Bir Bomba Fabrikası Çalışanlarındaki Total Kolesterol Düzeyleri ile Depresif Durum Arasındaki İlişki

The Relationship Between Depressive Status and Total Cholesterol Levels in a Bomb Plant Workers

Bomba Fabrikası Çalışanlarında Depresyon ve Kolesterol Düzeyleri / Depression and Cholesterol Levels in Bomb Plant Workers

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Özet

Amaç

Düşük kolesterol düzeyleri ile agresif davranışlar, depresyon ve intihar vakaları arasındaki ilişkiyi gösteren pek çok çalışma bulunmaktadır.

Gereç ve Yöntemler

Bu çalışmanın amacı ise, bir bomba fabrikasında çalışan 77 erkek işçi ve 80 ofis çalışanındaki depresif durum ile serum total kolesterol düzeyleri arasında bir korelasyon olup olmadığını ortaya koymaktır. Deneklerin depresif durumları Beck Depresyon Derecelendirme Ölçeği ve Zung Kendi Kendine Derecelendirme Depresyon Ölçeği kullanılarak değerlendirilmiştir.

Bulgular

Ofis çalışanlarına göre bomba fabrikası işçilerinde depresyon skorlamasının oldukça yüksek ve total kolesterol düzeylerinin anlamlı bir şekilde düşük olduğu bulunmuştur. Her iki çeşit personelde kolesterol düzeyleri hem Beck hem de Zung ölçeklerine göre bulunan depresyon skorlaması ile negatif korelasyon göstermekteydi. Orta derecede ve ağır depresyon semptomları gösteren bomba fabrikası işçilerinin total kolesterol düzeyleri ise normal ve hafif depresyon vakalarına göre anlamlı derecede düşük bulundu.

Sonuç

Bu veriler, düşük serum total kolesterol düzeylerinin depresif durumun artması riski ile bir ilişkisinin bulunduğunu göstermektedir.

Anahtar Kelimeler

Depresyon, Kolesterol, Bomba Fabrikası.

Abstract

Aim

There is significant amount of evidence linking low cholesterol levels to aggressive behaviors, depression and suicide.

Material and Methods

The objective of this study was to determine whether a correlation exists between serum total cholesterol levels and depressive state in 77 male workers labouring in a bomb plant and in 80 male office personnel. Depressive statuses of the subjects were determined by using Beck Depression Rating Scale and Zung Self-Rating Depression Scale.

Results

Depression scores were significantly higher and total cholesterol levels were significantly lower in bomb factory workers than that of office staff. In both types of workers, cholesterol levels were negatively correlated with depression scores according to both Beck and Zung scales. Total cholesterol levels of bomb factory workers with moderate and severe depression symptoms were significantly lower when compared with normal and mild depression.

Conclusion

These data indicate that low serum total cholesterol level is associated with increased risk of depressive state.

Keywords

Depression, Cholesterol, Bomb Plant.

DOI: 10.4328/JCAM.10.1.14 **Received:** 02.09.2009 **Accepted:** 15.10.2009 **Printed:** 01.01.2010 J.Clin.Anal.Med. 2010;1.1:21-25

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Introduction

Despite the fact that most people are worried about having increased cholesterol levels and the medical establishment continues to provide the suppression of cholesterol levels to abnormal low levels, it is not widely known that there is a significant amount of evidence linking low cholesterol levels to aggressive behaviors and depression [1-6]. However, many contradictive results have also been reported recently [7-15]. Therefore, the association between low or lowered cholesterol and aggressive behaviours and depression remains controversial. The aim of the present study was to determine the level of total cholesterol and possible depression in a group of male workers labouring in a bomb plant, who are considered to be under the risk for the development of some degree of depression, and in a group of male official personnel, all were otherwise known to be good in health, and whether low cholesterol level can be a risk factor for the development of depression in these subjects.

Material and Methods

This study was performed on 77 male workers (mean age 35 years; range 22-47 years) labouring in the bomb plant department of Kırıkkale Bomb Factory and on 80 official male personnel (mean age 36 yr; range 21-46 yr), as the control group, who were all on check-up in Hospital of Kirikkale Faculty of Medicine. It should also be noted that there had been an explosion in the mentioned Factory on 3rd July 1997, and 208 persons within the affected area were injured. These control groups were selected from the official employees who work at a governmental institution other than bomb plant. Thus, this group was not under threat of a bomb factory accidental explosion due to physical proximity. Subjects who had systemic disease or were taking any medication that affected lipid metabolism and mood were not included into the study. Control subjects were both from the same cultural and ethnical background and both social and economical statuses of controls were also similar with those of workers. Prior to the study, the aim of the study was explained to the subjects and informed consent was obtained from each individual. Beck Depression Rating Scale and Zung Self-Rating Depression Scale, which were modified for our country, were applied to all subjects included into the study [16-18]. Subjects were subgrouped regarding the depression levels based on the Beck's score as follows: Normal 0-8, depression symptoms 9-21, and clinical depression 22 and over. Subjects were also subgrouped based on Zung's score as follows: Normal 0-49, mild depression 50-59, moderate depression 60-69, severe depression 70 and over. Blood samples were collected in the morning after a 12-hour fasting, and the levels of total cholesterol were measured in sera on Olympus AU600 auto analyzer using spectrophotometric technique.

Data obtained were analyzed by using SPSS 9.0 software program and variables were compared with chi-square and two-tailed t-tests. Relationships between variables were tested by linear regression analysis. Statistical significance was assumed for $P<0.05$. Data were reported as the mean ± SD.

Results

There was no significant difference in age between two groups ($P>0.05$). There was a strong correlation between Beck and Zung depression scores in all subjects included into the study ($r= 0.693$; $p<0.001$). Total cholesterol levels and mean depression scores in workers and official personnel are presented in Table 1. Total cholesterol levels of the bomb factory workers were found significantly lower than those of the official personnel (Table 1). Mean scores of depression according to both Beck and Zung depression scales were significantly higher in factory workers when compared to official personnel (Figure 1).

Beck and Zung depression scores negatively correlated with total cholesterol levels in factory workers ($r = -0.373$, $P = 0.001$ and $r = -0.468$, $P = 0.000$, re-

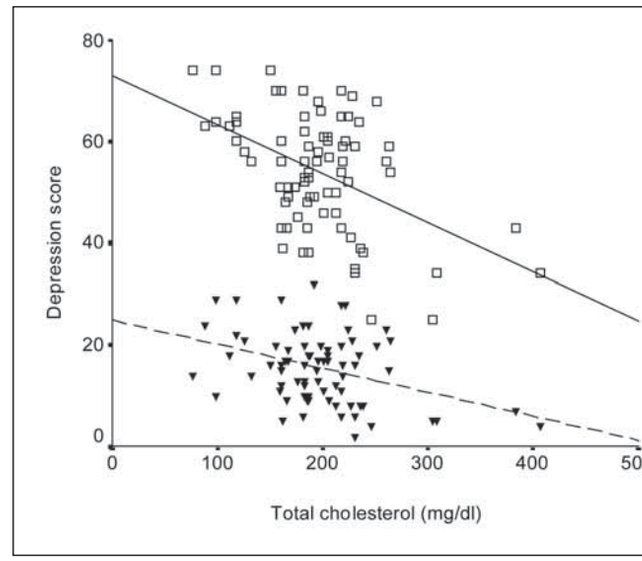


Figure 1. Depression scores according to Beck (▾) and Zung (□) depression scales in relation to total cholesterol levels in men labouring in a bomb plant.

Table 1. Total cholesterol levels and depression scores of the bomb factory workers and official personnel.

	Bomb factory workers n = 77 Mean ± SD	Official personnel n = 80 Mean ± SD	P value
Total cholesterol (mg/dl)	196 ± 56	224 ± 73	0.008
Beck- depression score	16 ± 7	10 ± 5	0.000
Zung - depression score	54 ± 11	47 ± 10	0.000

Table 2. Total cholesterol levels of the factory workers and official personnel in each depression level according to Beck and Zung depression scales

	Total cholesterol (mg/dl)			
	Factory workers		Official workers	
	n	Mean ± SD	n	Mean ± SD
Zung-depression level				
Normal	25	222 ± 65	47	237 ± 81
Mild	27	199 ± 35	29	216 ± 53
Moderate	18	174 ± 52	4	127 ± 21
Severe	7	148 ± 48		
Df= 83, F= 6.4, p = 0.001				
Beck-depression level				
Normal	14	256 ± 71	35	242 ± 73
Depression symptoms	48	186 ± 38	45	210 ± 72
Clinical depression	15	172 ± 53		

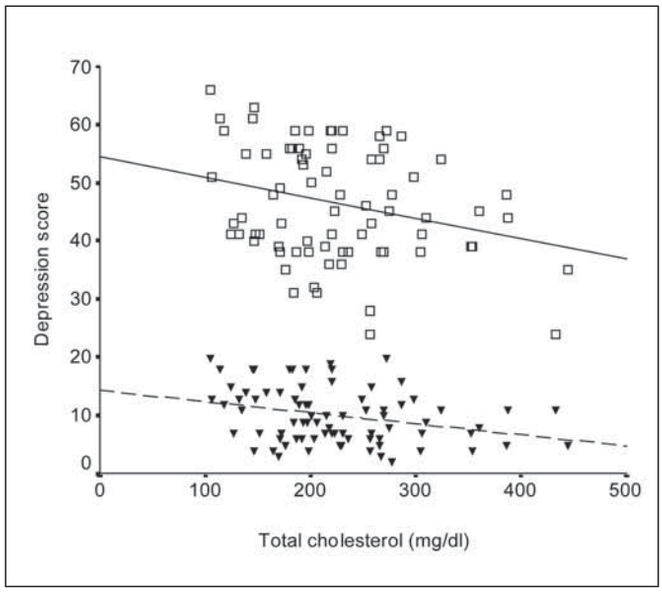


Figure 2. Depression scores according to Beck (▾) and Zung (□) depression scales in relation to total cholesterol levels in men working as official personnel

spectively) and also in official personnel (r = -0.267, p = 0.016 and r = -0.298, p = 0.007, respectively) (Figure 2).

Table 2 shows distribution of the both groups of subjects in subgroups determined by their scores according to both depression scales. We used a 2-way ANOVA with group based on profession (factory workers us official) and depression level based on scores from Zung scale (none, mild, moderate, severe). This had revealed a significant main effect for being workers at bomb plant, (F=6.4, df=83, p < 0.05.) However, depression level had no effect on cholesterol levels. In factory workers, when the subgroups determined by the scores according to Beck depression scale were compared, total cholesterol levels of normal subjects were found to be significantly higher than those of the subjects with depressive symptoms (n=48, df=60, t=2,7, p< 0.001) and subjects with clinical depression (n=15, df=27, t=3.1, p<0.001) while latter two subgroups were not different from each other in their cholesterol levels (df=61, t=3.9, p>0.05). When the subgroups determined by the scores according to Zung depression scale were compared, total cholesterol levels in normal subjects were found not to be different from subjects with mild depression (p>0.05), but to be significantly higher from those of the subjects with medium and severe depression (p = 0.019 and p = 0.007, respectively). In the group of official personnel, according to Beck depression scale, total cholesterol levels of the normal subjects (n=35) were significantly higher than the subjects with depressive symptoms (n=45, df=78, t=-2.55, p<0.05). According to Zung depression scale total cholesterol levels in normal subjects were not different from those of the subjects with mild depression (p= 0.392), but higher than those of the subjects with moderate depression (p= 0.01). In the group of official personnel, nobody was determined to be clinically or severely depressive state.

Discussion

In the present study, bomb factory workers were found to be at significantly higher risk for the development of some degree of depression in comparison with official personnel. This is important since even very low levels of depression symptoms can affect the working request and cause hesitation during the work and decrease in working efficiency. Also, in the present study, total cholesterol levels were found to be significantly lower in the factory workers and correlated negatively with depression scores, suggesting that low cholesterol level is a risk factor for development of depression. An association between dietary cholesterol and central serotoninergic activity and social behavior was demonstrated in monkeys [19]. It is possible that low cholesterol level changes neuron membrane fluidity, thus, increases presynaptic seratonin reuptake and decreases postsynaptic seratonin activity and triggers depression [20]. It was also shown that serotonin levels are also reduced as well as cholesterol levels in men with depressive symptoms suggesting that cholesterol levels can affect the activity of serotonin, a brain neurotransmitter implicated in the regulation of mood [4,21]. There are significant amount of studies reporting that low cholesterol level had negative effects on pyschological status and had associations with aggressive behaviors and depression [1,3,22-30]. Some investigators examined the correlation between low serum total cholesterol and deaths from suicide and found that those with lower total cholesterol concentration had more risk of committing suicide than those with higher cholesterol levels [26, 31-35]. Although medical establishment continues to provide the suppression of cholesterol levels to abnormal low levels to decrease cardiac morbidity and mortality, increase in suicide risk and number of deaths caused by violence attitudes appeared because of reduction in lipid levels were suggested to lower the success of total mortality reduction [12, 31,36,37]. In contrast to earlier studies, recent large trials of statins did not show an increase in suicide mortality [7,8,38]. But further studies are warranted to conclude the possible relationship between low or lowered serum cholesterol and suicidal behavior.

In conclusion, low serum total cholesterol level seems to be associated with an increased risk of depressive state. Periodical measurements of serum total cholesterol level especially for the groups of subjects who are relatively at higher risk for developing some degree of depression should be performed and a low level be taken into consideration as one of the risk factors.

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