

■ Original Article

A cross-sectional study: Is there any effects of cholesterol ratios on acute ischemic stroke severity?

Kesitsel bir araştırma: Kolesterol oranlarının akut iskemik inme şiddeti üzerine etkisi var mı?

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Abstract

Aim: The aim of prevention of stroke and stroke related complications is to control and eliminate modifiable risk factors. Since hypercholesterolemia is one of these risk factors, we aimed to compare the low density lipoprotein cholesterol (LDL-C) / high density lipoprotein cholesterol (HDL-C) and total cholesterol / HDL-C ratios with NIHSS scores and to evaluate the effects of these ratios on the severity of stroke.

Material and Methods: This retrospective cross-sectional study included 207 patients with ischemic stroke. Demographic characteristics, total cholesterol, triglycerides, LDL-C and HDL-C levels of patients who did not use any lipid-lowering drug and NIHSS scores were recorded in a data collection form.

The effects of LDL-C / HDL-C and total cholesterol / HDL-C ratios on NIHSS scores were investigated.

Results: The mean age of the patients was 69.3 years. The mean LDL-C / HDL-C ratio was 2.93 and the total cholesterol / HDL-C ratio was 4.68. The mean score of NIHSS was 7.05 at admission. No statistically significant difference or correlation was observed between all these parameters.

Conclusion: There was no statistically significant relationship between HDL-C / LDL-C and total cholesterol / HDL-C ratios and NIHSS scores. Considering the risk of ischemic stroke, prospective multicentric studies are needed to find proper parameters.

Keywords: ischemic stroke, HDL-C, LDL-C, NIHSS

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Öz

Amaç: İnme ve inme ile ilgili komplikasyonların önlenmesinin amacı, değiştirilebilir risk faktörlerini kontrol etmek ve ortadan kaldırmaktır. Hiperkolesterolemi bu risk faktörlerinden biri olduğundan, düşük dansiteli lipoprotein kolesterol (LDL-C) / yüksek dansiteli lipoprotein kolesterol (HDL-C) ve total kolesterol / HDL-C oranları ile NIHSS puanlarını karşılaştırarak, bu oranların inme ciddiyetine etkilerini değerlendirmeyi amaçladık.

Gereç ve Yöntemler: Bu retrospektif kesitsel araştırma iskemik inmeli 207 hastayı içermektedir. Hastaların demografik özellikleri, total kolesterol, trigliserit, herhangi bir lipid düşürücü ilaç kullanmayan hastaların LDL-C ve HDL-C düzeyleri ve NIHSS skorları bir veri toplama formunda kaydedildi. LDL-C / HDL-C ve total kolesterol / HDL-C oranlarının NIHSS puanlarına etkisi araştırıldı.

Bulgular: Hastaların yaş ortalaması 69.3 idi. Tüm bu hastalar arasında ortalama LDL-C / HDL-C oranı 2.93 ve total kolesterol / HDL-C oranı 4.68 idi. Başvuru sırasında NIHSS'nin ortalama puanı 7.05 idi. Tüm bu parametreler arasında istatistiksel olarak anlamlı bir fark veya korelasyon gözlenmedi.

Sonuç: Başvuru sırasında HDL-C / LDL-C ile total kolesterol / HDL-C oranları ve NIHSS skorları arasında istatistiksel olarak anlamlı bir ilişki gözlenmedi. İskemik inme risklerini göz önünde bulundurarak uygun parametreleri bulmak için ileriye dönük çok merkezli çalışmalara ihtiyaç vardır.

Anahtar kelimeler: iskemik inme; HDL-C; LDL-C; NIHSS

Introduction

Although there have been significant improvements in the management of cerebrovascular disease in recent years, ischemic stroke is still one of the leading causes of death worldwide. Control of risk factors that can be modified in preventing stroke and stroke-related complications is very important [1]. Although the effects of dyslipidemia on stroke are controversial, the association of high low-density lipoprotein cholesterol (LDL-C) or low high-density lipoprotein cholesterol (HDL-C) levels with ischemic stroke has been suggested strongly [2-5]. Statin therapy has been shown to lower LDL-C and prevent recurrent ischemic stroke and post-stroke cardiovascular events [6]. However, the effect of HDL-C on post-stroke outcome is unclear. HDL-C is a lipoprotein that transports cholesterol back from the peripheral tissues to the liver. In addition to its role in transporting cholesterol, HDL-C directly protects against atherosclerosis with its antioxidant, anti-inflammatory and antithrombotic effects [7-9]. Because of the strong association of high LDL-C and low HDL-C with cardiovascular events, we hypothesized that LDL-C / HDL-C and total cholesterol / HDL-C ratios may have an effect on stroke severity.

We aimed to investigate whether LDL-C / HDL-C and total cholesterol / HDL-C ratios have an impact on the severity of stroke patients, correlating with National Institutes of Health Stroke Scale (NIHSS) scores [10].

Material and Methods

Study subjects

This study is a retrospective cross-sectional observational cohort study. Patients admitted to the emergency department between January 2011 and June 2017 were included in the study. The local ethics committee approved the study. Stroke was diagnosed according to the criteria of World Health Organization [11]. The inclusion criteria were as following:

i) Being 18 years old or older ii) Not using lipid-lowering medication prior to admission to the emergency iii) Having acute ischemic stroke. Transient ischemic attack, hemorrhagic stroke and subarachnoid hemorrhage were not included in the study. Patients with ≥ 400 mg / dL triglyceride levels were excluded from the study The study was performed in accordance with the Declaration of Helsinki's Good Clinical Practice guidelines and approved by the local ethical committee. All subjects provided written informed consent before participation in the study.

Clinical data

Within the template prepared before the study; demographic data of the patients, risk factors for atherosclerosis, medication used before the admission to the emergency room, laboratory tests and follow-up information were collected. In order to prevent the effects of lipid-lowering drugs (fibrate, statin, ezetimibe, nicotinic acid and cholestyramine alone or in combination) on the results of the study, patients using



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