Learning from best scalp cooling practices in a registry: differences in results from n>7000 patients with solid tumors

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INTRODUCTION

Hair loss is a frequently occurring and stigmatizing side effect of chemotherapy. Scalp cooling is worldwide introduced in >60 countries to prevent chemotherapy-induced alopecia (CIA). It is used in the Netherlands since 2005. In the USA the FDA approved scalp cooling for breast cancer in 2015 and for solid tumors in 2017. It was added to the NCCN guideline for breast cancer in 2019.

METHODS

In this prospective, longitudinal registry patients were included if they received alopecia-inducing chemotherapy. Patients were eligible for evaluation of efficacy of scalp cooling if they received ≥2 cycles of chemotherapy or ceased scalp cooling because of severe CIA after the 1st cycle. Success was defined as not feeling the need to use a wig or head cover.

RESULTS

- 7378 patients, 68 (60%) Dutch hospital locations, between 2006-2017
- 75% breast cancer, 8% prostate cancer
- Overall efficacy 57% no wig/head cover
- Range in efficacy between hospitals by type and dosage of chemotherapy: table 1
- Variation between hospitals:
  - o Wetting the hair: 0-100% of patients
  - o Satisfaction with information about scalp cooling: 80-100%[a] of patients
  - o Nursing expertise: 55-100%[a] of patients

[a] in hospitals n≥10 patients included

CONCLUSION

Scalp cooling efficacy is highest for taxanes. Efficacy varies enormously between hospitals. A registry is a useful tool to identify best practices and for guidance to further improve results. Work in progress is the international CHILL registry to collect data on CIA among scalp cooled and non-scalp cooled patients in the USA, Australia, the UK and the Netherlands

Table 1:
Efficacy data from the Dutch scalp cooling registry

Chemotherapy (mg/m2)	Number of patients	% no wig/head cover	
		Overall	Variation between hospitals (min-max)[c,d]
A60C600	1442	44	19-72
D75	710	94	82-100
D100	241	72	38-88
D75A50C500	159	12	0-18
F500A50C500	59	53	n.a.
F500E90C500	628	51	40-82
F500E100C500	607	33	7-60
F500E100C500-D100[a]	808	44	25-79
Irino 350	196	27	7-37
T80	415	86	60-95
T90	87	79	n.a.
T175Car[b]	178	39	22-70

A: doxorubicine, C: cyclofosfamide, Car: carboplatin, D: docetaxel, E: epirubicine, F: 5-fluorouracil, Irino: irinotecan, T: paclitaxel
[a] 3xFEC followed by 3xD
[b] AUC6
[c] different from ASCO abstract because of selection by chemotherapy dosage
[d] in hospitals n≥10 patients included for particular chemotherapy/dosage

Table 2: Univariate and multivariate logistic regression analysis. Odds ratios (OR) of wearing no wig/head cover (higher OR means higher efficacy)

Characteristics	Uni variate OR	Multi variate[a]		
		OR	95% CI	P-value
Age group (years)				
18-44	1.0	1.0	-	-
45-54	1.2	1.2	(1.0-1.3)	0.06
55-64	1.4	1.0	(0.9-1.2)	0.93
65+	2.3	1.1	(0.9-1.3)	0.38
Gender				
Female	1.0	1.0	-	-
Male	5.9	2.7	(2.1-3.5)	<0.0001
Type chemotherapy				
Adjuvant	1.0	1.0	-	-
Palliative	3.1	1.9	(1.7-2.3)	0.06
Infusion time (minutes)[b]				
0-30	1.0	1.0	-	-
31-60	2.4	1.6	(1.3-1.9)	<0.0001
61-90	1.5	1.3	(1.1-1.6)	0.004
91+	1.2 (NS)	1.1	(0.9-1.3)	0.54
Chemotherapy ever before				
No	1.0	1.0	-	-
Yes	1.9	1.2	(1.0-1.4)	0.06
Type of hair				
West- European	1.0	1.0	-	-
South- European/ African/ Asian	0.6	0.7	(0.6-0.9)	0.001
Quantity				
Small/ medium	1.0	1.0	-	-
Large	0.8	1.0	(0.9-1.1)	0.68
Mean post infusion cooling time (PICT, minutes)[c]				
0-80	1.0	1.0	-	-
81-100	0.4	0.4	(0.4-0.5)	<0.0001
101+	0.3	0.4	(0.3-0.5)	<0.0001
Dampen hair				
No[d]	1.0	1.0	-	-
Yes	1.4	1.5	(1.3-1.6)	<0.0001

NS: Not significant
[a] corrected for all characteristics in this table
[b] missings included
[c] shorter PICT better results because of high efficacy in docetaxel for prostate and breast cancer with a standard PICT of 45 or 20 minutes versus ≥90 minutes for other chemotherapies
[d] included 'sometimes damping'