

SCALPCOOLING AS A METHOD OF AVOIDING ALOPECIA IN CANCER PATIENTS RECEIVING CHEMOTHERAPY

Nina Firing de Vries, Ole Kristian Andersen Dept. of Oncology, County Hospital of Vestfold, Tønsberg, Norway.

ABSTRACT

This study has been carried out at the Out-patient Clinic of the Dept of Oncology in the city of Tønsberg, Norway. SIV is the County Hospital of Vestfold, with a population of 210,000 inhabitants. Dept of Oncology will be administering approximately 4000 courses of chemotherapy this year.

The study period is from April 2000 to October 2001.

The aim of the study was to examine the medical effect of Scalp Cooling treatment, and to measure the patient's response to this type of treatment. Scalp Cooling treatment was offered as a standard procedure to all patients who fulfilled certain criteria. Diagnosis, treatment intention, and the type of treatment were other factors taken into account.

The results showed a success rate of 92% for all patients who were treated with FEC or weekly Paclitaxel. The results were based on WHO's grading for hair loss. Most patients experienced minimal discomfort when using the Scalp Coolers. Only 8% of the patients found the treatment a major problem.

INTRODUCTION

Loss of hair is one of the side effects caused by a number of Chemotherapy regimens. To patients receiving this kind of treatment, the loss of hair adds to the torment of suffering from a serious and potentially fatal disease. Loss of hair has a negative effect both psychologically and socially. This can result in reduced self-esteem, quality of life, and hence isolation for the patient

In September 1999 the Norwegian breast cancer group decided to introduce new guidelines for adjuvant treatment of women operated for breast cancer and with an increased risk of recurrence. Anthracyclines were introduced as the mainstay agent replacing Methotrexate of the well-known CMF-regimen. This resulted in a new group of patients, mainly young or middle-aged women, experiencing total alopecia due to the anthracycline -content of the FEC-regimen.

It was therefore decided to introduce scalp cooling treatment in our Department of Oncology with the purpose of preventing alopecia. Scalp cooling is a form of treatment, which has previously been tried out in Norway in women who have gynaecological cancer. The technique of scalp cooling was, however, based on an entirely different and more cumbersome cooling system. European countries who have been using the newer form of scalp cooling treatment, have achieved very good results, also in breast cancer patients receiving adjuvant treatment for chemotherapy courses containing anthracyclines.

RESULTS

Table 1 shows the patient status and type of treatment.

Table 2 - 3 shows variables such as pre-cooling, post-cooling and the different medical doses.

Graph 1 shows the total effect for both types of treatment. 92% of all patients retain so much hair that a wig is not necessary.

Graph 2 and 3 shows the patient acceptability of the scalpcooler. 89% of patients described the treatment as acceptable, with minimal discomfort caused by the longer treatment period. One patient did not wish to continue the treatment due to the length of time required to stay in the hospital. Only 2% of patients considered headaches a major problem, whilst 15% of patients considered the coldness factor a major problem. Headaches are a major problem for only 2% of the patients, whilst the coldness factor was a major problem for 15%. One patient discontinued because the treatment caused major discomfort.

92% of the group said they found the treatment to be either unproblematic, or only experienced slight discomfort.

METHOD

From the very first patient who received the scalp cooling treatment, data has been recorded. At the first course of treatment, epidemiological data, chemotherapy (drug regimen and protocol) and the chemotherapy agent identified as being responsible for causing alopecia was considered and recorded for each patient. During the first course and all subsequent courses the chemotherapy dose, the time for infusion and the duration of cooling of the scalp before and after the drug infusion were recorded. The patient's own experience of the treatment was also documented. The documentation was obtained and collated by the contact nurse of the patient. The degree of alopecia was assessed before and after treatment, and was graded in line with WHO's scale of hair loss in the following categories:

1. No significant hair loss.
2. Minor hair loss, not requiring a wig.
3. Significant hair loss, but no requiring a wig.
4. Severe hair loss, wig necessary.
5. Total alopecia, wig necessary.

Our goal was defined at achieving a grading of 1-3 on the scale, resulting in the patient not requiring a wig.

Using the Paxman Hair Loss Prevention System gives a continuous cooling of the scalp. This results in vasoconstriction, which minimizes the cytotoxic effect on the hair follicle cells. In addition the cooling also reduces the metabolic rate, which also helps to reduce the risk of hair loss.

In the initial part of the study, latex rubber caps were used and were offered in three different sizes. However, during the study period, a new silicon cap was introduced by the manufacturer. The new caps came in two sizes. They had a better fit and enhanced the comfort through not covering the ears.

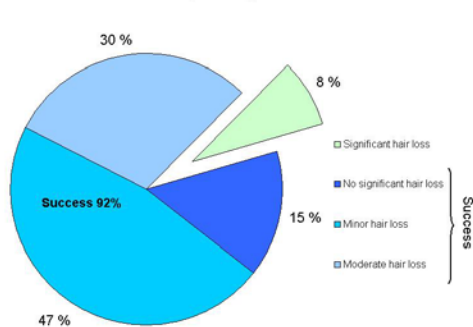
The scalp cooling treatment was carried out as follows. The patient's hair was moistened in order to reduce its insulation effect. Pre-cooling before cytotoxic agent was used for a minimum of 15 minutes, and for the entire period of drug infusion. Post-infusion cooling continued for 1 to 2.5 hours after infusion, which was determined on the treatment type and the dose used. It was possible to disconnect the patient from the machine for a maximum time of 10 minutes during each treatment. The cooling fluid had a temperature of -3.5°C to -4.9°C during the entire treatment. This method was carried out on all planned courses of chemotherapy, until an eventual switch to a different kind of cell poison, or until it was judged that the patient no longer had any benefit from the treatment.

CONCLUSION

Scalp cooling treatment is an effective method for avoiding alopecia in patients receiving chemotherapeutic treatment with courses of FEC or weekly paclitaxel.

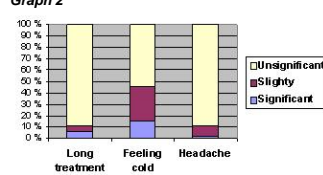
The patients have minimal discomfort, and there are no significant side effects during the cooling period.

Total Evaluation of Hair loss, both regimes

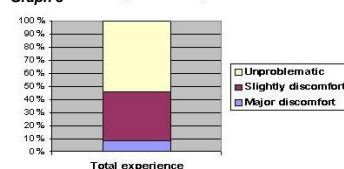


Graph 1

Graph 2 Patient acceptability



Graph 3 Total patient experience



Drug regime	Adjuvant	Neo-Adjuvant	Palliativ	Total no of patients
FEC/FAC	31	4	6	41
TAXOL-1	1		12	13
Total	32	4	18	54

Table 1

Drug regime	Pre-cooling			Time of infusion			Post cooling time		
	Median	Min	Max	Median	Min	Max	Median	Min	Max
FEC/FAC	20	15	150	45	15	120	120	120	150
TAXOL-1	20	15	120	60	60	150	60	60	120

Table 2

Drug regime	Drug	Dose		
		Median	Min	Max
FEC/FAC	Epirubicin 60 mg/m ²	105	60	150
TAXOL-1	Paclitaxel 90 mg/m ²	140	105	160

Table 3