Biosimilar filgrastim in routine clinical practice: a single centre experience.

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Abstract

Introduction: The use of recombinant human granulocyte colony-stimulating factors (rh-G-CSF) has significantly increased the ability to maintain effective schedules and doses of chemotherapy regimens with severe medullary toxicity. However, despite numerous guidelines, the use of rh-G-CSFs in clinical practice is often suboptimal, occurring on a non-systematic case-by-case basis. The availability of biosimilar filgrastim at significantly reduced costs may allow more patients to benefit from growth factor support with comparable results to the originator filgrastim in terms of febrile neutropenia (FN) risk reduction. We performed a retrospective data analysis of 42 patients who underwent chemotherapy for advanced solid tumours and received primary prophylaxis with biosimilar filgrastim (Zarzio®).

Methods: All hospital day patients with an expected risk of FN >20% based on their scheduled chemotherapy regimen received 3 days (days 2−4) primary prophylaxis with subcutaneous bolus injections of Zarzio® 300 µg. Patients with FN < 20% and poor bone marrow reserve or other severe co-morbidities and at high risk for infection also received primary prophylaxis. Blood tests were performed at the nadir and the day before the next cycle of treatment. Patients were usually asked to repeat each test in the same laboratory. The primary end-point was the efficacy and tolerability of primary prophylaxis with Zarzio® in terms of severe neutropenia and overall FN incidence and duration in unselected cancer patients in routine clinical practice. Treatment related toxicity (predominantly muscle-skeletal events) was evaluated through the NCI CTC 3.0.

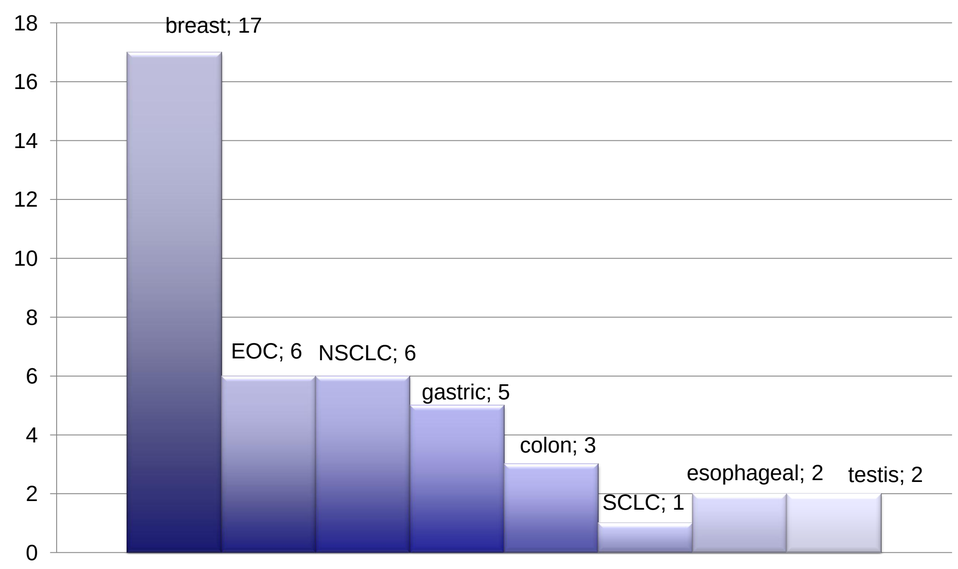
Results: We analysed data from 42 patients (male, n=14; female n=28) with advanced solid tumours (breast, n=15; endometrial/ovarian, n=7; non-small-cell lung, n=6; gastric, n=5; others, n=9) who received primary prophylaxis with Zarzio® for FN. Median age was 58 years (range: 26−82), with one-third of patients (n=14) aged ≥65 years. Median body weight was 68 kg (range 44−101). Eighteen patients received primary prophylaxis because of an FN risk >20% and 24 because of associated co-morbidities. A total of 185 chemotherapy cycles was administered (median 4.4 cycles/patient). Zarzio® was administered 538 times (median 12 administrations/patient). Severe neutropenia (ANC ≤ 1100 x 10^9/L) was recorded in 24/401 blood tests. None of the patients developed FN. Musculoskeletal event (arthralgia, myalgia, bone pain) after Zarzio® administration were as expected ; two patients reported cutaneous rash and one patient had hypotension. There were no significant differences between the elderly population (aged ≥65 years) and patients aged <65 years in terms of toxicity or severe neutropenic events (11 versus 13 events, OR: 0.57, 95% CI 0.24−1.31, p= 0.18).

Conclusion: Our retrospective analysis in unselected patients confirmed the efficacy and safety profile of Zarzio® in routine clinical practice. No patients developed FN or had delayed treatment because of severe neutropenia. Elderly patients (33.3% of the study population) did not differ significantly from other patients in terms of treatment tolerability and efficacy.

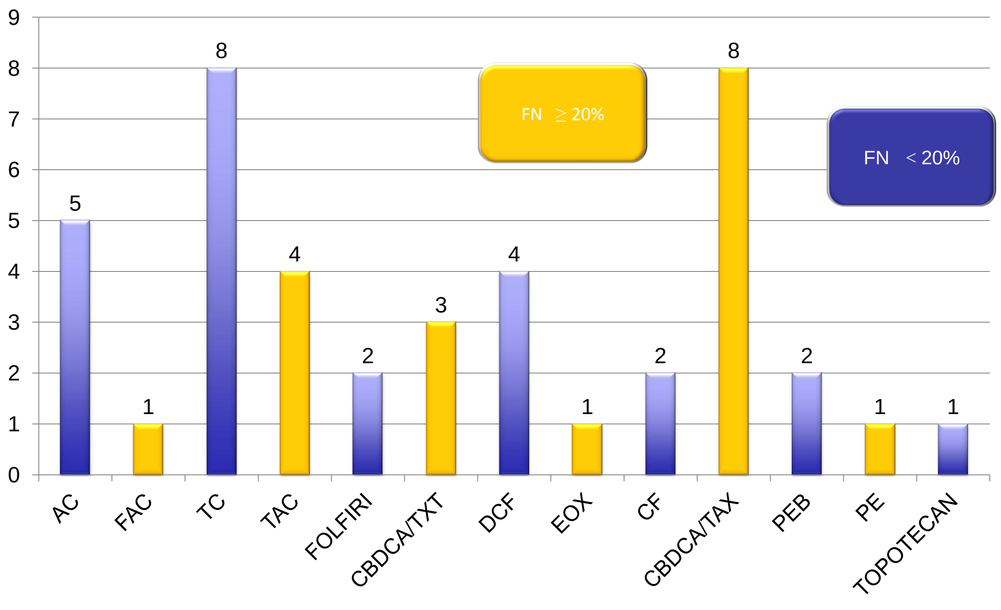
Background

Febrile neutropenia is a frequent and potentially life threatening complication in patients undergoing cancer treatment [1]. Febrile neutropenia often requires hospitalization; may trigger reductions in chemotherapy dose intensity, delays in chemotherapy regimens, or delays and cancellations of surgery; impairs antineoplastic treatment outcomes; and is associated with increased morbidity, mortality, and healthcare costs. A very elegant demonstration by Aapro and Co. showed the cost efficient profile of Zarzio® under all the possible treatment scenarios to prevent FN [2-3]. We developped a retrospective data analysis on 42 cancer patients with advanced solid tumors to assess efficacy and tolerability of the primary prophylaxis with Zarzio®.

Patients and Methods

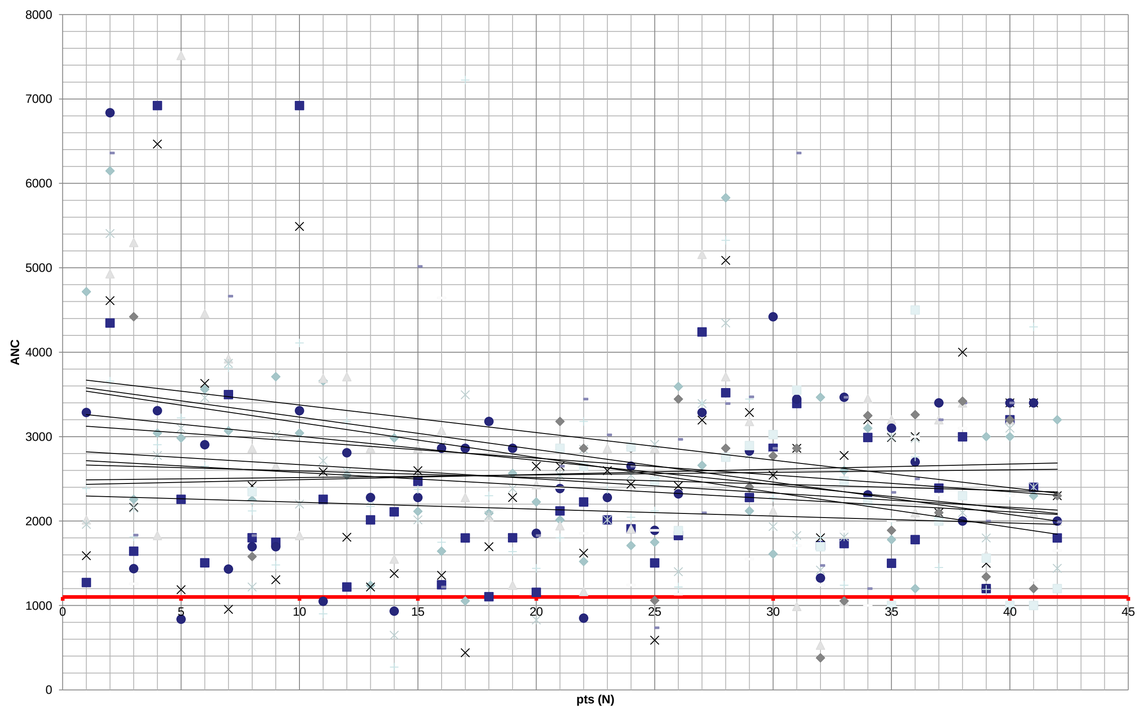


Graphic 1. Patients distribution for cancer



Graphic 2. Patients distribution for chemotherapy regimen.
------ Blu blocks show regimens with < 20% Febrile Neutropenia (FN) expected incidence.
------ Yellow blocks show regimens with ≥ 20% FN expected incidence.

Results



Graphic 3. Differences between linear interpolated Absolute Neutrophil Count (ANC) before the chemotherapy cycle and at the nadir of the 42 observed patients who received a primary prophylaxis with Zarzio ®.
Red line demonstrated the ANC limit of 1100X 10^9/L .

Toxicity

Biosimilar filgrastim (Zarzio ®)	Patients (TOT N=42)
ALLERGIC REACTION	
Rush, orticaria, edema	2
Dispnea	0
Cardiovascular (Hypothension, tachicardia)	1
Spleen rupture	0
Respiratory distress syndrome	0
ADVERSE REACTION	
Medullary Bone Pain	n.a.
Cutaneous Vasculitis	0
Febrile Neutropenia	0

Conclusions

Biosimilars are a valid option to create savings in a very expensive modern oncology world drugs. Confirmation of efficacy and safety in routine clinical practice have to encourage clinical oncologists to their use. In our experience, elderly patients with cancer did not differ from the general population in terms of safety and efficacy of biosimilar filgrastim. To our knowledge, this is the first described experience in elderly population with cancer treated with biosimilar filgrastim. Notwithstanding the small sample, these data have to be strongly considered especially because elderly patients often presented with bone marrow decreased reserve.

Acknowledgements

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References

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