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Thematic Article

Alopecia in Oncology

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Abstract

Aim: The aim of this study was to evaluate the prevalence of alopecia in malignancy patient undergoing chemotherapy.

Methods: A 2-years prospective study identifying 180 cases of alopecia induced by chemotherapy in cancer patients, was carried out at the Hassan II university hospital Fez, Morocco. We describe the epidemiological, clinical, dermoscopic and evolutionary aspects.

Results: The mean age was of 47 years. The sex ratio was 0,3. The average delay of appearance of alopecia was 12 days after the first course of chemotherapy. The most incriminated cytotoxic agent was taxanes. Noncicatricial alopecia was observed in 98,8% of patients. The universalis form occurred on 80% of patients. Grade 2 was noted in 60% of patients. The Regrowth hair has been objectified, on average, after 4 weeks of discontinuation of treatment. All patients had a complete regrowth hair. 67% reported a change in thickness, texture and color of the hair.

Conclusion: Chemo-induced alopecia is a psychologically devastating side effect. We highlight the interest of information and psychological support.

Keywords: *Alopecia; Oncology; Chemotherapy*

Introduction

Chemotherapy-induced alopecia represents the most psychologically devastating side effects of chemotherapy [1]. It may seriously affect body image, which in turn has an impact on self-esteem and self-confidence [2]. Extreme anxiety related to this cosmetic disfigurement reportedly drives 8% of patients to reject chemotherapy [1]. We aim to describe the epidemiological, clinical, dermoscopic and evolutionary characteristics of chemo-induced alopecia.

Materials and Methods

Our study was a prospective analysis of 350 patients followed in medical oncology and referred for management of dermatological complications, during the period from September 2016 until September 2018 at the department of dermatology at Hassan II University Hospital, Fez, Morocco. We had identified 180 cases of post-chemotherapy alopecia. The clinical data were collected in an exploitation sheet. For each patient we recorded the age, past medical history, type of neoplasia, chemotherapy regimen, clinical and dermoscopic findings, treatment, and outcome.

Results

The mean age was of 47 years. The sex ratio was 0,3. The delay of appearance of alopecia ranged between 3 and 21 days after the first course of chemotherapy with a mean delay of 12 days. The most incriminated cytotoxic agent was taxanes, Docetaxel in 54% and Paclitaxel in 34% of cases. The grade 1 was noted in 18%, grade 2 in 60%, grade 3 in 20,8% and grade 4 in 1,2% of patients. The universalis

form occurred on 60% of patients. Although 35% presented a total form and 5% an alopecia in plate. Dermoscopic examination in all patients showed yellow and black dots with some downy white hairs. Noncicatricial alopecia was observed in 98,8% of patients. Two patients presented a permanent alopecia of the scalp. The regrowth hair has been objectified, on average, after 4 weeks of discontinuation of treatment. Therapeutic abstention has been proposed to our patients with surveillance and a good explanation of this transient adverse effect. Outcome was favorable. Almost patients had a complete spontaneous regrowth hair. The patients with persistent alopecia were treated with minoxidil 2% with a favorable evolution marked by complete hair regrowth. 67% reported a change in thickness, texture and color of the hair.

Discussion

Chemotherapy-induced alopecia (CIA), although not life threatening, is one of the most distressing side effects for patients undergoing chemotherapy treatment [3]. The incidence of CIA is estimated at 65% in patients with cancer [2]. CIA generally presents suddenly and initially manifests as patterned hair loss. The areas of greatest hair damage seem to be selective, and in particular affect scalp regions that show low total hair densities, such as the frontal or occipital hairlines [1]. Pathobiologically, most CIA is categorized as anagen effluvium, which is defined as the shedding of fully pigmented hair shafts in the growth phase [4]. Anticancer drugs impair mitotic and metabolic processes in actively growing hair follicles leading to the thinning of hair shaft, which becomes fragile and susceptible to fracture with minimal trauma. Later, hair follicles undergo apoptosis-driven regression (catagen) followed by the resting period (telogen) [5]. CIA typically begins within 2 to 4 weeks after treatment onset, and hair usually begin to regrow 3 - 6 months after the end of treatment [6]. According to the literature, CIA occurs after 3 weeks in almost of our patients. Reversibility of alopecia depends on the degree of hair-follicle stem-cell damage. several factors are criminalized such as dose, administration regimen, frequency of administration, patient's age, comorbidities, nutritional and hormonal statuses, bone-marrow transplantation and exposure to X-rays [1,5]. Fortunately, 98,8% of our patients presented a reversible CIA. Many chemotherapeutic agents have the ability to cause alopecia [6]. The risk of CIA and the degree of hair loss differ substantially between chemotherapeutic agents [1]. Drugs with high potential are adriamycin, cyclophosphamide, doxorubicin, cisplatin, cytosine arabinoside, ifosfamide, etoposide, methotrexate, mitomycin, taxoids, vincristine and vinblastine [2,5]. In our study, we noted that CIA was more frequent in patients receiving taxanes. The Olsen CIA scale is used to evaluate the CIA severity. This scale included 5-grade scale: grade 1 = minimal (1% - 24% loss, compared with the pretreatment state); grade 2 = moderate (25% - 49% loss), or grade 3 (50% - 74% loss); grade 4 = extensive (75% - 99% loss); and grade 5 = complete (100% loss) [7]. We have used the same score to evaluate alopecia in our patients and the grade 2 was predominant. Permanent CIA is rare and defined as an absence of or incomplete hair regrowth 6 months postchemotherapy [7]. The described implicated agent are busulphan, cyclophosphamide, thiotepa, melphalan, etoposide, carboplatin, docetaxel and paclitaxel [6]. In our cases, alopecia was frequently induced by taxanes and platinum sels. The pathogenesis is still unknown. Some authors suggested direct toxicity on stem cells or hair matrix cells, or separation of the matrix cells from the dermal papilla. Although the relationship between chemotherapy dose and persistent alopecia are conflicting. Histologically, CIA corresponds to severe reduction in the total number of hairs, no inflammation or fibrosis, an increased number of vellus hairs, a peribulbar lymphocytic infiltrate. Almost patients complained changes in the density, color, and texture of their hair at regrowth. These modifications were reported by 67% of our patients. That's can be explain by damage the function of the hair follicle, induced by chemotherapeutic agents, secondary to the involvement of vasculature and sebaceous glands, associated to oxidative to the pigmentary unit of the hair follicle [7]. Management of CIA primarily consists of counselling and the provision of written information, professional psychological support, and the recommendation to use a wig [1]. The scalp cooling is an effective way that allows a meaningful reduction of CIA incidence. The only inconvenient is an increased risk of subsequent metastases to the scalp. These include cutaneous vasoconstriction leading to a decrease in the concentration of chemotherapy in the scalp, decrease in cellular uptake of chemotherapy by the hair follicle and reduction in the hair follicle metabolic rate [8]. Moreover, treatment of eyelash CIA with Bimatoprost resulted in positive improvements [9]. The prevention of CIA by the use of minoxidil is still conflicting. Although, some authors reported that Minoxidil reduces the period of baldness and promoted hair regrowth [10]. All our patients have received information and explanations about this side effect and its reversibility. the scalp cooling technique was not available. the cases of permanent alopecia received minoxidil with a good evolution.

Conclusion

Alopecia is a devastating adverse effect of chemotherapy with a significant psychological impact, hence the interest of sensitizing patients to this reversible effect, to offer a psychologist consultation and to introduce preventive measures to improve the quality of life of these patients.

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