

## Elevated Plasma Lipid Levels in Patients with Epidermoid Cysts

### Epidermoid Kisti Olan Hastalarda Artmış Plazma Lipid Düzeyleri

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19

#### Abstract

**Objective:** Epidermoid cysts are the most common type of skin cysts. We aimed to investigate whether there are any plasma lipid level differences in patients with epidermoid cysts.

**Material and Methods:** Three-hundred forty-two patients (147 females and 195 males) were included. Patients' data (including plasma lipid levels) were retrospectively evaluated, and the results were compared with the average plasma lipid levels of the Turkish population.

**Results:** A significant increase was found in plasma low-density lipoprotein (LDL)-cholesterol and triglyceride levels ( $p<0.05$ ) in patients with epidermoid cysts.

**Conclusion:** Because the presence of elevated LDL-cholesterol and triglyceride levels may be accepted as a significant risk factor for coronary heart disease, we claim that the risk of coronary heart disease is increased in patients with epidermoid cysts. Further, high plasma lipid levels may be a result of sebaceous cysts or may be an effective mechanism of sebaceous cyst formation. Larger series of patients should be analyzed to evaluate this relation.

**Keywords:** Epidermoid cysts, coronary heart disease, plasma lipid levels

#### Öz

**Amaç:** Epidermoid kist deri kistleri içerisinde en sık görülen tiptir. Bu çalışmada epidermoid kisti olan hastalarda plazma lipid seviyelerinde herhangi bir değişiklik olup olmadığını araştırmayı amaçladık.

**Gereç ve Yöntemler:** Çalışmaya 342 (K:147, E:195) hasta dahil edildi. Hastalara ait bilgiler (plazma lipid düzeylerini içeren) değerlendirildi ve Türk toplumundaki ortalama plazma lipid düzeyleri ile karşılaştırıldı.

**Bulgular:** Epidermoid kisti olan hastalarda plazma LDL-kolesterol ve trigliserid düzeyleri istatistiksel olarak anlamlı şekilde artmış bulundu ( $p<0,05$ ).

**Sonuç:** Artmış LDL-kolesterol ve trigliserid düzeyleri koroner kalp hastalığı için belirgin bir risk faktörü olarak kabul edilebildiğinden, epidermoid kisti olan hastalarda artmış koroner kalp hastalığı riski iddia edilebilir. Yine yüksek plazma lipid düzeyleri sebace kistin sonucu veya sebace kist gelişimi için etkili bir mekanizma olabilir. Bu ilişkiyi değerlendirmek için daha geniş hasta serileri analiz edilmelidir.

**Anahtar Sözcükler:** Epidermoid kist, koroner kalp hastalığı, plazma lipid düzeyleri

#### INTRODUCTION

Epidermoid cysts are the most common type of skin cysts.<sup>1</sup> Several etiologic factors have been implicated, including epidermal element implantation, epidermal rest sequestration, eccrine duct or pilosebaceous unit occlusion, and human papillomavirus infection.<sup>1,2</sup> The cyst wall is stratified squamous epithelium and contains keratin and lipid-rich debris. These lipids are ceramides (41%), cholesterol (27%), cholesteryl esters (10%), fatty acids (9%), cholesteryl sulfate (1.9%), ceramide esters (3.8%), sterol diesters (0.9%), and other lipids (6.4).<sup>3</sup> Because of this high lipid content, we hypothesized that there is a relationship between plasma lipid levels and sebaceous cyst formation.

Bu araştırma 5. Balkan Plastik ReKonstrüktif ve Estetik Cerrahi Kongresi'nde Mayıs 22-26, 2007 tarihinde İzmir, Türkiye'de ve 29. Ulusal Türk Plastik Rekonstrüktif ve Estetik Cerrahi Kongresi'nde Ekim 17-20, 2007 tarihinde Eskişehir, Türkiye'de sunulmuştur.

This study was presented at 5<sup>th</sup> Congress of the Balkan Association for Plastic, Reconstructive Aesthetic Surgery between May 22 to 26, 2007 in İzmir, Turkey and 29<sup>th</sup> National Congress of Plastic Reconstructive and Aesthetic Surgery between October 17 to 20, 2007 in Eskişehir, Turkey

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**Received/Geliş Tarihi:** 13.10.2014

**Accepted/Kabul Tarihi:** 10.12.2014

We aimed to investigate whether there are any differences in plasma lipid levels in patients with epidermoid cysts.

## MATERIAL AND METHODS

Three-hundred forty-two patients (147 females and 195 males) were included. Patients' data were retrospectively evaluated. The evaluation parameters were as follows: age; gender; existing diabetes or coronary heart disease; and plasma total cholesterol, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol and triglyceride levels. The results were compared with the average plasma lipid levels of the Turkish population.<sup>4,5</sup>

## Statistical Analysis

Pearson-Fisher  $\chi^2$  and Student's *t* tests were performed using SPSS for Windows 11.0 software (Statistical Package for the Social Sciences Inc; Chicago, IL, USA).

## RESULTS

The mean age was 42 (20–78) years and the male:female ratio was 1.2:1. There was no statistically significant difference between male and female patients ( $p>0.05$ ). Two percent of the patients had diabetes mellitus and 0.5% had coronary heart diseases, but there was no statistically significant difference found when compared with the general population rates ( $p>0.05$ ). However, there were no statistically significant difference found in the plasma total cholesterol and HDL-cholesterol levels; a significant increase was found in plasma LDL-cholesterol and triglyceride levels ( $p<0.05$ ) (Figure 1).

## DISCUSSION

Epidermoid cysts are benign lesions; there are no published data regarding disease relation, except very rare cases of various associated malignancies.<sup>6</sup> Their etiology is uncertain. Although the relation between lipid levels and epidermoid cysts is a common question raised by patients, to our knowledge, the literature lacks reports on any relation between plasma lipid levels and epidermoid cysts. Hyperlipidemia and hyperlipoproteinemia involve abnormally elevated levels of any or all lipids and/or lipoproteins in the blood. It is the most common form of dyslipidemia. Hyperlipidemias are also classified according to the types of lipids whose levels are elevated, i.e., hypercholesterolemia, hypertriglyceridemia, or both in combined hyperlipidemia. The most common dermatologic manifestations of dyslipidemia are xanthelasmata and xanthomas. These firm and non-tender cutaneous deposits of cholesteryl ester-enriched foam cells are most commonly observed with high levels of LDL. Because of the hereditary component, they may indicate high blood levels of cholesterol. When there is no family history of xanthelasmata, they usually indicate high cholesterol levels and may correlate with a risk of atherosclerotic disease.<sup>7</sup> With this knowledge, epidermoid cysts may have a similar etiology. In this study, we found that patients with epidermoid cysts have increased LDL-cholesterol and triglyceride levels when compared with the average levels of the Turkish population.

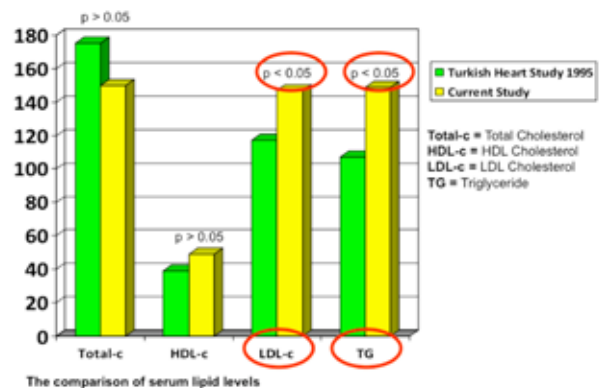


**Figure 1.** Comparison with the average plasma lipid levels of the Turkish population

## CONCLUSION

Because the presence of low HDL-cholesterol or elevated LDL-cholesterol and triglyceride levels may be accepted as a significant risk factor for coronary heart disease, we claim that the risk of coronary heart disease is increased in patients with epidermoid cysts. Therefore, these patients may be further investigated depending on the presence of any possible coronary heart disease. Further, high plasma lipid levels may be a result of sebaceous cysts or may be an effective mechanism of sebaceous cyst formation. Larger series of patients should be analyzed to evaluate this relation.

**Ethics Committee Approval:** Data of the study were collected retrospectively and there were no extra procedure on patients. For that reasons there was no need for ethics committee approval.

**Informed Consent:** Data of the study were collected retrospectively and there were no extra procedure on patients. For that reasons there was no need for informed consent.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - T.E.; Design - T.E., S.Ö.; Supervision - S.Ö., Ş.U.; Resources - T.E., S.Ö., Ş.U., O.Ç.; Materials - T.E., S.Ö., Ş.U., O.Ç.; Data Collection and/or Processing - T.E., Ş.U.; Analysis and/or Interpretation - T.E., Ş.U.; Literature Search - T.E., S.Ö., Ş.U., O.Ç.; Writing Manuscript - T.E., S.Ö., Ş.U., O.Ç.; Critical Review - T.E., S.Ö., Ş.U., O.Ç.; Other - T.E., S.Ö., Ş.U., O.Ç.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study has received no financial support.

**Etik Komite Onayı:** Veriler retrospektif olarak hasta bilgileri taranarak toplandığından ve hastaya ayrı bir işlem uygulanmadığından dolayı etik onay alınmasına gerek duyulmamıştır.

**Hasta Onamı:** Veriler retrospektif olarak hasta bilgileri taranarak toplandığından ve hastaya ayrı bir işlem uygulanmadığından dolayı hasta onamı alınmasına gerek duyulmamıştır.

**Hakem Değerlendirmesi:** Dış bağımsız.

**Yazar Katkıları:** Fikir - T.E.; Tasarım - T.E., S.Ö.; Denetleme - S.Ö., Ş.U.; Kaynaklar - T.E., S.Ö., Ş.U., O.Ç.; Malzemeler - T.E., S.Ö., Ş.U., O.Ç.; Veri Toplanması ve/veya İşlemesi - T.E., Ş.U.; Analiz ve/veya Yorum - T.E., Ş.U.; Literatür Taraması - T.E., S.Ö., Ş.U., O.Ç.; Yazıyı Yazan - T.E., S.Ö., Ş.U., O.Ç.; Eleştirel İnceleme - T.E., S.Ö., Ş.U., O.Ç.; Diğer - T.E., S.Ö., Ş.U., O.Ç.

**Çıkar Çatışması:** Yazarlar çıkar çatışması bildirmemişlerdir.

**Finansal Destek:** Yazarlar bu çalışma için finansal destek almadıklarını beyan etmişlerdir.

## REFERENCES

1. Sobanko JF, Dagum AB, Davis IC, Kriegel DA. Soft tissue tumors of the hand. 1. Benign. Dermatol Surg 2007; 33(6): 651-67. [\[CrossRef\]](#)
2. Luba MC, Bangs SA, Mohler AM, Stulberg DL. Common benign skin tumors. Am Fam Physician 2003; 67(4): 729-738.
3. Wertz PW, Swartzendruber DC, Madison KC, Downing DT. Composition and morphology of epidermal cyst lipids. J Invest Dermatol 1987; 89(4): 419-25. [\[CrossRef\]](#)
4. Mahley RW, Palaoğlu KE, Atak Z, Dawson-Pepin J, Langlois AM, Cheung V, Onat H, Fulks P, Mahley LL, Vakar F. Turkish Heart Study: lipids, lipoproteins, and apolipoproteins. J Lipid Res 1995; 36(4): 839-59.
5. Onat A. Lipids, lipoproteins and apolipoproteins among turks, and impact on coronary heart disease. Anadolu Kardiyol Derg 2004; 4(3): 236-45.
6. Jehle KS, Shakir AJ, Sayegh ME. Squamous cell carcinoma arising in an epidermoid cyst. Br J Hosp Med (Lond) 2007; 68(8): 446. [\[CrossRef\]](#)
7. Miller M, Vogel RA. Clinical signs and syndromes associated with premature coronary artery disease. In: The Practice of Coronary Disease Prevention. Baltimore: Md: Williams & Wilkins; 1996: 24-35.