of pegfilgrastim dispensed for 51 patients at both sites during the 6 month period.

Fairhaven Site:

There were a total of 77 pegfilgrastim doses given in the 6 month timeframe among a total of 24 patients.

Only 4 (17%) were palliative or had no treatment goal specified

- One patient was on a protocol with a high incidence of fever and neutropenia: gemcitabine 900 mg/m^2 IV days 1 and 8 and docetaxel 100 mg/m^2 day 8; this justified the use of pegfilgrastim.
- Two of the four patients were older patients with prostate cancer on a docetaxel regimen; one can extrapolate from the NCCN guidelines that this regimen has a moderate risk of fever and neutropenia. Using the MASCC febrile neutropenia risk index, both patients have a high risk of fever/neutropenia and pegfilgrastim use was appropriate.
- The last patient was put on pegfilgrastim after developing a neutropenic cystitis after her first cycle of brentuximab; this was deemed appropriate for use.

Fall River Site:

There were a total of 74 pegfilgrastim doses given in the 6 month timeframe among a total of 27 patients.

Only 6 (22%) were palliative or had no treatment goal specified

- One of these patients was on the cyclophosphamide/docetaxel regimen that has a high risk of fever/neutropenia according to NCCN guidelines; this justified the use of pegfilgrastim.
- One of these patients was pancytopenic, not on active chemotherapy treatment and not responding to filgrastim, so pegfilgrastim was started.
- The four remaining patients were evaluated based upon the MASCC febrile neutropenia risk index; two were deemed to be high risk and two were not.

Conclusions

- Practitioners at the Southcoast Centers for Cancer Care followed proposed guidelines or justified pegfilgrastim use in 96% of the cases during the study period
- Practitioners provided appropriate and cost-effective care to patients, however, the oncology pharmacy department suggested that these guidelines become accepted as standard practice and be reviewed with all existing and new practitioners as well as with nursing and pharmacy staffs.
- Based on the results of the study, the practitioners agreed to have the guidelines implemented as standard practice.
- Staff education is underway

References

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Southcoast Centers for Cancer Care

Located in Fall River and Fairhaven, Massachusetts, we serve the growing need for comprehensive cancer services in the South Coast region. Seven medical oncologists, three radiation oncologists and three full time nurse practitioners complete provider services for the centers. Support services include navigation, nursing, nutrition, pharmacy, psychosocial, and financial counseling. Annually, we treat approximately 6000 adult (>18 years old) patients.

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