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### Introduction

Chronic Graft-versus-Host Disease (cGVHD) has a negative impact on quality of life after hematopoietic stem cell transplantation and is associated with transplant related death. It is also a major cause of morbidity and mortality after double umbilical cord blood transplantation (dUCBT) and is known to present different characteristics. However, data regarding its manifestations, treatment response, and risk factors are limited. We used the major revised consensus criteria proposed by the National Institutes of Health (NIH) in 2005 (NCC 2005) to grasp its general features.

### Materials and Methods

This is a retrospective study using Eurocord-EBMT database. Questionnaires were sent to each transplant center for collecting additional transplant data. Eligible pts were adults >18years who received 1<sup>st</sup> dUCBT for hematological malignancy between 2006 and 2014, achieved neutrophil engraftment, survived ≥100 days, developed cGVHD and had available data to calculate the NIH score.

PATIENT CHARACTERISTICS	N = 154
Median Age at dUCBT, yr (range)	42.6 (18-70)
Weight, median in Kg, (range)	71.8 (42-118)
Diagnosis, N (%)	
ALL	32 (20.8)
AML	61 (39.6)
MDS/MPD	29 (18.8)
Others	32 (20.8)
Disease status for AL, N (%)	93
1 <sup>st</sup> CR	45 (48.9)
2 <sup>nd</sup> CR	36 (39.1)
Advanced*	11 (12.0)
Missing	1 (1.1)
ATG use before dUCBT, N (%)	37 (24.0)
HLA match, N (%)	
1 mismatch	38 (30.6)
2 mismatch	79 (63.7)
3 mismatch or more	5 (4.0)
Missing	30
Cryopreserved TNC (10 <sup>7</sup> /Kg)	5.1 (2.3-13.3)

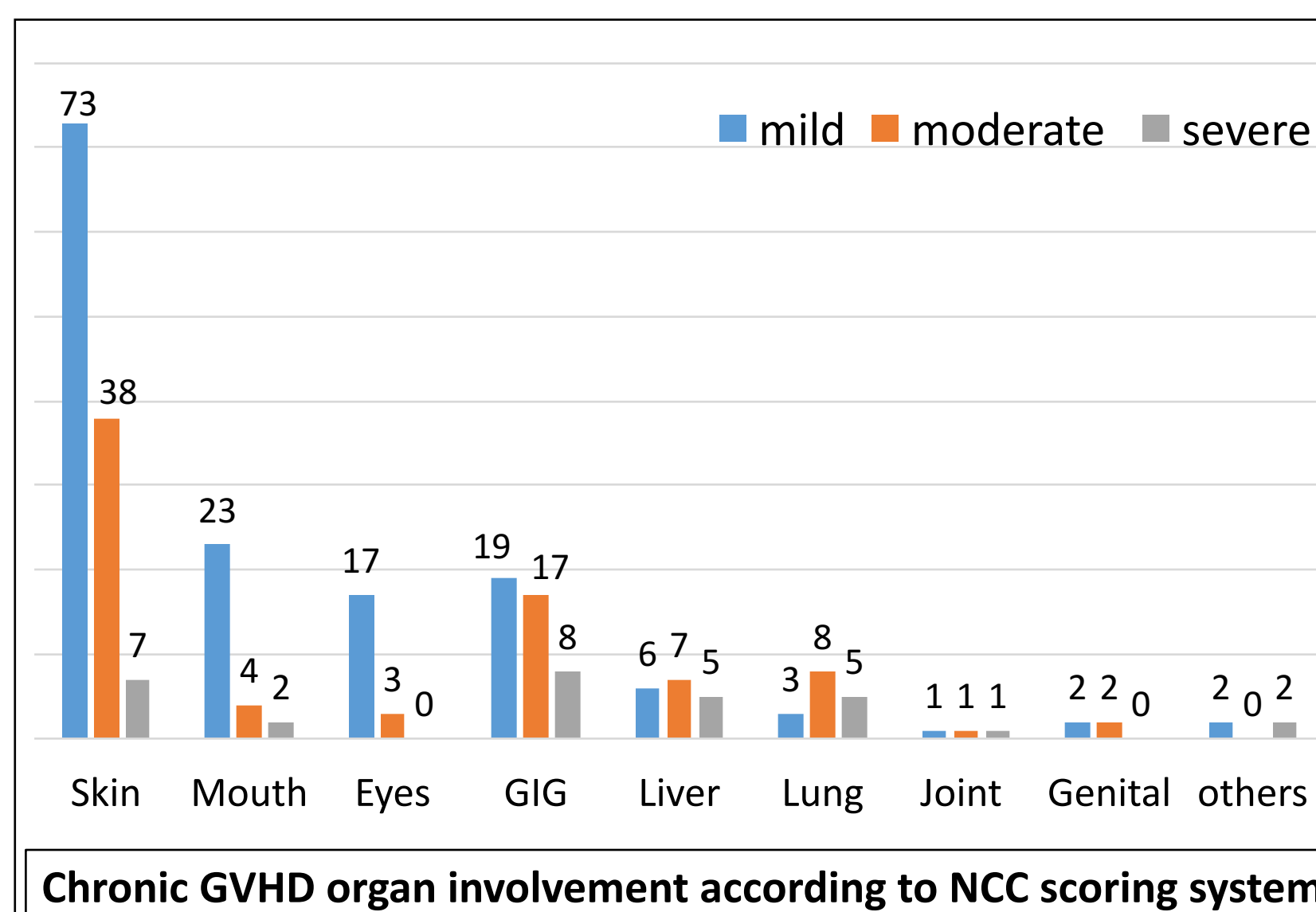
TRANSPLANT CHARACTERISTICS	N	(%)
MAC, N (%)	60	
CY + FLU + TBI	26	(43.3)
CY + TBI	17	(28.3)
Other(s) + TBI	1	(1.7)
Other(s)	16**	(26.7)
RIC, N (%)	94	
CY + FLU + TBI	82	(87.2)
Others + TBI	6	(6.4)
Others	6	(6.4)
GvHD prophylaxis, N (%)		
CsA + MMF	121	(78.6)
Others***	33	(21.4)
ABO mismatch, N (%)		
Full match	27	(20.1)
Minor mismatch	28	(20.9)
Major mismatch	79	(59.0)
Missing	20	
Gender mismatch, N (%)		
No gender mismatch	45	(29.6)
1-2 gender mismatch	107	(70.4)
Missing	2	

Abbreviations: AL, Acute Leukemia; ALL, Acute lymphoblastic Leukemia; AML, Acute Myeloid Leukemia; MDS/MPD, Myelodysplastic syndrome / Myeloproliferative disease; CLL, Chronic Lymphocytic Leukemia; NHL/HL, Non-Hodgkin Lymphoma/Hodgkin Lymphoma; CR, Complete Remission; ATG, Anti-Thymocyte globulin; \*Advanced; non CR/3 or more than 3<sup>rd</sup> CR. \*\*5 for CY+BU, 11 for Others. \*\*\*CsA±MTX, FK506+MMF, MMF only, CsA+/-Steroid+other(s)

### Results

OUTCOMES OF dUCBT	
Neutrophil engraftment, median days (range)	25 (6-67)
Achieved Platelet engraftment, N	142 (92.8)
Platelet engraftment, median days (range)	41 (9-175)
Chimerism at day 100, N (%)	
Full donor; donor≥95%	137 (89.0)
Mixed chimerism ; 5<donor <95	14 (9.1)
unknown	3 (1.8)
Relapse, N (%)	
Relapsed	45 (29.2)
Non-relapse	108 (70.1)
Missing	1 (0.4)
Cause of death, N (%)	60 (39.0)
Relapse or disease progression	28 (46.7)
GvHD	12 (20.0)
Infection	10 (16.7)
Other transplant related cause	5 (8.3)
Other or unknown cause	5 (8.3)
Median follow-up, month (range)	27.5 (3.5-103)

CHARACTERISTICS OF ACUTE GVHD	
Previous Grade II-IV acute GVHD, N (%)	88 (57.1)
Time to II-IV acute GVHD, median days (range)	24 (6-106)
Site of acute GVHD (overlapping site included), N	
Skin	71
Liver	19
Gastrointestinal Tract	58



CHARACTERISTICS OF CHRONIC GVHD	
Time to chronic GVHD, median days	219 (47-2056)
NCC 2005 global scoring, N (%)	
Mild	67 (43.5)
Moderate	53 (34.4)
Severe	33 (21.4)
No major organ involvement*	1 (0.6)
Number of major involved organs**, N (%)	
1 organ only	88 (55.8)
2 organs	44 (28.6)
3 organs	16 (10.4)
More than 3 organs	7 (4.5)
No major organ involvement	1 (0.6)
Combination of major involved organs, N (%)	
Skin only	60 (39.0)
Skin + GI	15 (9.7)
GI only	12 (7.8)
Skin + Mouth	9 (5.8)
Other single organ involvement	14 (11.0)
Other combinations	44 (28.6)
1 <sup>st</sup> line treatment for cGVHD	
Topical treatment or No treatment	31 (20.1)
Steroid	100 (65.0)
Steroid + CNI	9 (5.8)
Others	14 (9.1)
Resolution of cGVHD	
Yes	94 (61.0)
No	57 (37.0)
Unknown	3 (1.9)

\* Kidney involvement  
\*\* Number of major involvement includes overlapping site counting

### Conclusion

We showed here the characteristics of cGVHD after dUCBT according to NCC 2005 Criteria. Our data gives clinicians the basic image of the most frequently involved organs after dUCBT and will help to better monitor this transplant complication.