Table S1. Incidence and risk factors of cataracts after hematopoietic cell transplantation.

Author Study type Study year	Number of patients HCT type Disease type	Conditioning regimen (N)	Cataract N (%)	Duration of follow-up (years)	Notes
Adult studies					
Tichelli et al[1] Single center 1979- 1991	197 Allo 174, Syngeneic 5, Auto 18	S-TBI (74) F-TBI (90) Chemotherapy (33)	**70 (36%)** S-TBI (100%) F-TBI (20%) Chemotherapy (3%)	0.2- 5.2	- Risk factors: Use of irradiation, mode of irradiation, steroid use > 3 months
Bray et al[2] Single center 1983- 1989	41 Allo 17, Auto 24	F-TBI (30) Chemotherapy (11)	**20 (49%)** F-TBI (63%) Chemotherapy (9%)	Allo 0.6- 7 Auto 0.5- 5.2	- Incidence by HCT type: Allo (71%), Auto (33%) - Risk factors: Dose of TBI, rate of TBI administration
Belkacemi et al[3] Multicenter (EBMT) Up to 1996	1063 Allo 688, Auto 375 AML, ALL, AUL	S-TBI (495) F-TBI (568)	**257 (24%)** S-TBI (35%) F-TBI (14%) Incidence at 10 years: 50%	1- 17.1	- 10 year estimated cataract incidence by HCT type: Allo (65%) vs Auto (46%) (p=0.0018) - Risk factors: Age > 23, higher dose rate of TBI (>0.04 Gy/ min), Allo HCT, steroids >100 days, - Protective factors: F-TBI, Heparin in S-TBI
Baker et al[4] Multicenter (BMTSS) 1974- 1998	248 Allo 220, Auto 28 CML	TBI (233) Chemotherapy (14)	**95 (38%)**	2- 27	- Cataract odds ratio 15.3 (95% CI 2.4-6.4) compared to siblings (p<0.001) - Incidence by cGVHD: Yes (61%) vs No (41%), - Incidence by HCT type: Allo (40%) vs Auto (21%) (p= 0.01) - 15-year cumulative incidence: 53% (Auto), 63% (related donor), 67% (unrelated donor)
Benyunes et al[5] Single center 1969-1981	492 Allo 480, Auto12 AML, ALL, CML, Lymphoma, SAA, Others	S-TBI (74) F-TBI (333) Chemotherapy (85)	**159 (32%)** Incidence at 11 years: S-TBI (85%) >12 Gy F-TBI (50%) 12 Gy F-TBI (34%) No TBI (19%)	2-18	- Incidence by steroids exposure: Yes (45%) vs No (38%) (P <0.001) - Risk factor: S-TBI - Protective factor: No TBI
Deeg et al[6] Single center 1969- 1981	277 Allo SAA, ALL, AML, CML, NHL, others	S-TBI (105) F-TBI (76) Chemotherapy (96)	**86 (31%)** S-TBI (55%) F-TBI (16%) Chemotherapy (17%)	1-12	- Risk factors: S-TBI [4.7-fold higher risk than F-TBI or Chemotherapy (p <0.001)], chronic steroid use, diagnosis of ALL, CML
Zierhut et al[7] Single center 1982-1994	85 Auto AML, ALL, lymphoma	F-TBI	**28 (33%)** Incidence at 13 years: 54%	1.7-13	

Bieri et al[8] Single center 1984- 2004	142 Allo AML, ALL, CML, MDS, MM, MPS	TBI (121) Chemotherapy (21)	**31 (22%)** Incidence at 10 years: 34%	> 2	
Dunn et al[9] Single center 1978-1991	366 Allo 293, Auto 73 AML, ALL, CML, Lymphoma, Other, SAA	TBI (185) Chemotherapy (181)	**40 (11%)**	0-12.5	- Risk factors: total dose and duration of corticosteroids
Pediatric studies					
Suh et al[10] Single center 1981-1996	104 Allo 95, Auto 9 AML, SAA, ALL, others	F-TBI	**24 (23%)**	0-15	- Incidence by HCT type: Allo- 24%, Auto- 11% - Risk factor: chronic GVHD
Levy et al[11] Single center 1994-2010	15 Allo ALL, AML, NHL	F-TBI	**9 (69%)**	1.4-13	
Frisk et al[12] Single center 1985-1994	29 Auto 28, syngeneic 1 ALL, AML, Lymphoma	S-TBI (20) F-TBI (1) Chemotherapy (8)	**22 (76%)** TBI (100%) Chemotherapy (12%)	4-10	- Risk factor: TBI
Ricardi et al[13] Single center	51 Allo 32, Auto 19 AML, ALL, CML, NHL	F-TBI	**36 (72%)**	5.1-17.9	- Incidence by HCT type: Allo (84%) vs Auto (53%) (p=0.02) - Risk factor: AlloHCT
Fahnehjelm et al[14] Single center 1986-2004	79 Allo ALL, AML, CML, MDS, JMML, SAA, Non-malignant	S-TBI (17) F-TBI (18) Chemotherapy (44)	**46 (58%)** S-TBI (100%) F-TBI (83%) Chemotherapy only (34%)	2-18	- Risk factor: S-TBI
Fahnehjelm et al[15] Single center 1986-2012	131 Allo Leukemia, MDS, non-malignant	S-TBI (17) F-TBI (36) Chemotherapy (86)	**65 (50%)**	1-19.4	Risk factors: TBI (HR 25.9, 95% CI 8.29-81.26, p < 0.001), malignancy (HR 5.38, 95% CI 3.02–9.56, p < 0.001)
Kinori et al [16] Single center 2001-2008	23 Allo AML, MDS, CML, non-malignant	Chemotherapy	**1 (4%)**	0.3-9.7	40% had <2 years follow-up
Ng et al[17] Single center 1991-1995	57 Allo 47, Auto 10 ALL, Beta thalassemia major, CML	F-TBI (56)	**4 (14%)**	0.2-4.5	
Holmstrom et al[18] Single center 1987-1994	45 Allo 42, Auto 3 AML, ALL, CML, HLH, MDS, SAA	F-TBI (21) Chemotherapy (24)	**25 (56%)** F-TBI: 20 (95%) Chemotherapy: 5 (21%)	F-TBI: 2-9 Chemotherapy: 3-10	- Risk factors: TBI, busulfan
Callissendorff et al[19] Single center 1978-1989	61 Allo Leukemia, SAA, others	F-TBI (43) Chemotherapy (18)	**44 (72%)** F-TBI (100%) Chemotherapy (0)	1-10	- Risk factor: TBI

S-TBI, single dose TBI; F-TBI, fractionated TBI.

Table S2. Treatment of cataracts after hematopoietic cell transplantation

Author Study type Study year	Number of Patients Patient age at HCT	Cataract N (%)	Duration of follow-up (years)	Treatment of Cataracts
Najima et al[20] Single center 1986-2006	622 (ADULTS) Median age 36 y Allo 622	45/561 (8.02%)	Median 836 days (0-7316)	- 13 of 45 (29%) underwent phacoemulsifcation and intraocular lens implantation - Mean interval from HCT to surgery 1028 days - Median age at surgery 42 y - Complication of posterior capsule opacification in 6/13
Fahnehjelm et al[15] Single center 1986-2012	139 (PEDIATRICS) Medan age 6.6 y	50% developed cataracts at 10.2 years after HCT	Median 8 y (1.0-19.4)	- 19/131 had surgery - Median age at surgery 20.4 years (range 14.7–24.5) - Mean 11.6 y, median 11.4 y (range 3.3-21) after HCT - Of 35 operated eyes, 13 (37%) required further treatment with laser or re-operation due to secondary cataract.
De Melo et al[21] Single Center 2006 - 2011	261 (ADULT) Mean age 56 y	41/261 (15.7%)	Mean 55 weeks (40-201)	- Posterior subcapsular cataracts seen only in patients less than 45 years. - Mean interval from HCT to surgery 14 weeks (34-299) - All patients underwent cataract extraction with phacoemulsification using temporal clear corneal, suture less incisions. - Cystoid macular edema was most common post-operative complication seen in 4 (5.6%) eyes.
Vaidya et al [22] Single Center 1984 - 1996	31 (PEDIATRICS) Median age 8 y (5–20)	12/31(38.7%)	Median 7.64 y (0.56–14.2)	- 12 who developed cataracts needed surgery
Aristei et al[23] Single center 1985 - 1998	193 (ADULT) Median age 33 y (2-59)	S-TBI 18/86 (21%) F-TBI 14/107 (13%)	Median S-TBI 3.02 y (1.13–7.28) F-TBI 7.56 y (1.14–14.9)	- Median time to cataract S-TBI 2.52 y after HCT, 11 (61.1%) had surgery F-TBI 7.6 y after HCT, 2 (14.3%) had surgery
Horowitz et al[24] Multi-center 2004 - 2010	308 (PEDIATRICS) Mean age 8.7 y	113/308 (41.7%)	Mean 10.3 y	- Median time to cataract 5.3 y after HCT - 9/113 (8.1%) had cataract surgery at a median of 3.8 years after cataract diagnosis (IQR 2.2-4.7).

S-TBI, single dose TBI; F-TBI, fractionated TBI.

Table S3. Ocular complications of the posterior segment after hematopoietic cell transplantation

Author	Year	N	Study	Ophthalmological evaluation	Findings	Risk factors
Hirst et al[25]	1983	45	Children/adults Prospective	All patients underwent visual acuity tests, slit-lamp and fundus.	No patients with microvasculopathy were reported	
Bernauer et al[26]	1991	127	Adults Prospective Allo/auto HCT	All patients underwent visual acuity tests, slit-lamp examination and fundus.	13 patients (10%) microcirculation changes	TBI, cyclosporine
Coskuncan et al[27]	1994	397	Retrospective Allo HCT	Ophthalmological evaluation	17 patients (4.3%) cotton-wool spots, 11 patients (2.8%) optic disc edema, 14 patients (3.5%) hemorrhagic complications	TBI, chronic GHVD, cyclosporine
Johnson et al[28]	1999	140	Adults Prospective Auto HCT	All included patients underwent visual acuity test, and fundus.	10 patients (7%) cotton wool spots / optic disc edema	Carmustine
Bylsma et al[29]	2001	399	Adults Retrospective Allo HCT	Ophthalmological evaluation on demand Fundus Angiography	4 patients (1%) late retinal microvasculopathy (mean 50 months after HCT)	Busulfan + Cyclophosphamide, Cyclophosphamide + TBI
Tabbara et al[30]	2009	620	Children/adults Retrospective Allo HCT	Ophthalmological evaluation on demand	No patients with microvasculopathy were reported	
Westeneng et al[31]	2010	101	Prospective Allo HCT	All included patients underwent ophthalmological evaluation	1 patient unilateral visual loss due IMR	GVHD
Ivanir et al [32]	2013	111	Prospective Allo HCT	All included patients underwent visual acuity tests. Slit-lamp examination, fundus	No patients with microvasculopathy	

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