Complications Associated with Prolonged GCSF with Dose-Dense EC Chemotherapy for Early Breast Cancer Patients

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BACKGROUND

- Primary GSCF prophylaxis with dose-dense chemotherapy for early stage breast cancer is routine practice to prevent febrile neutropenia (FN).
- Current practice administers 7 days of GCSF, which reduces the FN risk but is associated with extra toxicity and costs.
- A recent study[1] suggested 5 days of GCSF is non-inferior to 7/10 days in early stage breast cancer.

OBJECTIVE

- To quantify the rates of FN, neutropenia, hospital admissions and GCSF-related toxicity in early stage breast cancer patients receiving 7 days of GCSF with dose-dense epirubicin and cyclophosphamide (EC).

METHOD

- Between 2018 and 2021, patients treated for early stage breast cancer with dose-dense epirubicin (90mg/m^2) and cyclophosphamide (600mg/m^2) given bi-weekly at our institution were identified from chemotherapy prescribing records.
- For each treatment cycle, delays, dose reductions, hospital admissions and GCSF-related toxicity were assessed from medical records.

RESULTS

- 97 patients (all female) were identified, receiving a total of 373 cycles. Median age was 46 years (25 – 60 years).
- Treatment was neoadjuvant in 44% and adjuvant in 56%, with no significant difference in complication rates.
- GCSF was prescribed for 7 days (days 3-10 of cycle) at 300mcg and 480mcg for 82 and 15 patients respectively.
- No serious toxicities, such as severe hypersensitivity reactions or ARDS (as reported in the SmPC) were recorded.
- Of the 40 patients with documented GCSF toxicity, 9 (22.5%) had them with 2 cycles, 4 (10%) had them with 3 cycles and 2 (5%) had them with all 4 cycles. Only 5 of these patients had the duration or dose of GCSF reduced.

Event	No. of patients	Risk per patient (%)	No. of cycles	Risk per cycle (%)
Hospital admission (any reason)	5	5.2%	5	1.3%
Febrile neutropenia	2	2.1%	2	0.5%
Dose delay due to neutropenia	3	3.1%	6	1.6%
Neutrophilia (>20 x 10^9/L)	3	3.1%	3	0.8%
Documented toxicity	40	41.2%	61	16.4%

Table 1: Frequency of relevant treatment-related events

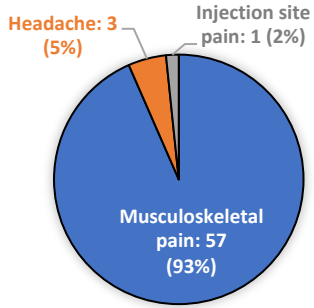

Fig 1: Breakdown of GCSF toxicity

DISCUSSION

- Our data is consistent with risk of FN in dose-dense anthracycline chemotherapy found in the literature (1 - 11% per patient)[2]. Use of 5 days GCSF presents a comparable FN risk of 5-6%[1].
- Significant neutrophilia represents excessive effect of GCSF with a potential opportunity to reduce duration particularly in the presence of other GCSF-related toxicity. Only one patient had GCSF reduced due to neutrophilia.

CONCLUSION

The optimal duration of GCSF prophylaxis to reduce the FN risk with dose-dense regimens is unclear. Seven days of GCSF is associated with toxicity with a low chance of febrile neutropenia per cycle. A reduction to 5 days should be considered for dose-dense regimes in early breast cancer. Documentation and response to toxicity is necessary.

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REFERENCES

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