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PRIOR ESHAP TREATMENT AND RISK FOR MOBILIZATION FAILURE

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Conflict of Interest: None

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Word Count: 486 words

References: 4

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1002/jca.21963

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To the editor,

We read with interest the paper by Ebisawa and colleagues describing the use of febrile neutropenia (D-index) as a predictor for poor mobilization in patients undergoing peripheral blood stem cell (PBSC) collection after chemotherapy mobilization.[1] What caught our eye was the treatment-related chemotherapy used for mobilization in their patient cohort. To minimize patient heterogeneity, the authors applied the D-index only to patients with relapsed or refractory non-Hodgkin's lymphoma (NHL) mobilized with G-CSF and ESHAP (etoposide, cytarabine [ara-C], methylprednisolone, cisplatin) or a modified ESHAP regimen (etoposide, ara-C, methylprednisolone, carboplatin). Although ESHAP is a common second-line salvage regimen used in NHL, it can be associated with poor mobilization in 10% to 20% of patients. In an older retrospective study of 78 NHL patients collected after ESHAP, 20% failed to collect a minimum transplant dose of 2 x10^6 CD34/kg after two leukapheresis procedures.[2] A smaller study of 20 NHL patients collected after second line treatment with ESHAP (1-3 cycles) also reported a 20% failure rate.[3] A more recent study using brentuximab and ESHAP as salvage for relapsed Hodgkin's lymphoma found good CD34 yields when patients were collected after their first cycle of ESHAP; however, there was a marked reduction in yields after a second cycle.[4] In the current study by Ebisa et al, 5/58 (9%) of patients failed to collect a minimum dose of 1-2 x10^6 CD34/kg/procedure after 2-3 cycles of ESHAP.[1]

We would like to share our experience with PBSC collection in patients mobilized with high-dose cyclophosphamide (CTX), *after* prior treatment with ESHAP. Over 10 years ago, there was an institutional trial in refractory/relapsed NHL which required *in vivo* purging with

rituximab (375 mg/m^2 weekly x 4) followed by chemotherapy mobilization using CTX (4 gm/m^2) and GCSF (10 mcg/kg). Of note, the trial was conducted prior to FDA approval and widespread availability of plerixafor. All patients were relapsed NHL (n=35; 25 diffuse B-cell, 4 follicular, 6 mantle cell) with a median of two prior chemotherapy regimens and 9 chemotherapy cycles. Seven patients (20%) received 2-3 cycles of ESHAP as second line treatment prior to rituximab and CTX mobilization. Among ESHAP patients, the majority required 4 or more leukapheresis (71% vs 18% non-ESHAP, P=0.006; OR=11.5 [95% CI: 1.7-77.2]) with 81% (21/26) procedures yielding < 0.5 x 10^6 CD34/kg (P=0.0001; OR 7.5 [95% CI:2.5-22]). The average CD34 yield/procedure was 0.60 ± 0.82 x 10^6/kg in ESHAP versus 1.64 x 10^6/kg in non-ESHAP patients (P=0.003), with a median total CD34 yield/mobilization = 2.1 x 10^6/kg ESHAP (versus 3.84 x 10^6/kg non-ESHAP, P=0.017). ESHAP patients accounted for 50% (3/6) of all mobilization failures (P=0.047). There was no significant difference in patient demographics or number of prior chemotherapy cycles between ESHAP and non-ESHAP patients. Our results stress the importance of collecting NHL patients shortly after initiating ESHAP salvage chemotherapy. In patients with prior ESHAP therapy, we suggest early upfront use of plerixafor due to the high risk of mobilization failure.

CONFLICT OF INTEREST: None declared

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