

# COMPARISON OF SCALP HAIR CHANGES ON THE FIRST AND FIFTH DAY OF NORMAL MENSTRUAL CYCLE IN YOUNG FEMALES

KHADIJA IQBAL<sup>1</sup>, AMENA RAHIM<sup>2</sup>, HAFZA AHMED<sup>3</sup>

## ABSTRACT

**OBJECTIVES:** To compare scalp hair changes on the first and fifth day of normal menstrual cycle in young females

**STUDY DESIGN:** A Cross sectional study

**PLACE & DURATION:** Islamic International Medical College over duration of nine months from 1<sup>st</sup> Jan 2013 –30<sup>th</sup> September 2013

**METHODOLOGY:** First and second year female medical students were involved in study. The first year 100 students were included in group A and 100 second year students were included in group B. Only females with regular cycles were included in study i.e. 5/30. In the group A the associated changes in hair were also noticed on the 5<sup>th</sup> day of the cycle and a pull test was performed on the same day. In the group B the associated changes in hair were noticed on the first day of the cycle and a pull test was performed on the same day. Percentages were calculated for different parameters.

**RESULTS:** Pull test was negative in 76% of the group A students. The hair were rough in 85% of students and 54% had splits in hair. 10% of students felt that hair were discolored and 60% of student noticed thinning of hair. In group B Pull test was negative in 86% of the students and the hair were rough in 45% of students. 50% had splits in hair, 5% of students felt that hair were discolored and 40% of student noticed thinning of hair.

**CONCLUSION:** The scalp hair show changes in color and texture on the first as well as fifth day of the menstrual cycle.

**KEY WORDS:** Menstrual Cycle, Hair, Hair Pull Test, Young Female

## INTRODUCTION

Menstrual cycles in females are not only associated with hormonal changes but also changes in various body systems. Some women experience episodes of vomiting, nausea and many other disorders<sup>1</sup>. In the recent years skin manifestations have also been seen in women ranging from thinning of hair to hair loss during the menstrual cycle. During menstrual cycle hormonal changes lead to hair changes, mood changes and headaches<sup>2</sup>. Every hair follicle undergoes phases of growth, resting and then returning to growth again<sup>3</sup>. In humans almost half of the hair are in growing phase<sup>4</sup>. Most of hair changes occur in resting phase<sup>5</sup>.

Loss of large group of hair follicles leads to bald spots. Baldness may be patchy or in some cases may be seen in form of hair loss over large frontal areas of scalp<sup>6</sup>. Telogen effluvium is loss as well as thinning of hair. In Telogen effluvium mostly the scalp hair are involved but in severe cases eyebrows may be affected<sup>7</sup>.

One of the causes for hair loss is stress<sup>8</sup>. Pre and post menstrual stress can also cause hair changes. Irregular periods do not lead

to hair loss, but they can lead to thinning of hair<sup>9</sup>. In polycystic ovarian syndrome changes in skin have also been reported<sup>10</sup>. More specifically hormonal imbalance can lead to excessive facial hair and hair on the chest, stomach and back<sup>11</sup>. Women complain that their hair were not smooth during menstrual cycles. Excessive sebum levels have also been reported<sup>12</sup>. There seems a clear association with hair changes and menstrual cycle but quite a few studies have been done to comment on this association. Keeping this in mind this study was conducted to see hair changes during menstrual cycle.

## METHODOLOGY

This cross sectional study was done in Islamic International Medical College. The duration of study was nine months from 1<sup>st</sup> Jan 2013 – 30<sup>th</sup> September 2013. Sampling technique was simple random.

First and second year female medical students were involved in study. The first year 100 students were included in group A and 100 second year students were included in group B. Only females with regular cycles were included in study i.e. 5/30. The students with skin or scalp disease were excluded.

In the group A the associated changes in hair were also noticed on the 5<sup>th</sup> day of the cycle and a pull test was performed on the same day. In the group B the associated changes in hair were noticed on the first day of the cycle and a pull test was performed on the same day. Percentages were calculated for different parameters.

Pull test was used to assess the loss of hair. One of the researchers acted as observer and counted the number of hair. The students were asked to take a bunch of hair between fingers and pull them gently. Normally about 4–8 hairs will come out. More than twenty hairs may indicate a more unusual period of hair loss and a positive pull test.

1. Associate Professor of Anatomy  
Al Nafees Medical College & Hospital,  
Isra University, Islamabad Campus
2. Assistant Professor of Biochemistry
3. Medical Student  
Islamic International Medical College Rawalpindi

### Corresponding to:

Khadija Iqbal  
Associate Professor of Anatomy  
Al Nafees Medical College & Hospital,  
Isra University, Islamabad Campus  
Email: khadijaiqbal1972@gmail.com

The splittants and thinness were assessed by taking the hair from the scalp of each participant and observing them under the microscope at 10x magnification.

The discoloration and roughness was estimated on gross examination.

TABLE - I: HAIR CHANGES IN MENSTRUAL CYCLE

Parameters	Gross Examination of Hair				
	Positive PULL TEST	Discoloration	Roughness	Splittants	Thinning of Hair
GROUP A n=100	45%	10%	85%	54%	60%
	45/100	10/100	85/100	54/100	60/100
GROUP B n=100	86%	5%	45%	20%	40%
	86/100	5/100	45/100	20/100	40/100

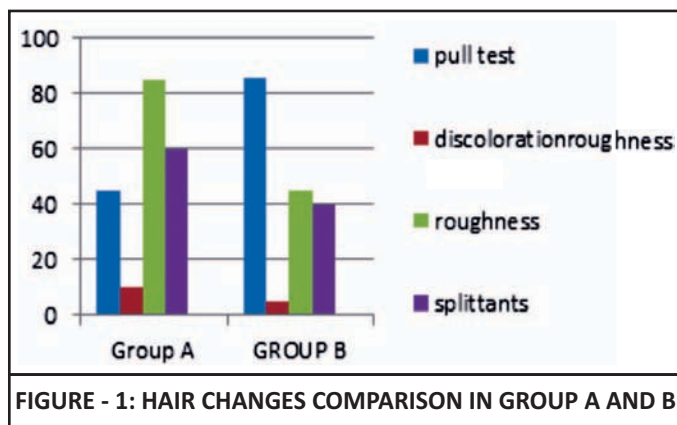


FIGURE - 1: HAIR CHANGES COMPARISON IN GROUP A AND B

RESULTS

Using SPSS 17 the data was analyzed. The relative percentages were calculated for each parameter. Pull test was positive in 45% of the students. When the students performed the pull test the observer counted the number of hair. In these 45 students more than 20 hair were observed in hands after pulling the hair (Fig-1).

When the hairs were examined under microscope and thinness of hair was noticed in 60% of students and 54% had splits in hair. The lower ends of hair were observed and the terminal end showed splittants.

On gross examination 10% of students felt that hair were discolored and 85% of student noticed thinning of hair (Fig- 1). In group B Pull test was positive in 86% of the students. The hair were rough in 45% of students and 5% of students felt that hair were discoloured.40% of student noticed thinning of hair and 20% had splits in hair (Fig-1).

DISCUSSION

The changes in menstrual cycle affect the activities of life in females and this may affect her behavior and outlook<sup>13</sup>. When a girl enters the puberty, action of female hormones lead to changes in skin, breast and body weight. <sup>14</sup>. Researchers have focused on all these parameters but a very important affect is hair changes which also affects the outlook and pesonality<sup>15</sup>. In this study it was seen that even with regular cycles 85% of young females had rough hair on first day and 45% had roughness on fifth day of the cycle. In past association of alopecia with

menstrual cycle has been studied and in one it was seen that significant hair loss was seen in frontal and occipital regions of scalp in 80% of the participants<sup>16</sup>. Our study focuses more on hair changes in normal menstrual cycles. The hair splittants were present in 54 % of students on the first and 20% had hair splitting on fifth day. The hair splittants were mostly seen at the lower ends of hair. In one study it was seen that hair fall had no association with menstrual cycle<sup>16,17</sup>. Also there was no discernible variation in sebum levels on the scalp or forehead during the menstrual cycle<sup>17</sup>.

In this study pull test was positive in 45% of cases on the first day 86% had positive pull test on fifth day of cycle. Loss of hair during reproductive cycles can be related to factors like anemia. In our country in puberty many causes of anemia have been reported and most common causes are deficient iron intake and malabsorption<sup>18</sup>. Low Hemoglobin concentration has also been observed in girls in pubertal ages<sup>19</sup>. However association between hair loss and low Hb levels has not been studied<sup>20</sup>.

In 10% of the females the hair were discolored in group A. This may be related to type and quality of shampoo used and how frequently they wash the hair.

The significance of positivity of pull test shows that hair change in menstrual cycle<sup>19, 21</sup>. The serum ferritin levels have been estimated in women with chronic diffuse telogen hair loss but role of iron supplementation therapy in the management of hair loss has yet not studied in detail<sup>20</sup>60% of students noticed that hairs started to thin out during the period of menstrual cycle while in group B 40% of students noticed that hairs started to thin out during fifth day of menstrual cycle. Again it can be more related to anemia. But the variation in estrogen and progesterone can also play a role in thinning<sup>21,22</sup>. Estrogen promotes hair growth by counteracting the testosterone that leads to female pattern hair loss and lengthens the hair growth phase<sup>20</sup>.

One important factor that relates to hair changes and levels of estrogen and progesterone is that during pregnancy hair become thicker and healthy with good ferritin levels<sup>23</sup>. After delivery there is loss of excess hair that the excess estrogen created<sup>20</sup>.Some of the scientists reported that parenteral administration of estrogenic hormones inhibited hair growth in

rats<sup>20,24</sup>. Others have reported that estrogens influence the activity of cells in the epidermis and in sebaceous glands<sup>21</sup>. In some other studies hair growth was less in female rats as compared to male rats<sup>20,16</sup>. So as we observed in this study the hair do undergo certain changes like increased fall and hair splitting were seen even in regular cycles.

### CONCLUSION

The results of this study showed that the scalp hair show changes in color and texture during the menstrual cycle. These changes may vary during the first and fifth day of the cycle.

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