High-Dose Cytarabine for Mobilization and Collection of Autologous Hematopoietic Progenitor Cells

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Background

Autologous HPC in NHL

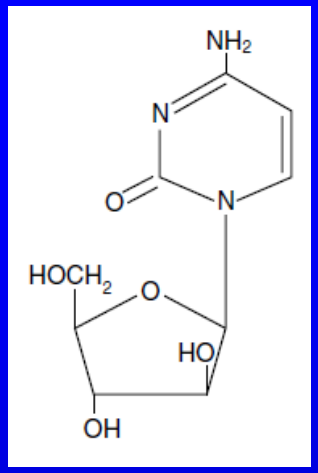
- Historically high failure rate
  - 20-38% fail to collect in 1 mobilization
    - Older
    - Heavily pre-treated
    - Radiation

- *HPC Mobilization and Collection*
  - Post-cycle chemotherapy
  - Cyclophosphamide

Cytarabine (AraC)

Pyramidine nucleoside analog

Acute leukemia (ANLL, ALL)



Mantle Cell Lymphoma

- AraC improves remission rates

	Induction	Salvage	Remission
Lefrere	CHOPx4	DHA*P	7% → 81%
Vant Veer	R-CHOPx3	HD-AraC	14 → 29%
Epner	HyperCVAD Mtx/AraC	-	58%
Geisler	maxiCHOP + AraC,R	-	96% OR 54% CR

Nordic II MCL Protocol

Adults, 18-65 yrs

Newly diagnosed MCL, stage II-IV

A. Induction Therapy

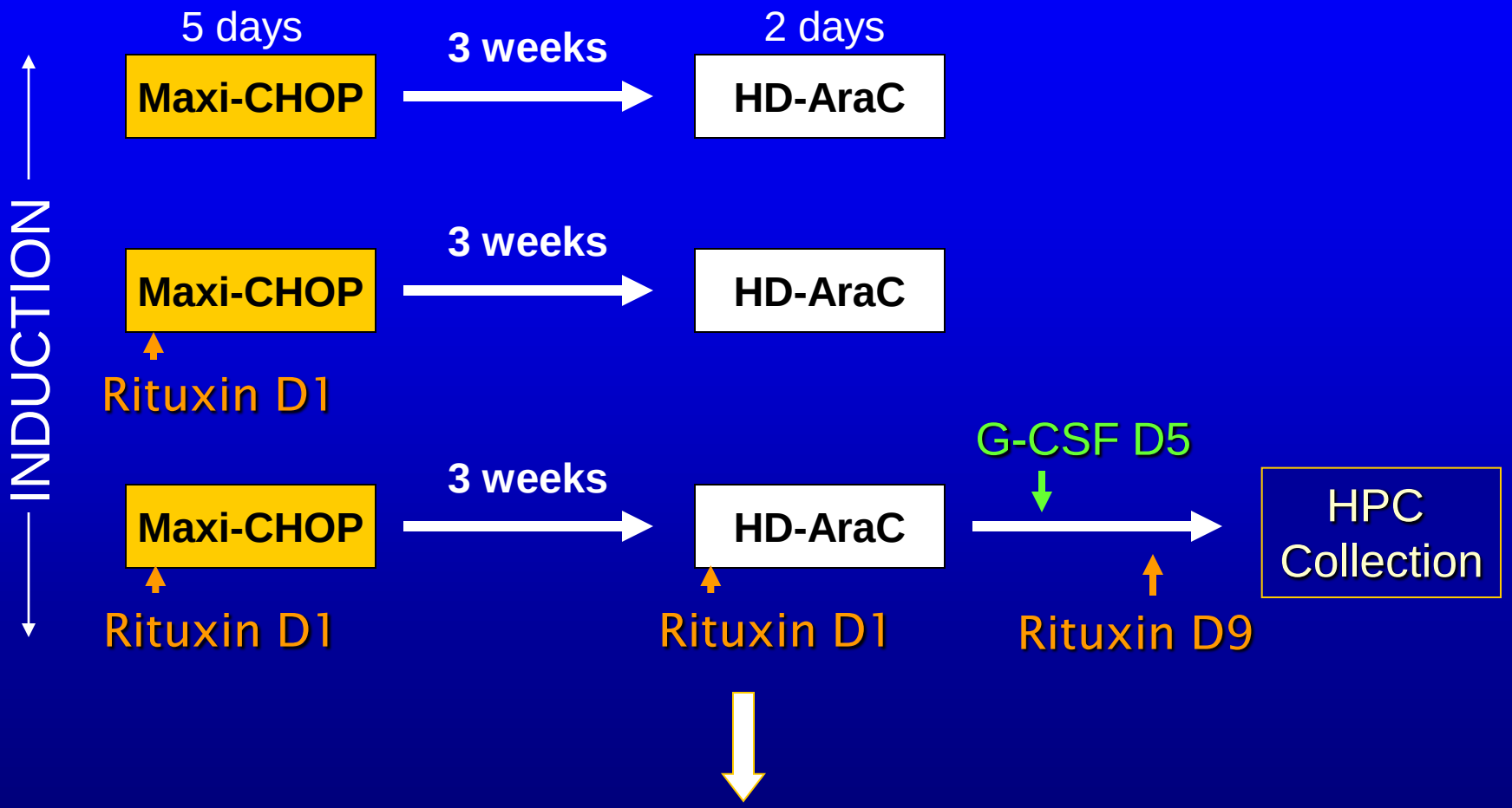
- Maxi CHOP
  - Cytoxan 1.2 gm/m2
  - Doxorubicin 75 mg/m2
  - Vincristine 2 mg
  - Prednisilone (100 mg x 5 D)
- High-Dose Cytarabine — 12 gm/m2
- Rituxin (in-vivo purging)
  - D1 Maxi-CHOP
  - D1, D9 Ara-C

B. HPC Collection — 3 million CD34/kg

C. High Dose Therapy — BEAM or BEAC

D. Auto HPC Transplant

Nordic MCL2 Protocol



Methods

- 3 year retrospective review
  - Adults > 18 yrs
  - Diagnosis MCL
  - Autologous HPC collection
- Data Collection
  - Demographic data
  - Mobilization regimen
  - Peripheral Blood Counts
  - Cell yields
  - Success rate per mobilization
- Statistics (t-test, chi-square)
  - Kaliedograph™, EpiInform™

Results: Demographics

		Mobilization Regimen		
	ALL	HD-AraC	Controls	P
Patient #	31	15	16	0.50
Sex (M/F)	21 / 10	12 / 3	9 / 7	0.16
Age	56.2 8.6	58.5 7.9	54.2 8.8	0.16
Weight (kg)	95.5 33	91.8 24.7	99.4 39.5	0.54
Chemotherapy				
HD-AraC	15	15	-	
Cytoxan	13	-	13 (81%)	
R-ICE	1	-	1	
Ifosamide	1	-	1	
GCSF+Plerixafor	1	-	1	

Results: Day 1 Blood Counts

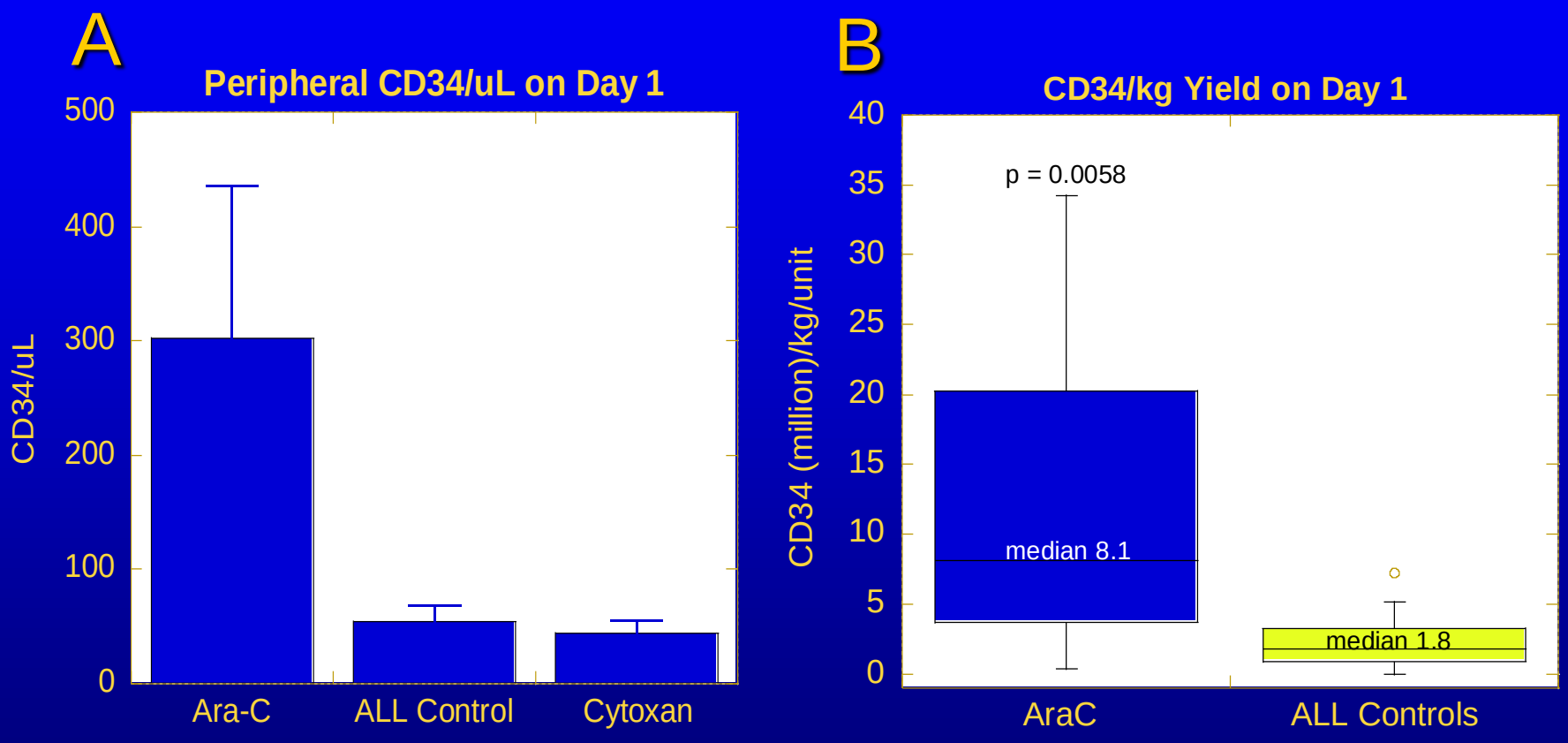
HD-AraC= higher mean %C34 and CD34/uL

Blood Cnt		Controls		
Day 1	HD-AraC	ALL	Cytoxan	P
WBC	37.8 6.2	38.8 8.8	36.3 4.5	0.97
%MNC	11.9 1.7	9.0 6.6	8.4 4.6	0.40
%CD34 (median)	0.69 0.23 (0.40)	0.23 0.03 (0.13)	0.24 0.09 (0.14)	0.07
CD34/μL (median)	302.3 133 (113)	53.8 14.5 (40.5)	44.4 10.9 (40.3)	0.08

Collection Yield & Success Rate by Mobilization Regimen

Collection		Controls		
Outcome	HD-AraC	ALL	Cytoxan	P
No. Proc	1.3 0.2	2.1 0.3	2.3 0.3	0.40
MNC/kg	2.1 1.4	2.0 1.7	1.9 + 1.8	0.88
CD34/kg/proc	9.0 2.2	1.9 0.3	2.0 0.4	0.0003
CD34 Total	11.9 2.6	3.9 1.7	3.5 1.8	0.008
Success Rate				
> $3x10^6$ / kg	100%	81%	85%	0.09
> $6x10^6$ / kg	67%	12%	17%	0.002
Failure Rate	0	19%	15%	

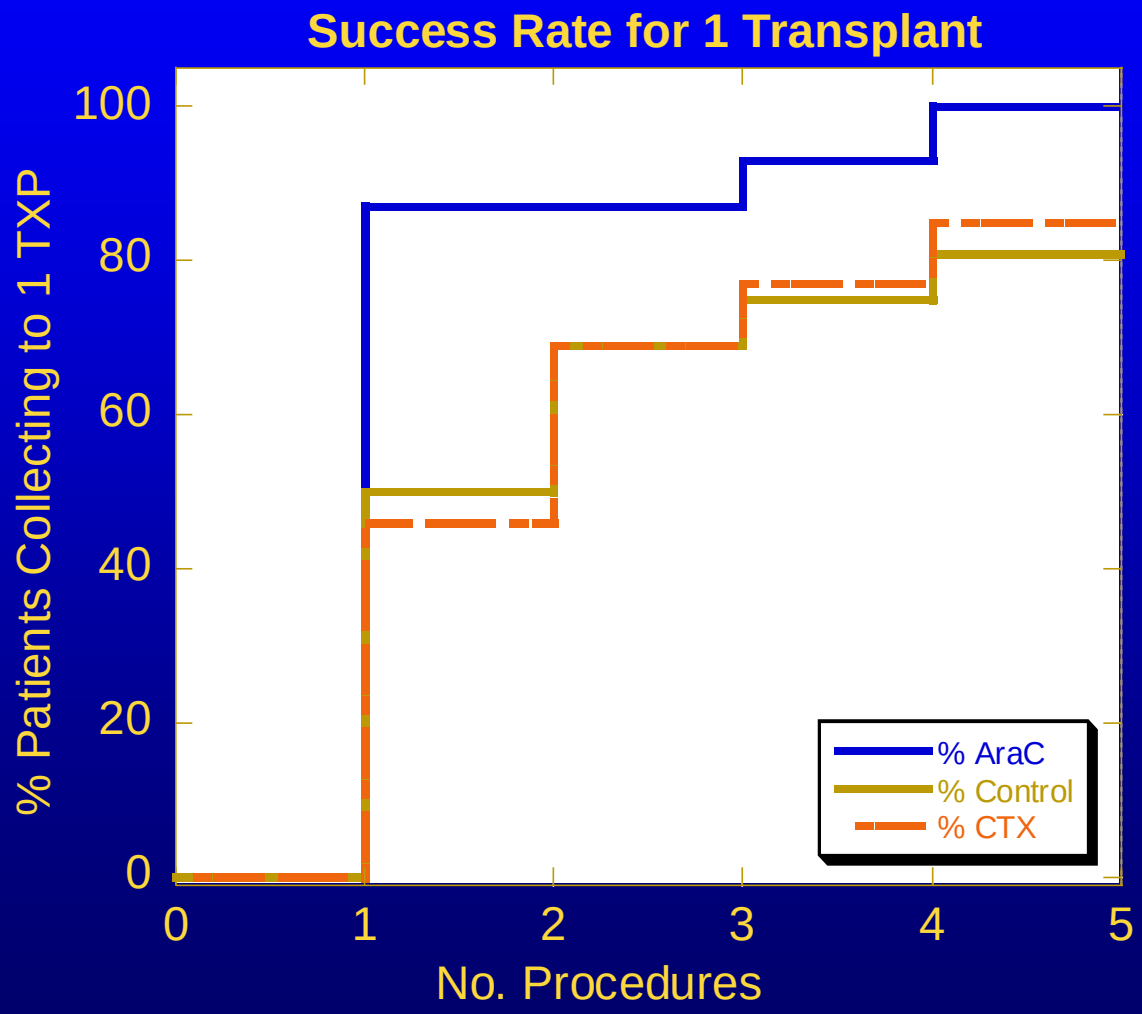
↑CD34/kg Day 1 Yields with HD-AraC



HD AraC averaged 5x higher CD34 counts
and 4x higher CD34/kg Yield on Day 1

Collection Success Rate per Day

(1 Transplant, 3 million CD34/kg)



Summary

CD34 Mobilization in MCL

- HD-AraC appears superior to cytoxan
  - Higher mean, median peripheral CD34/uL
  - Higher mean CD34/kg per collection
- Higher collection success rate
  - Day 1
  - > 2 Txp