

## Scalp metastases and scalp cooling for chemotherapy-induced alopecia prevention

Alopecia is one of the most common adverse events of chemotherapy and although it is not life threatening it can be psychologically devastating. In an effort to reduce chemotherapy-induced hair loss various preventive measurements, such as the scalp cooling technique, tourniquet and medications, have been developed since 1970 [1]. Methods that have been applied in order to induce scalp hypothermia include chilled air for cooling, simple bags with crushed ice, frozen cryogel packs, packs with endothermic cooling reaction, special bags with cryogel and an insulation layer, and caps connected to a cooling device using air or fluid as a medium and equipped with a thermostat.

In a recent review published in *Annals of Oncology* regarding the prevention of hair loss by scalp cooling, there is an open question for the long-term adverse consequences of these methods [2]. There are significant concerns of possible long- or short-term scalp recurrences as a result of using the scalp cooling system during chemotherapy in patients with haematological or solid tumour malignancies. These concerns are based on the hypothesis that stem cells or malignant cells that may be present in the scalp at the time of treatment are not adequately treated when the scalp is cooled.

We have previously published our experience with the MSC cold cap among 83 patients, none of whom developed metastases of the skin scalp [3]. We would like to report our updated data, from January 1998 until April 2005, of 442 patients with various tumour types, to whom the MSC cold cap was applied (Table 1). Two patients with breast cancer did develop biopsy-confirmed skin scalp metastases. The incidence of scalp metastases among all patients was 0.45% and among breast cancer patients was 0.88%.

This is in agreement with the data presented by Grevelman and Breed [2]. In their review, they describe that skin scalp metastases were found in nine patients in six studies out of a total of 2500 patients in 56 studies (0.36%). However, in 24 studies specific attention was not paid to scalp metastases, thus the safe conclusions cannot be made.

**Table 1.** Type of cancer in patients to whom the cold cap was applied

Type of cancer	No. of patients used the cold cap	No. of patients developed scalp metastases
Breast	227	2
Ovarian/endometrial	45/4	0
Lung	50	0
Oesophageal/stomach	33	0
Colon	18	0
Other	65	0
Total	442	2

It is of interest that in our study, one patient with breast cancer and scalp metastases that was treated with weekly docetaxel decided to use the cold cap. The scalp metastases did respond to treatment and her hair was preserved.

The incidence of scalp metastases in patients using scalp cooling methods during chemotherapy is low and it does not seem to influence the clinical outcome; however, safe conclusions regarding the impact in overall survival can be made only through a well-designed randomised trial.

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