MJMR, Vol. 35, No. 1, 2024, pages (229-234)

Open Access
ISSN:2682-4558

Research Article

Androgenic Alopecia in Female

Alshimaa A. Mohamed[1], Mohamed Al-khayat[2], Mahmoud Hamdy[2] and Osama Fargally[3].

[1] Department of Dermatology, Tahta Hospital, Sohage, Egypt.
[2] Department of Andrology and STDs, Faculty of Medicine -Minia University, Egypt.
[3] Department of Clinical Pharmacology, Faculty of Pharmacy-Minia University, Egypt.

DOI: 10.21608/MJMR.2023.243525.1528

Abstract

Background: Androgenic alopecia is a prevalent hair loss illness, that impacts individuals of both genders. The onset of androgenic alopecia typically occurs in adolescence, resulting in a gradual and patterned hair loss. Females suffering with androgenic alopecia may have substantial deterioration in their quality of life. There are several methods that evaluate FPHL, Sinclair grading one of them. **Objective:** The objective of the current investigation is to identify pattern of Androgenic alopecia in female. **Patients and Methods:** A total of 30 randomly selected patients were enrolled in the study from March 2021 to January 2023, all the patients completed the study after the inclusion and exclusion criteria were satisfied. Thirty alopecia female patients were evaluated by Sinclair grading. **Results**: Age of patients ranged from 28 to 45 years with a mean ± SD of 34.7 ± 5 years. Positive family history represented in 15 cases and 18 cases were married. Grade lll was the most common type. **Conclusion:** Sinclair grading is a good descriptive method for pattern of female androgenic alopecia, the most common type was Grade III.

Keywords: Alopecia**;** Hair**;** Sinclair**.**

Introduction

Androgenic alopecia (AGA) is a prevalent hair disorder defined by the gradual loss of hair in specific patterns. Both men and women with agenetic predisposition are susceptible to this condition, which is attributed to the hormone dihydrotestosterone (DHT), and its role in inhibiting hair follicle growth[(1)]. The role of genetics is significant in the etiopathogenesis of the condition as there is observed diversity in gene expression among individuals[(2)]. There is a robust connection between the androgen receptor (AR) gene and other signals as well as associations with the X chromosome[(3)]. Androgenic alopecia is attributable to the atypical responsiveness of scalp hair follicles to circulating androgens, which is believed to be caused by an upsurge in the quantity of androgen receptors (AR)[(4)].The conversion of testosterone into dihydrotestosterone (DHT) is facilitated by the enzyme 5α-reductase (5αR), which has a significantly greater affinity for the androgen receptor (AR) in comparison to testosterone. Dihydrotestosterone (DHT) exhibits a high affinity for androgen receptors (AR) that are situated inside the cytoplasm of the specific cells[(5)].

The primary pathophysiological characteristics of Androgenic alopecia encompass modification in the formation the hair cycle, follicular shrinkage and inflammation. In Androgenic alopecia, the anagen phase exhibits a gradual decrease with each successive cycle. Conversely, the length of telogen remains constant or experiences an extension. In the end, the duration of anagen phase gets significantly reduced, resulting in insufficient hair growth to reach the surface of the skin, so leaving a follicular pore devoid of hair[(6)].

Female pattern hair loss (FPHL) is well recognized as the prevailing hair loss problem among women. The onset of symptoms develop

during the adolescence resulting in a gradual and patterned hair loss[7]. Female pattern hair loss is well recognized as the prevailing hair loss problem among women. Female pattern hair loss is identified as a kind of alopecia that does not result in scarring and is characterized by the gradual shrinkage of hair follicles and consequent decrease in the quantity of hairs, particularly in the central, frontal, and parietal regions of the scalp[8]. Female pattern hair loss (FPHL) present with three primary symptoms. The initial presentation involves the gradual loss of hair in the upper biparietal and vertex area, whereas the anterior hair line remain intact. Another manifestation observed is the progressive reduction in hair density in the upper bitemporal region and vertex, accompanied by increased prominence of the frontal area resulting in a distinctive triangle or Christmas tree shaped -pattern of hair loss in the frontal-vertical area. One further symptoms involve a significant recession of the hairline in the frontal-temporal region and actual balding at the vertex, this pattern is predominantly observed in males, although it can occasionally manifest in females[9]. Multiple hair loss scales have been developed to classify (FPHL) and each scale has advantages and dis-advantages[10]. The objective of the current investigation is to identify pattern of Androgenic alopecia in female.

Patients and Methods

Study design: This was Randomized controlled clinical study (simple randomization) included 30 randomly selected (FPHL) patients attending Dermatology Outpatient Clinic of Dermatology Department, Minia university Hospitals after taking the approval of the Research Ethics Committee of Faculty of Medicine, Minia University, Egypt. A written informed consent was obtained from each patient after informing her about the technical and scientific basis of the research Approval No.134:12/2021. Date: 18 December 2022.

Patients:
A total of 30 randomly selected patients were enrolled in the study from March 2021 to January 2023, 30 patients completed the study after the inclusion and exclusion criteria were satisfied. All patients were subjected to full history taking including (name, age, duration, marital state, menstrual history, treatment and family history). General and local examinations including pattern of Androgenic alopecia to all patients included in the study. Thirty patients were examined for pattern and Sinclair grading for the type of alopecia. Digital photography was taken using digital camera. Photos were assessed by at least two expert dermatologists.

Results

The current study included 30 alopecia female patients in the outpatient clinic of El-Minia University, Egypt.

Socio-Demographic data of the patients

Age of patients was ranged from 28 to 45years with a mean ± SD of 34.7 ± 5 years. Positive family history represented in 15 cases and 18 cases were married (**Table 1) (Figure A&B).**

Sinclair grading of Androgenic alopecia

Sinclair grading was grade I: 0 cases, grade II: 3 cases **(Figure C**), grade III: 12 cases (**Figure D)**, grade IV: 9 cases and grade V: 6 cases (**Figure E)**. Grade III was the most common type.

Table 1: Demographic Data.

Age	**Range mean ± SD**	**(28-45)** **34.7 ±5**
Marital status	**Single** **Married** **Divorced** **widow**	9 (30%) 18 (60%) 3 (10%) 0 (0%)
Family history	**Negative** **Positive**	15 (50%) 15 (50%)

Table 2: Sinclair grading.

Grade I	0 (0%)
Grade II	3 (10%)
Grade III	12 (40%)
Grade IV	9 (30%)
Grade V	6 (20%)

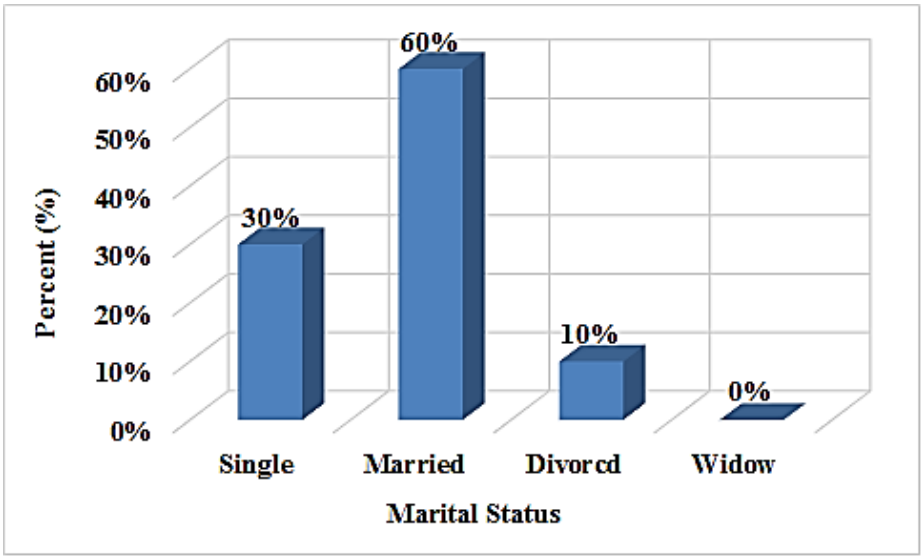

Fig. (A) Marital Status of Female Androgenic Alopecia

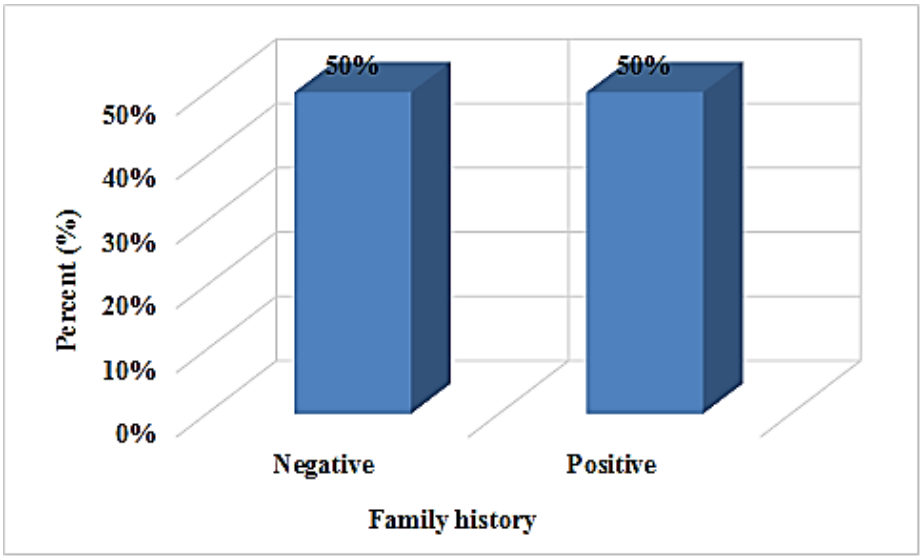

Fig. (B) Family History of Female Androgenic Alopecia

Fig. (C) Sinclair Grade II of Female Androgenic Alopecia

Fig. (D) Sinclair Grade III of Female Androgenic Alopecia

Fig. (E) Sinclair Grade V of Female Androgenic Alopecia

Discussion

Androgenic alopecia (AGA) is a disorder that is influenced by multiple factors and is associated with advancing age[11]. This condition is a prevalent hair ailment that is characterized by the gradual loss of hair in specific patterns. It primarily affects those who have a hereditary predisposition and attributed to the hormone dihydrotestosterone (DHT), which lead to decrease in the formation of hair follicles[12]. The objective of the current investigation is to determine the efficacy of Sinclair grading in classify of Androgenic Alopecia. A total of 30 female patients were included in this study, Positive family history represented in 15 cases and 18 cases were married**.** Sinclair grading was grade I: 0 cases, grade II: 3 cases, grade III: 12 cases, grade IV: 9 cases and grade V: 6 cases. Grade III was the most common type.

Married patients represented 18 this in accordance with the age range in reproductive period has hormonal influence on the etiopathogenesis[13]. Androgens have a significant role in the progression of male pattern baldness as well as being implicated in the development of pattern hair loss in certain women. Nevertheless, there are additional non-androgenic elements that contribute to the development of FPHL, although their specific identities remain unknown[14].

Polycystic ovarian syndrome is the most prevalent endocrinologic comorbidity associated with FPHL[15]. Positive family history represented 15 (50%). In another study it was 66.2% (255/385) of female patients with Androgenic alopecia (AGA), this may be because, Androgenic alopecia commonly associated with paternal inheritance[16]. The role of genetics is significant in the etiopathogenesis of the condition as there is observed diversity in gene expression among individuals[2]**.** There is a robust connection between the androgen receptor (AR) gene and other signals as well as associations with the X chromosome[3]. The manifestation of Androgenic alopecia can be attributed to the atypical responsiveness of hair follicles on the scalp to androgens present in the blood stream[4]. Heilmann *et al* [3] have reported a significant discovery of over 60 gene loci that are related with male Androgenic alopecia. The occurrence of hair loss in women is attributed to a combination of multiple genetic variables and other environmental influences. Multiple research been conducted to investigate the significance of various genes associated with alopecia[17].

Conclusion

Sinclair grading is a good descriptive method for pattern of female Androgenic alopecia, Grade III was the most common type.

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