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Factors influencing frontal fibrosing alopecia severity: a multicentre cross-sectional study

Editor

Frontal fibrosing alopecia (FFA) is a primary scarring alopecia with a variable prognosis.¹ We previously analysed the 12-month progression of the disease in a cohort of 106 patients treated with oral dutasteride 0.5 mg three times weekly and topical clobetasol and observed that the age of the patient, age at diagnosis of the disease and the clinical pattern (linear, diffuse or pseudo-fringe pattern) were prognostic factors of hairline regression, which ranges from 0.1 to 2.6 cm according to previous studies.^{2–4} In order to increase the external validity of those results, we conducted a multicentric study that analysed severity of the disease, measured by hairline regression, and the risk factors of FFA previously described.⁵ Hairline regression was categorized into five stages (I–V) as previously reported.¹

In all, 278 women affected by FFA were included in the study. Diagnosis was made by clinical examination and trichoscopy signs or based upon histopathology if atypical presentation. Mean age of patients was 60 (range: 33–91). Three patients (1.1%) were Latin American and the rest Caucasian. The majority of the patients (64.7%) were considered as mild FFA [grade I (12.8%) or II (18.3%)]. The rest of the patients (35.3%) were considered as severe FFA [grade III (9.2%), IV (4.5%) or V (3.3%)]. Table 1 shows treatment modalities of the patients; the combination of topical treatment (clobetasol propionate, tacrolimus and minoxidil) and oral dutasteride 0.5 mg three times a week was the most used therapy (82.4%). The association between risk factors and severity of FFA is shown in Table 2. The age of the patients, age of disease onset, duration of disease, a low

Table 1 Frequency of treatment modalities of study subjects

Treatment	Frequency
No treatment	2 (0.7%)
Mometasone furoate 0.1% cream, tacrolimus 0.1% ointment and minoxidil 0.05% solution†	5 (1.8%)
Clobetasol propionate cream 0.05%, tacrolimus 0.1% ointment and minoxidil 0.05% solution‡	20 (7.2%)
Topical treatment§ and finasteride 2.5 mg daily	17 (6.1%)
Topical treatment§ and hydroxychloroquine 200 mg daily	5 (1.8%)
Topical treatment§ and dutasteride 0.5 mg three times a week	229 (82.4%)

†Mometasone furoate cream was applied three times a week for the first month and tacrolimus ointment chronically three times a week. Minoxidil solution was applied daily. ‡Clobetasol propionate was applied three times a week for the first month and tacrolimus ointment chronically three times a week. Minoxidil solution was applied daily. §Topical treatment consisted of clobetasol propionate 0.05% three times a week for the first two months and tacrolimus 0.1% chronically three times a week. Minoxidil solution was applied daily. Subcutaneous injections of triamcinolone acetonide (0.1%) were used at irregular intervals if the patient presented trichoscopic signs of activity (erythema and/or perifollicular hyperkeratosis).

level of academic studies, exposure to organic solvents, exposure to alkylphenolic compounds, hypothyroidism and a higher body mass index (BMI) were associated with greater severity of the alopecia in the bivariate analysis. History of tobacco consumption and university degree were associated with milder forms of the disease. After adjusting the multivariate model by age, age of disease onset, duration of disease and education level, the risk factors associated with severe FFA were a higher age, a higher age of onset of the disease, a low academic level and higher BMI.

This study confirms that patient's age and age of disease onset are both predictors of FFA severity. In addition, the data suggest that a lower educational level might be associated with severe forms of the disease. It should be highlighted that exposure to occupational endocrine disruptors (e.g. alkylphenolic compounds or organic solvents) was not associated with more severe forms of the disease after adjusting by academic level. In addition, the use of sunscreens was not associated with the severity of the disease. Regarding BMI, it was found associated with severe forms of the disease. Interestingly, in postmenopausal women oestrogen levels are associated with higher BMI.⁶ This fact is consistent with the observations of other studies that have suggested a hypothetical influence of oestrogens in the onset of the disease.^{1,5} Finally, although tobacco consumption was associated with milder forms of the disease in the bivariate analysis, consistent with a previous report,⁷ this association was not observed in the adjusted multivariate model and was suspected to act as a confounding factor (i.e. tobacco exposure was associated with age, BMI and education level).

A limitation of this study is the absence of patient follow-up, which was addressed recruiting the patients from 13 different centres and adjusting the multivariate model with the age of the patients and age of onset of the disease.

Table 2 Factors associated with disease severity

Factor	Mild	Severe	Bivariant analysis	Multivariate analysis
<i>n</i>	180 (64.7%)	98 (35.3%)		
Age	57.3 (33–81)	65 (39–91)	P 0.00 (OR: 1.07)	P 0.00 (OR: 1.2)
Age onset of the disease	54.1 (24–80)	58.14 (18–83)	P 0.01 (OR: 1.03)	P 0.00 (OR: 1.03)
Duration of disease	2.87 (0–6)	6.95 (5–24)	P 0.00 (OR: 1.17)	P 0.00 (OR: 1.21)
Academic level†				
Primary education	29 (16.1%)	40 (40.8%)	P 0.00 (OR: 4.6)	P 0.03 (OR: 2.3)
Secondary education	16 (8.9%)	13 (13.3%)	P 0.02 (OR: 2.75)	P 0.17 (OR: 2.03)
Higher education	40 (22.2%)	17 (17.3%)	P 0.3 (OR: 1.4)	P 0.91 (OR: 0.95)
University degree (Reference)	95 (52.8%)	28 (44.2%)	P 0.00 (REF)	P 0.08 (REF)
Exposure to organic solvents	49 (27.2%)	57 (58.2%)	P 0.00 (OR: 3.71)	P 0.2 (OR: 1.6)
Exposure to alkylphenolic compounds	50 (27.8%)	58 (59.2%)	P 0.00 (OR: 3.77)	P 0.25 (OR: 1.5)
Pregnancy	145 (80.6%)	85 (86.7%)	P 0.19 (OR: 1.5)	P 0.92 (OR: 1.04)
Hormonal replacement therapy	31 (17.2%)	23 (23.5%)	P 0.21 (OR: 1.47)	P 0.92 (OR: 1.03)
Raloxifene	2 (1.1%)	4 (4.1%)	P 0.12 (OR: 3.78)	P 0.2 (OR: 3.3)
Rosacea	24 (13.3%)	10 (10.2%)	P 0.45 (OR: 0.73)	P 0.62 (OR: 0.79)
Lichen planus pigmentosus	3 (1.7%)	5 (5.1%)	P 0.12 (OR: 3.17)	P 0.19 (OR: 2.9)
Hypothyroidism	27 (15%)	27 (27.6%)	P 0.01 (OR: 2.15)	P 0.1 (OR: 1.8)
Facial sunscreen	143 (79.4%)	72 (73.5%)	P 0.25 (OR: 0.71)	P 0.86 (OR: 0.93)
Facial moisturizers	165 (91.7%)	88 (89.8%)	P 0.6 (OR: 0.8)	P 0.78 (OR: 0.86)
Tobacco	85 (47.2%)	33 (33.7%)	P 0.03 (OR: 0.58)	P 0.32 (OR: 0.73)
Body mass index	24 (16.6–39.6)	27.2 (19.5–47.8)	P 0.00 (OR: 1.2)	P 0.00 (OR: 1.17)

†Academic level is stratified into primary education (i.e. elementary education), secondary education (i.e. high school), higher education (i.e. undergraduate education) and university degree (i.e. postgraduate education).

FFA, frontal fibrosing alopecia; OR, odds ratio.

In conclusion, FFA severity seems to be associated with the age of the patient, age of onset of the disease, duration of the disease, low academic level and body mass index.

This study has been reviewed and approved by an Institutional Review Board (Hospital Universitario Ramon y Cajal).

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