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A STUDY ON HAIR PULL TEST IN SOUTH INDIAN SUBJECTS

Dermatology

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ABSTRACT

Background: The hair pull test lacks validation and has unclear pre-test guidelines. The test is a very approximate method which is difficult to standardize and it has low specificity and sensitivity, but it might be supportive as a secondary procedure to assess activity of hair loss.
Objective: We sought to quantify normal hair pull test values between various types of hair and hair styling methods and elucidate the effect of pre-test and post-test hair washing and brushing. The impact of hair texture and lifestyle was also examined.
Methods: Participants ([female=42, male=18] [test 30, control 30]) were subjected to a questionnaire recording demographics, medications, and hair health/history. Hair pull test was performed over 4 sites, namely, vertex, occiput, right and left parietal region of scalp.
Results and conclusion: Hair pull test was positive in 21 patients. On comparing hair pull test with hair texture and scalp diseases, it was significantly more positive in those with curly hair and was also significantly more positive in patients with telogen effluvium. There was no significant difference in the positivity of the test between different hairstyles and with recent illness and comorbidities.

KEYWORDS

hair pull test, hair washing, brushing, curly, telogen effluvium

INTRODUCTION:

Hair loss is a natural phenomenon, which can result in shedding of telogen hairs ranging between 80-100 hairs per day in a healthy adult [1]. It is considered pathological, when there is an increase in telogen hair loss or the presence of anagen hair loss [2]. The disorders with hair loss can be monitored by various non-invasive clinical tests, one of which is hair pull test. This test is performed by holding 50-60 hairs close to the scalp, between thumb, index finger and middle finger. A firm is pull is given on the bundle using a slow traction as the fingers slide down the hair shaft. Fast and forceful tugs must be avoided. This test is performed at the vertex, 2 parietal areas and occiput of scalp. The pulled hairs are counted; if it is more than 10% of the hairs in each bundle, the test is considered positive. If it is less, it is attributed to normal shedding. If the test is positive in more than one scalp area, telogen or anagen effluvium should be considered.

Various methods have been adopted to assess the hair loss, namely, hair weighing, hair pull test, wash test, unit area trichogram, phototric hogram, trichoscan, trichoscopy,etc [3]. The hair pull test is ideally used for monitoring the advancing edge of alopecia areata, acute cases of telogen effluvium, anagen effluvium and loose anagen syndrome. This study is aimed to validate and quantify the normal hair pull test values and to find out the pre and post-test effects of hair washing and brushing in patients attending the skin outpatient department.

AIM:

The hair pull test is commonly used despite the fact that the test lacks validation, strict pre-test guidelines, and hair texture considerations. This study aimed to find out normal hair pull test values, to evaluate the effect of pre-test hair washing and hair brushing and to standardise these variables in clinical practice which would regulate telogen hair removal before the test. The study also aimed to find out the effect of hair texture, hair style, scalp diseases, recent illness and comorbidities on hair pull test positivity.

PARTICIPANTS:

Informed consent was obtained from 60 volunteers, including men (n = 18) and women (n = 42). All participants were 18 years of age or older, as the hair pull test is designed for the post pubescent population. Patients with chemically treated hair and those in postpartum, those having compulsive hair pulling, significant weight loss and patients on medications with a suggested effect on hair loss were included in the study. Any individuals with a hair loss disorder at the time of testing were included. This study was conducted after obtaining clearance from ethical committee and a written consent from the patient. All the subjects were asked to fill a questionnaire enclosing their demographic data, hair texture, hair practices and any recent illness.

EXCLUSION CRITERIA:

Participants younger than 18 years and those who had a weave, extensions, or dreadlocks were excluded because of on-going traction and lack of hair shaft base accessibility. Men with hair shorter than half an inch were excluded because of difficulty in performing the hair pull test. If known, the experimenters excluded a participant's immediate family members to avoid over representation.

PROCEDURE:

Initially, a bundle of hair, approximately 50-60 hairs over vertex were separated and held between thumb, index finger and middle finger by the examiner. Before performing the test, the examiner practised approximating the hair bundle size for a better accuracy. A firm pull using a slow traction was given as the fingers slid down the hair shaft [4]. The tension should be sufficient to slightly stretch the scalp. It may cause mild discomfort, but should not cause pain. The examiner counted and documented the number of hairs extracted. Similarly, the test was performed over occiput, right and left parietal region of scalp. The hair pull test results for each hair texture, hair style, prior hair treatment or procedures were documented.

RESULTS:

Statistical analysis was done based on Pearson Chi square test and the p-value of <0.05 was considered as significant. 60 subjects (30 cases and 30 controls) were included in the study. Of which females were 42 and males were 18 in number. The age of the patients included in the study ranged from 19-43 years with a mean age of 29 years. In our study, the total number of patients who showed positive hair pull test

was 21(35%). The hair pull test positivity was more in females (n=16) when compared to males (n=5).This may be due to more females being included in the study. When hair pull test results and hair texture was compared, it was significantly more positive in individuals with curly hair (p=0.02). On comparing hair pull test with hair style and prior hair treatment procedures, the results were insignificant (p-values- 0.3 and 0.2). When hair pull test results were compared in individuals with scalp diseases, it was significantly more positive than in individuals without any scalp disease (p=0.03). The most common disorder of scalp in this study was telogen effluvium (n=13) and hair pull test positivity was highest in the same. No significant association was found between comorbidities and recent illness with hair pull test. No significance was noted with the hair pull test results in association with hair brushing and hair washing, in this study.

DISCUSSION:

This study tried to evaluate the hair pull test positivity with the various factors which has been reported formerly.

Pre-test hair washing and brushing guidelines:

In previous guidelines, only hair washing has been considered and it was proposed that participants were to withhold from washing hair, 5 days before the test [5]. But it is difficult because of today's societal norms (i.e. washing hair daily or alternate days). Even though hair wash is an essential factor, pre-test guidelines should include all influences on telogen hair loss removal, including hair brushing. In this study, participants were subjected to the hair pull test, before and after hair washing, as well as before and after hair brushing and there was no significant difference in the hair pull test positivity. These results suggest that healthy hair loss values are uninfluenced by time since hair wash or hair brushing. This was similar to the study done by Mc Donald et al [6].

Effect of hair texture:

Different hair textures namely Asian, Caucasian and African textured hair has potential impact on hair pull test[7]. In this study, when hair pull test results were compared with hair texture, it was significantly more positive in individuals with curly hair. A highest number of positivity was noted with curly hair (n=14, p=0.02). This suggests that hair texture may affect hair pull test.

Effect of scalp diseases/infections:

Participants with various diseases were included in the study, namely telogen effluvium, seborrheic dermatitis, pediculosis capitis, androgenetic alopecia and alopecia areata. A significant association was noted on comparing hair pull test positivity in individuals with scalp diseases compared to individuals without any scalp disease (p=0.03). We suggest that scalp diseases have a tendency to affect the hair pull test positivity.

Lifestyle variables, recent illness and comorbidities:

In this study, hair loss variables like hair treatment/procedures, hair style (tight, loose, normal) did not significantly affect hair pull test positivity. No significance was noted on comparing hair pull test positivity with recent illness and associated comorbidities (namely diabetes mellitus, thyroid abnormalities, polycystic ovary disease, etc).

CONCLUSION:

In this study, hair pull test was performed using guidelines that can fit our societal norms. Previously, hair washing was considered as an important factor in influencing the hair pull test positivity as it removes telogen hairs. However, in the results it was proven that neither hair washing nor hair brushing altered hair pull test results. We suggest, hair washing and hair brushing can be done any time before test rather than 4 to 5 days prior to the test which might be difficult for the patient. Participants with curly hair and telogen effluvium had significantly increased positivity in hair pull test. Hair style and hair treatment procedures did affect the hair pull test.

TABLE 1: Comparison of hair pull test results – before and after hair washing

	After hair washing				Total
	POSITIVE	NEGATIVE			
Before hair washing	POSITIVE	Count	5	11	16
		% within Before hair washing	31.3%	68.8%	100.0%
		% within After hair washing	50.0%	22.0%	26.7%
		% of Total	8.3%	18.3%	26.7%
	NEGATIVE	Count	5	39	44
		% within Before hair washing	11.4%	88.6%	100.0%
		% within After hair washing	50.0%	78.0%	73.3%
		% of Total	8.3%	65.0%	73.3%
Total	Count	10	50	60	
	% within Before hair washing	16.7%	83.3%	100.0%	
	% within After hair washing	100.0%	100.0%	100.0%	
	% of Total	16.7%	83.3%	100.0%	

TABLE 2: Comparison of hair pull test results – before and after hair brushing

			After hair washing		Total
			POSITIVE	NEGATIVE	
Before hair brushing	POSITIVE	Count	0	4	4
		% within Before hair brushing	0.0%	100.0%	100.0%
		% within After hair washing	0.0%	8.0%	6.7%
		% of Total	0.0%	6.7%	6.7%
	NEGATIVE	Count	10	46	56
		% within Before hair brushing	17.9%	82.1%	100.0%
		% within After hair washing	100.0%	92.0%	93.3%
		% of Total	16.7%	76.7%	93.3%
Total		Count	10	50	60
		% within Before hair brushing	16.7%	83.3%	100.0%
		% within After hair washing	100.0%	100.0%	100.0%
		% of Total	16.7%	83.3%	100.0%

TABLE 3: Comparison of hair pull test results with hair texture

			Hair type			Total
			Curly	Straight	Wavy	
Hair pull test	POSITIVE	Count	14	4	3	21
		% within Hair pull test	66.7%	19.0%	14.3%	100.0%
		% within Hair type	53.8%	19.0%	23.1%	35.0%
		% of Total	23.3%	6.7%	5.0%	35.0%
	NEGATIVE	Count	12	17	10	39
		% within Hair pull test	30.8%	43.6%	25.6%	100.0%
		% within Hair type	46.2%	81.0%	76.9%	65.0%
		% of Total	20.0%	28.3%	16.7%	65.0%
Total	Count		26	21	13	60
	% within Hair pull test		43.3%	35.0%	21.7%	100.0%
	% within Hair type		100.0%	100.0%	100.0 %	100.0%
	% of Total		43.3%	35.0%	21.7%	100.0%

REFERENCES:

1. Towersey L. Hair disorders. InnovAiT. 2010 Dec 3.
2. O'Donnell BP, Sperling LC, James WD. Loose anagen hair syndrome. International

journal of dermatology. 1992 Feb 1;31(2):107-9.
3. Olszewska M, Warszawik O, Rakowska A, Słowińska M, Rudnicka L. Methods of hair loss evaluation in patients with endocrine disorders. Endokrynologia Polska. 2011;62(I):29-34.
4. Shapiro J, Wiseman M, Lui H. Practical management of hair loss. Canadian Family Physician. 2000 Jul 1;46(7):1469-77.
5. Guarrera M, Semino MT, Rebora A. Quantitating hair loss in women: a critical approach. Dermatology. 1997;194(1):12-6.
6. McDonald KA, Shelley AJ, Colantonio S, Beecker J. Hair pull test: Evidence-based update and revision of guidelines. Journal of the American Academy of Dermatology. 2017 Mar 31;76(3):472-7.
7. Olsen EA, Bettencourt MS, Coté NL. The presence of loose anagen hairs obtained by hair pull in the normal population. InJournal of Investigative Dermatology Symposium Proceedings 1999 Dec 1 (Vol. 4, No. 3, pp. 258-260). Elsevier.