

Kronik telogen effluviumlu hastaların vitamin B12 düzeyleri

Vitamin B12 levels in patients with chronic telogen effluvium.

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ÖZ

GİRİŞ ve AMAÇ: Saç dökülmesinin pek çok formunda bazı vitaminlerin önemli rol oynadığı iyi bilinmektedir. Fakat vitamin B12 (vit B12) nin saç dökülmesinin patogenezindeki rolü hala açık değildir. Bu çalışmada Kronik Telogen Efluvium (KTE) ile vit B12 düzeyleri arasındaki ilişkiyi değerlendirmeyi amaçladık.

YÖNTEM ve GEREÇLER: Dermatoloji polikliniğinde KTE tanısı alan hastalardan hasta grubu oluşturuldu. Kontrol grubu hiçbir sistemik ve dermatolojik hastalığı olmayan Vit B12 düzeyi check up polikliniğinde ölçülmüş olan bireylerden oluşturuldu. Her iki gruptaki bireyler için demografik özellikler ve vit B12 düzeyleri kaydedildi. İstatiksel analizler için SPSS 17 (Chicago, IL) paket programı kullanıldı.

BULGULAR: Çalışma grubunda 317 hasta ve kontrol grubunda 327 sağlıklı birey vardı. Her iki grup yaş ve cinsiyet dağılımı açısından istatistiksel olarak benzerdi. Ortalama vit B12 düzeyleri, hasta ve kontrol grupları için sırasıyla 345.72 ± 138.39 pg/ml (255.14 ± 102.13 pmol/l) ve 349.11 ± 110.14 pg/ml (257.11 ± 110.14 pmol/l) idi. Aradaki fark istatistiksel olarak anlamsızdı ($p > 0.05$). Fakat vit B12 eksikliği hastaların 38 (11.98%)'inde kontrol grubunun ise 22 (6.72%)'sinde vardı. Aradaki fark istatistiksel olarak anlamlıydı ($p < 0.05$).

TARTIŞMA ve SONUÇ: Vitamin B12 eksikliği oranı hasta grubunda belirgin derecede yüksek bulundu. Bizim sonuçlarımız, KTE ile vit B12 arasında bir ilişki olabileceğini gösteriyor.

Anahtar Kelimeler: Telogen effluvium, vitamin B12, saç kaybı

ABSTRACT

INTRODUCTION: It is well known that some vitamins play a significant role in many forms of hair loss. However, the effect of vitamin B12 (vit b12) in the pathogenesis of hair loss is still unclear. We aimed to evaluate the relationship between vit B12 levels and Chronic Telogen effluvium (CTE) in this study.

METHODS: Patient group was formed by the patients who had diagnosis of CTE in our dermatology outpatient clinic. The control group was formed by individuals who had no systemic and dermatologic disease and whose vit B12 levels were measured at the check-up polyclinic. The demographic characteristics and the levels of serum vit B12 levels of the individuals were recorded for both groups. Statistical analysis was performed using SPSS 17 (Chicago, IL) pack program.

RESULTS: There were 317 patients in the study group, 327 healthy individual in the control group. Both groups were statistically similar in terms of age and sex. Mean vit B12 levels of the patient and control group were 345.72 ± 138.39 pg/ml (255.14 ± 102.13 pmol/l) and 349.11 ± 110.14 pg/ml (257.11 ± 110.14 pmol/l), respectively. The difference was statistically insignificant ($p > 0.05$). But vit B12 deficiency was found in 38 (11.98%) of the patients and in 22 (6.72%) of the controls. The difference between groups was statistically significant.

DISCUSSION AND CONCLUSION: Vitamin B12 deficiency rate was found to be significantly higher in our patient group. Our results indicate that there may be a correlation between CTE and vit B12 levels.

Keywords: Telogen effluvium, vitamin B12, hair loss

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INTRODUCTION

Telogen effluvium, is first described by Kligman, is the most common cause of diffuse hair loss and it is known as a hair cycle abnormality.^{1,2,3} TE is divided into two groups according to the etiology; physiological and pathological. For example neonatal and postpartum TE is physiological and hair follicles are not affected by any other systemic disease. In pathological TE, hair follicles are metabolically affected and there is a systemic disorder that triggers it. High fever, chronic systemic diseases, anemia of severe iron deficiency and metabolic disorders such as liver failure, chronic renal failure, childbirth, surgical trauma, severe bleeding and emotional changes are known as triggering factors.⁴⁻⁶

TE can also be classified as acute TE and chronic TE. Acute TE usually occurs after an infection with high fever and there is a sudden onset of hair loss that is lasting less than 6 months.⁷ Chronic TE (CTE) was first described in 1996 as a primary idiopathic disease.⁸ This disease is characterized by loss of telogen hair and usually occurs in middle-aged women, without a triggering factor and lasting more than six months.⁹⁻¹⁰ Clinically, TE is easily distinguished from androgenic alopecia, cicatricial alopecia, alopecia areata because there is no scarring or atrophy and no significant hair loss in a particular region, such as in the central scalp region or frontal region.⁹ The incidence of CTE is reported to be 30-35% in different countries.⁹⁻¹⁰ After bone marrow, hair is known to be the fastest growing tissue in our body. For this reason, hair follicles need calories, proteins, trace elements and vitamins during hair growth and prolongation.¹¹⁻¹³

To our knowledge, there are limited number of studies investigating vit B12 levels in CTE patients and the results of them were different.¹⁴⁻¹⁸ At a molecular level, vitamin B12 is known to play a role in nucleic acid synthesis and so could affect hair follicle cycling or growth.¹⁹ We tried to determine the relationship between vitamin B12 and CTE, by comparing vitamin B12 levels of CTE patients with the control group.

MATERIALS AND METHODS

The study design was approved by the the Kocaeli Health Directorate and Hamidiye Ethics Committee of Health Sciences University. Patients that were diagnosed as CTE in dermatology outpatient clinics between January 2015 and April 2018 were included in the study.

Study group was created retrospectively from medical records of individuals with the diagnosis of CTE. The diagnosis of telogen effluvium was made based on the clinical appearance of the scalp and the history of the patients.⁹⁻¹⁰ Telogen effluvium patients that were having hair loss for more than six months and having no other known diseases and drug use that could cause it, were accepted as CTE and included in the study.

A control group was created retrospectively from medical records of individuals who visited other outpatient clinics mainly checkup polyclinic and had their vit B12 levels measured.

For both groups, individuals with a history of chronic diseases including renal or hepatic diseases, thyroid diseases, rheumatological diseases, metabolic diseases, malabsorption, vitamin D, folate, zinc deficiencies, iron deficiency anemia, type 1 diabetes mellitus or malignancies were excluded from the study. In addition individuals with a knowledge of any drug use such as multivitamin, corticosteroids and drugs affecting vit B12 levels, were also excluded. After retrospective examination of their medical records, 317 patients with CTE and 327 age and sex matched healthy controls, between the ages of 18-65 were found to be appropriate for our study. Data including vit B12 levels and demographic features of individuals were taken from their medical records

Levels of serum vit B12 were measured in our hospital's biochemistry laboratory and by ADVIA Centaur XP system. According to this system levels between 214-914 pg/ml (158675 pmol/l) accepted as normal. Statistical analysis Demographic features of groups were analyzed by using descriptive statistics. Serum vit B12 levels of patients and control groups were compared with crosstabs. A two-sided p-value < 0.05 was considered statistically significant. Statistical analysis was performed using SPSS 17 (Chicago, IL) pack program.

RESULTS

There were 317 patients in our patient group and age and sex matched 327 healthy individuals in our control group. In the patient group, female / male ratio was 300/17, whereas in the control group, it was 303/24. The mean age of the patient group was 30.52 ±10.49 years and the control group was 31.88±9.29 years and both groups were statistically similar in terms of age and sex (p>0.05).

Mean vit B12 levels of the patient and control group were 345.72±138.39 pg/ml (255.14±102.13 pmol/l) and 349.11±110.14 pg/ml (257.11±110.14

pmol/l) , respectively. The mean vit B12 levels was statistically similar (p> 0.05). The demographic characteristics and vit B12 levels of the patient and control group are shown in table 1 (**table 1**). Vitamin B12 levels was found to be lower than normal in 38 (11.98%) of the patients and in 22 (6.72%) of the controls. The difference between groups was statistically significant. In patient group, vit B12 levels were found to be higher than normal in 2 patients (**table 2**).

Table 1: The demographic characteristics and vit B12 levels of the patient and control group

	Patients	Controls	p
Number of individuals	317	327	-
Age (Mean±SD)	30.52 ±10.49	31.88±9.29	0.08
Female/male, n	300/17	303/24	0.3
B12 levels (pg/ml) (pmol/l)	345.72±138.39	349.11±110.14	0.73
Vit B12 deficiency rate (n/%)	255.14±102.13	257.64±81.28	
	38/11.98	22/6.72	0.02

Table 2: Distribution of groups according to vit B12 categories

Groups	Vit B12 categories			Total	p
	Normal*	Low**	High***		
Patient	277 (87.38%)	38 (11.98 %)	2 (0.6 %)	317	0.02
Control	305 (93.27 %)	22 (6.72 %)	0 (0 %)	327	
Total	582	60	2	644	

*214-914pm/ml or 158-675pmol/l
 **<214pm/ml or 158pmol/l
 ***>914pm/ml or 675pmol/l

DISCUSSION

Excessive telogen hair loss is a problem that is commonly seen by dermatologists in daily practice. In nearly 33% of cases there is no identified etiological reason.1-8 The need for some vitamins and trace elements for hair growth is not yet fully elucidated. However it is believed that chronic illnesses such as malabsorption, long-term parenteral nutrition, alcoholism, malignancies, cirrhosis, chronic renal failure, cystic fibrosis and dietary habits should be questioned in patients with diagnosis of TE. Because of high rate of mitosis, the

hair follicle needs energy from carbohydrates and proteins for regenerate. Lack of carbohydrates, proteins and vitamins, would trigger hair disease or would make the disease resistant to treatment. Iron, Cystine, Vitamin B6, Vitamin C, biotin and niacin are known to have effects on hair growth. Zinc, folic acid, Vitamin B12 and vitamin D are thought to have effects in hair growth and differentiation, but this relationship is not clear yet.14

This disease has been reported to occur in middle-aged women.9 The number of female patients in our study group was also very high. We thought that

women are more exposed to conditions that trigger hair loss because of their hormonal status changes during their life. We also thought that women are more likely to refer to the doctor because of their hair loss, because they give more importance to their appearance.

Patients suffering from hair loss, commonly apply to family physicians and pharmacists. Most often, they use various vitamins and nutritional supplements before they come to the dermatology clinic

Vit B12 is a cyanocobalamin complex and is abundantly found in animal-derived foods. After it is attached to intrinsic factor in the stomach, it is absorbed from the ileum. In the body, it plays a role in nucleic acid synthesis. Primary vit B12 deficiency is quite rare and occurs in vegetarians, alcoholics. Sekondary deficiency is more common and usually pernicious anemia seen due to intrinsic factor deficiency. Although evaluation of vit B12 levels are very common in routine screening of CTE patients, there are limited number of studies with different results, investigating the exact relationship between CTE and vit B12. However, there was no control group, in all of these studies.¹⁵⁻¹⁸ In a study reported by Avcı A et al. vit B12 deficiency reported only in 3.02% of TE patients.¹⁶ Similar with their results, Cheung et al. found vit B12 deficiency in 2.6% of TEpatients.¹⁵ Güler Özden et al.¹⁷ also found the rate of vit B12 deficiency as 2 (%). On the other hand in another study the vit B12 deficiency was found in 21.2 (%) of TE patients.¹⁸

In our study, vit B 12 deficiency was found in 11.98% of patients and when compared with healthy controls it was statistically significant. In addition there were two patients with high levels of vit B12. We thought that, as mentioned above, there may be an unrecorded history of vitamin and nutritional supplement usage in these patients.

To our knowledge, our study is the first case-control study. On the other hand the study had some limitations. Because it was retrospective, we could not evaluate some factors such as nutrition, alcohol usage, body mass index, genetic predisposition and socio-economic status of patients and controls. In addition, in medical records of patient and control groups, there was no history of chronic disease and drug usage that can affect the vit B12 levels, but

there is still a possibility of presence of unrecorded illnesses and medications for these individuals. In addition it is known that, holotranscobalamin and methylmalonic acid markers are more diagnostic for vit B12 deficiency¹⁸ but there was no informaiton about these parameters in medical records of both goups.

According to our study, even though mean vit B12 level were found to be similar to the control group, deficiency rate was found to be significantly higher in the patient group. So we thought that there may be a relation between CTE and Vit B12. However, to evluate the relation between vit B12 levels and CTE, there is a need for further prospective wider studies, including holotranscobalamin and methylmalonic acid markers.

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