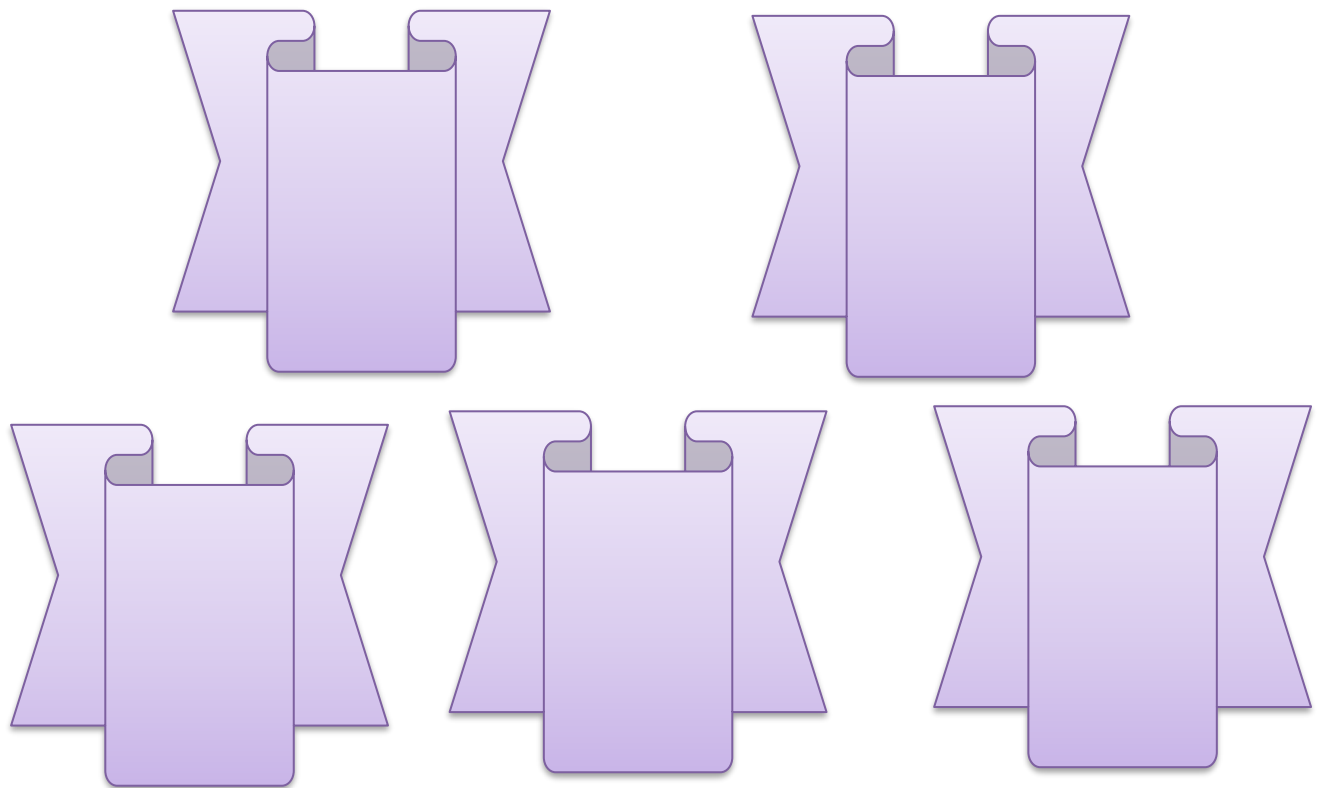


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Original Article

Retrograde Alopecia: Prevalence, Patterns, Dermoscopic Features among Egyptian Men: A Cross Sectional Study

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ABSTRACT

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Background: Retrograde alopecia [RA] is a term that describes the hair loss in the nape of the neck that may extend to the occipital region or above in the scalp. In most cases it is associated with Androgenetic alopecia [AGA]. Yet, as the severity of Androgenetic alopecia increases, the retrograde alopecia becomes more frequent, prominent and severe.

Aim of the work: To explore the prevalence, patterns, grades, dermoscopic features of retrograde alopecia and linking this finding with eligibility of Hair transplantation for AGA.

Patients and Methods: One thousand patients are included in this study recruited from al Al Hussein hospital, dermatology department, Hair clinic. Clinical and dermoscopic examination for occipital area are done to detect RA prevalence, patterns and dermoscopic findings.

Results: Fifty patients out of thousand patients examined were affected by RA of varying degrees and patterns. Grading system is done for those patients. We have linked this grading system with eligibility for hair transplantation for AGA.

Conclusion: RA is fairly common among patients with Androgenetic alopecia of severe degrees. Detection of RA by good examination clinically and dermoscopically is mandatory for reaching the appropriate diagnosis, treatment and exclusion of affected hair by RA from harvesting to get a safe donor area regarding hair transplantation of AGA.

Keywords: Retrograde alopecia; Androgenetic alopecia; Dermoscope



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INTRODUCTION

Androgenetic alopecia is a genetically predisposed condition in which there is a permanent hair loss of varying degrees. However, some authors consider Retrograde Alopecia [RA] as a subtype of Androgenetic alopecia but others consider it as a separate entity [1].

Retrograde alopecia [RA] is defined as a hair loss that affects the nape and the sides of the scalp just above the ears. The prevalence of retrograde alopecia is not well known but it is thought to be common in patients with Androgenetic alopecia [1]. Clinical picture of RA is similar to normal male patterned hair loss. Both may start at hair line and progress toward the center of the scalp in a special pattern. However, it affects areas beyond defined borders the Norwood Hamilton hair loss chart [2].

As regard the clinical presentation of Androgenetic alopecia, it presents with a receding hairline, loss of hair on the vertex of the scalp, or a combination of both with progression over the time. Moreover, on dermoscopic examination there is thinning, miniaturization, and loss of hair in the affected regions of the scalp [2]. One the other hand, hair becomes thinner all over the head without recession of hairline in female pattern hair loss. In the majority of cases there is no affection of posterior and lateral scalp margins [3].

As we study the different classifications of hair loss, we found that the most commonly used classification for men is the Hamilton\Norwood classification, and for women the Ludwig system. However, both classifications system doesn't describe the hair loss that occurs with the RA [3].

Therefore, the aim of our study is to illustrate prevalence, patterns and grades of RA. Also aiming to add a new grading system linked with hair transplantation and safe donor area.

PATIENTS AND METHODS

Type of the study: cross sectional.

Study participants: One thousand male patients older than 20 years complaining of androgenetic alopecia were recruited from Al Hussein Hospital.

Inclusion criteria: Males with any stage of Androgenetic Alopecia based on Dermoscopy Examination, males older than 20 years.

Sample Size and Statistical Power: After extensive reviewing of the literature the sample size [SS] was calculated on the basis of $[\alpha] = 0.05$ with 80% Power, 95% confidence interval. the final sample size should be at least 300 patients.

Recruitment of Participants: Patients were recruited from Al-Hussein University Hospital [Hair clinic] during the data collection period after explaining to them the research idea and getting their agreement to participate orally.

Examination of cases: Examination was done by using the dermoscope as an investigating tool to confirm diagnosis and extension of RA and its patterns.

Statistical analysis: Statistics were done to detect distribution of Retrograde alopecia and its patterns.

Ethics: We have obtained the ethical approval from the ethical committee of medical school of Al-Azhar University according to the principles embodied in the declaration of Helsinki. All study participants were assured of confidentiality and their right to withdraw without prejudice. Also, they agreed to participate by oral consent.

RESULTS

One thousand patients were included in this study. All of them have Androgenetic alopecia of varying degrees. Our study showed that approximately 5% of those patients have retrograde alopecia of different patterns and degrees.

Based on clinical examination and dermoscopic findings, we have classified these patients into 5 grades according to the site of affection.

In respect of patients with retrograde alopecia that represent 50 patients out of one thousand patients included, we have found that thirty-two of them on grade 1, twelve of them on grade 2, four of them on grade 3, one patient on grade 4 and one patient on grade 5. In addition, we suggest a new score for retrograde alopecia regarding eligibility for hair transplantation in patients with Androgenetic alopecia grade V, VI

and V11 on Hamilton Norwood classification [refer to the table above].

observed pattern is straight pattern parallel to occipital fringe, also less commonly observed patterns are hour glass pattern and inverted pattern.

Moreover, we have found different patterns of retrograde alopecia. The most commonly

Table [1]: Grades of Retrograde alopecia

Grades of RA	RA level	Eligibility for Hair transplantation [HT] and affection of safe donor area
Grade 1	RA below level of external occipital protuberance by 2 cm	No affection of safe donor area.
Grade 2	RA at level of external occipital protuberance	No affection of safe donor area
Grade 3	RA at level above external occipital protuberance by 2 cm.	Minor to moderate affection of donor area. Candidate for HT after exclusion of affected hair by RA
Grade 4	RA at level below Helical rim by 2 cm	Severe affection of donor area. Poor candidate for HT except if supported by body or beard hair.
Grade 5	RA at level of occipital fringe or affection of temporal area	Total affection of donor area. Not candidate for HT.

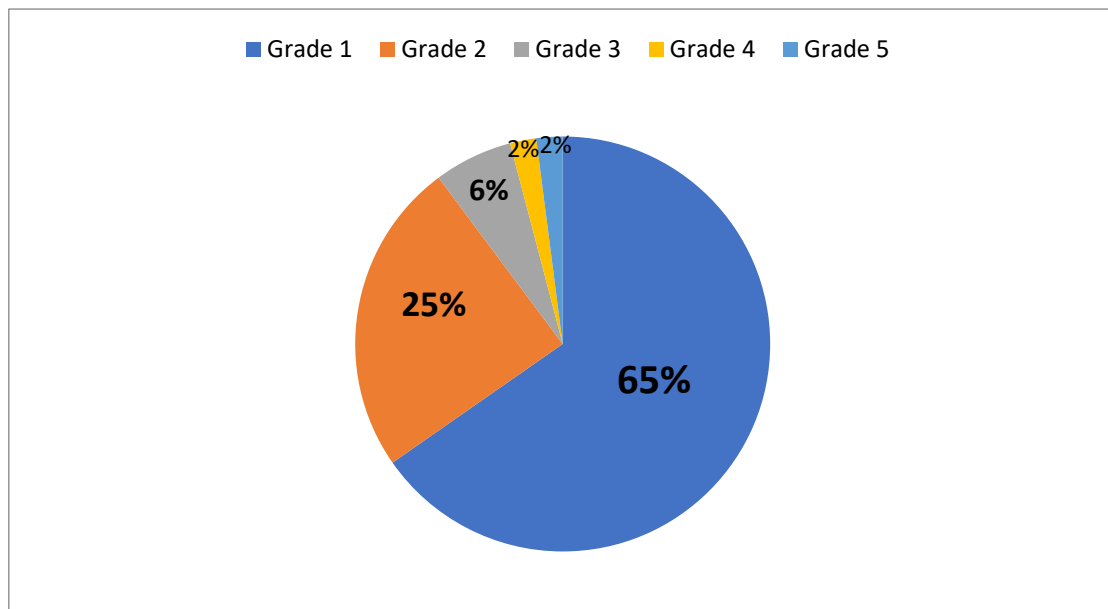


Figure [1]: Relative frequency of RA grades



Figure [1]: Retrograde alopecia affecting the nape of the neck below external occipital protuberance [grade 1]



Figure [2]: Retrograde alopecia affecting the nape of the neck at level of external occipital protuberance [grade 2]



Figure [3]: Retrograde alopecia affecting the nape of the neck above external occipital protuberance by 3 cm [grade 3]



Figure [4]: Retrograde alopecia affecting the nape of the neck below helical rim by 2 cm [grade 4]

DISCUSSION

Retrograde alopecia is a recent term used to describe a hair loss in the occiput. In retrograde alopecia the lower and lateral occiput recedes toward midcentral occiput. In opposite, in Androgenetic alopecia the anterior, temporal and posterior hairlines gradually recede. However, Both RA and Androgenetic alopecia share many similarities such as gradual establishment after puberty, gradual increase of vellus like hair and decrease of normal hair. Interestingly, we can notice that the middle segment of hair of the lower occiput affected with RA usually remains intact similar to the middle part of frontal scalp in Androgenetic alopecia [4].

Dermoscopic examination of RA revealed that vellus hairs are above 20%. Vellus hair is describes as a thin, non-medullated and hypo pigmented hairs less than 30 μm thick and less than 2-3 mm long [5].

In consequence, identification and careful examination of the donor area is vital to exclude the presence of RA. Therefore, the safe donor area in the occipital region was marked by identifying the occipital protuberance and the extent of miniaturized hair follicles. Yet, the mean of evaluation of RA is to measure the degree of thinning and miniaturization in the donor area. Miniaturization is defined as gradual progressive loss of normal hair shaft length and diameter. In normal population vellus hair does

not exceed 20%. Many factors may affect this process as age, Hormones, drugs and others [6].

We aimed at our study to reach a safe donor area candidate for harvesting in hair transplantation for AGA. A safe donor area is a term that describes the occipital hair in the scalp that can be extracted safely. So, exclusion of miniaturized hair that is affected by RA is the prime goal. The roughly estimated follicular units in the safe donor area are around 12.500 follicular units. Up to 25-50 % can be extracted safely.

In Hair transplantation surgery for AGA we prefer to postpone the operation until the patient becomes thirty to reach the final clinical picture of Androgenetic alopecia, also to detect appropriately the affected donor area to exclude the miniaturized hair that will be lost many years later.

Therefore, the donor area must be well defined before going into hair transplantation. The donor area has three significant boundaries; The anterior boundary is determined by an imaginary line drawn vertically above external acoustic meatus bilaterally. **Bernstein and Rassman** determined the anterior margin of donor area by 3 cm behind the temple hair line and the distance from one side to another should be at least 30 cm [7]. The superior boundary of the donor area is determined by an imaginary line drawn on horizontal plane extending from the upper border of the helical rim HR to the other

side. The inferior border of the donor area is slightly controversial, since the inferior margin differs from one to another; also it's known that inferior margin may move upward with the passage of time^[8].

As regard the link between the Androgenetic alopecia and Retrograde alopecia, we have noticed that the more increase in the severity of AGA, the more increase in the severity in RA in those patients already have RA. The importance of this link is Shawn in appropriate selection of the patient's candidate for hair transplantation and excludes the patients with combined higher grades of AGA and RA.

Hence, the clinician should be aware of retrograde alopecia that may alter the level or shape of the inferior margin from one person to another. So, exclusion of RA in the donor area is vital before any procedure.

Conflict of Interest and Financial Disclosure: None.

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