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Karpal Tünel Sendromunda Crp / Albumin Oranının Rolü

The Role of Crp / Albumin Ratio in the Carpal Tunnel Syndrome

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ÖZ

Amaç: Karpal tünel sendromu, patogenezi ve doğal seyri tam olarak anlaşılamayan en yaygın mononöropati nedenidir.

Gereç ve Yöntemler: Bu retrospektif çalışmada KTS tanısı alan hastalarda evreye göre serum C-reaktif protein (CRP) / albümin oranını belirleyerek inflamasyon ve oksidatif stresin etiyopatogenezdeki rolü hakkında veri toplamayı ve bu oranın hastalığın ilerlemesi üzerindeki olası etkilerini belirlemeyi amaçladık. EMG polikliniğimize 2019 yılının son altı ayında KTS ön tanısıyla başvuran 18-65 yaş arası hastaların kayıtları toplandı. Nörolojik muayene ve EMG sonuçlarına göre 50 kontrol ve 50 KTS hasta kaydı toplandı.

Bulgular: EMG sonucuna göre iki taraflı orta KTS 12'sinde, tek taraflı orta KTS 10'unda, tek taraflı şiddetli KTS 15'inde, iki taraflı şiddetli KTS 10'unda ve iki taraflı hafif KTS 3'ünde vardı. Kontrol grubu ve KTS evreleri arasında CRP, albümin ve CRP / albümin oranı istatistiksel olarak anlamlı bulunmadı.

Sonuç: Hastalarımızda akut KTS olmadığı için subakut-kronik süreçte CRP / albümin oranı normale dönebilir. Bu nedenle tedavi seçiminde, subakut ve kronik süreçte antiinflamatuvar özelliklerden çok analjezik özelliklere sahip analjezikler seçilebilir. Akut süreçteki hasta sayısı artırılarak bu fikir desteklenebilir.

Anahtar Kelimeler: CRP; albümin; karpal tünel sendromu

ABSTRACT

Aim: Carpal Tunnel Syndrome is the most common cause of mononeuropathy, the pathogenesis and natural course of which has not been fully understood.

Materials and Methods: In this retrospective study, we aimed to collect data on the role of inflammation and oxidative stress in etiopathogenesis by determining the serum C-reactive protein (CRP) / albumin ratio according to the stage of patients with a CT diagnosis and to determine the possible effects of this ratio on the progression of the disease. Records of patients aged 18-65 who were admitted to our EMG outpatient clinic with a pre-diagnosis of CTS in the last six months of 2019 were collected. According to the neurological examination and EMG results, 50 control and 50 CTS patient records were collected.

Results: According to the EMG result, bilateral moderate CTS in 12, unilateral moderate CTS in 10, unilateral severe CTS in 15, bilateral severe CTS in 10, and bilateral mild CTS in 3. CRP, albumin and CRP / albumin ratio between the control group and stages of CTS were not statistically significant.

Conclusion: CRP / albumin ratio may return to normal in the subacute-chronic process since our patients don't have acute CTS. Therefore, in the choice of treatment, analgesics with more analgesic properties rather than anti-inflammatory properties can be selected in the subacute and chronic process. This idea can be supported by increasing the number of patients in the acute process.

Keywords: CRP; albumin; carpal tunnel syndrome

INTRODUCTION

Carpal tunnel syndrome (CTS), which is caused by trapping the median nerve at the wrist level in the carpal tunnel, is the most common cause of mononeuropathy. Generally, CTS is idiopathic and it is more common in women (50-60% are bilateral). Diagnosis in CTS is based on clinical symptoms, physical examination findings, and electrophysiological confirmation of these findings. Electrophysiological tests are useful in supporting the diagnosis of CTS, determining the level of trapping and the severity of the median nerve compression. It can occur during the course of diseases such as diabetes, rheumatoid arthritis, hypothyroidism, and during pregnancy. In the idiopathic form degeneration, vascular sclerosis, edema and collagen breakdown occur in the synovial membrane of the flexor tendon, but nonsteroidal anti-inflammatory agents are used primarily in the treatment since the pathogenesis is not fully cleared. The compression of the median nerve occurs very frequently in the carpal tunnel. Microtraumas in the duct area and any pathological event that causes deformity or narrowing of the duct volume creates complex symptoms and signs. The main symptoms of carpal tunnel syndrome can be listed as median nerve-induced thumb, forefinger, middle finger, and inner side of ring finger numbness. In advanced patients, melting and weakness of hand muscles can be added to the symptoms. It is common to wake up with numbness in the hands during the night and this numbness can be relaxed by rubbing or shaking hands (1). Studies showed that IL-1, TNF-α and IL-6 levels were significantly higher in dialysis patients with carpal tunnel syndrome compared to dialysis patients without carpal tunnel syndrome (2). In this study, the aim was to collect data on the role of inflammation and oxidative stress in etiopathogenesis by determining the serum C-reactive protein (CRP) / albumin ratio according to the stage in patients with a carpal tunnel diagnosis and to determine the possible effects of this ratio on the progression of the disease. CRP / albumin ratio rises as prognostic and potential inflammatory marker in chronic neurological diseases. CRP is not only a biomarker of acute and chronic inflammation, but also plays a direct role in the pathological process. Several studies have shown a relationship between hypoalbuminemia and other acute phase proteins and increased CRP level. The preliminary hypothesis of our study is that the CRP / albumin ratio as a biomarker of inflammation and oxidative stress can be used as an indicator of the etiopathogenetic process in patients diagnosed with carpal tunnel. In a recent similar study from the literature, it was found, when the CRP and procalcitonin values are checked, procalcitonin values in the carpal tunnel patients increased significantly compared to the control group. This retrospective study will contribute to the etiopathogenesis and treatment by using CRP / albumin ratio in the carpal tunnel patients whose etiopathogenesis is not clear and open new possibilities for further research. In the choice of treatment, it was thought that if the determined rate was high to support inflammation, the clinician would choose an analgesic with a more potent anti-inflammatory effect when choosing medical treatment, or, in the opposite case, an agent with a more potent analgesic feature would be used.

MATERIALS AND METHODS

This study is a retrospective study and was evaluated in terms of the median nerve entrapment for carpal tunnel syndrome with a preliminary diagnosis of carpal tunnel after neurological examination in our EMG outpatient clinic in the last six months of 2019 after its approval by the ethical committee of Balıkesir

University (no: 2019/169). During the study, the CRP and albumin values and the stages in the EMG reports were recorded in women and men between the ages of 18-65 who were diagnosed with carpal tunnel, who did not use any drugs, who were not without pregnant and systemic diseases, and who were diagnosed with carpal tunnel. Records of the control group consisting of individuals with the same criteria and with normal neurological examination and EMG report were also collected. A group of 50 patients diagnosed with carpal tunnel syndrome and a control group of 50 were established. CRP / albumin values of patients with mild, moderate and severe carpal tunnel syndrome detected in the patient group were compared among themselves and with the control group. The severity of CTS was graded as follows: mild CTS (SNCV slowing <50 m/s); moderate CTS (SNCV slowing < 50m/s and delayed DML > 4,5 ms); and severe CTS (no SNAP) (3).

Statistical Analysis

In the numerical value comparisons of the examined patient and control groups, Mann-Whitney U test was used in samples that did not show normal distribution, and independent samples t-test was used in samples with normal distribution. In the results, mean and standard deviation p value was taken as <0.05.

RESULTS

A control group of 50 healthy individuals and 50 patients diagnosed with carpal tunnel syndrome were included in the study. The mean age of the control group was 44.25 ± 8 (35 female, 15 male), and the mean age of the CTS group was 46.75 ± 10 (39 female, 11 male). According to the EMG result, bilateral moderate CTS in 12, unilateral moderate CTS in 10, unilateral severe CTS in 15, bilateral severe CTS in 10, and bilateral mild CTS in 3. CRP, albumin and CRP / albumin ratio between the control group and patients were not statistically significant (figure 1) (figure 2) (figure 3). Since mild CTS patients were few, they were not taken into statistical evaluation.

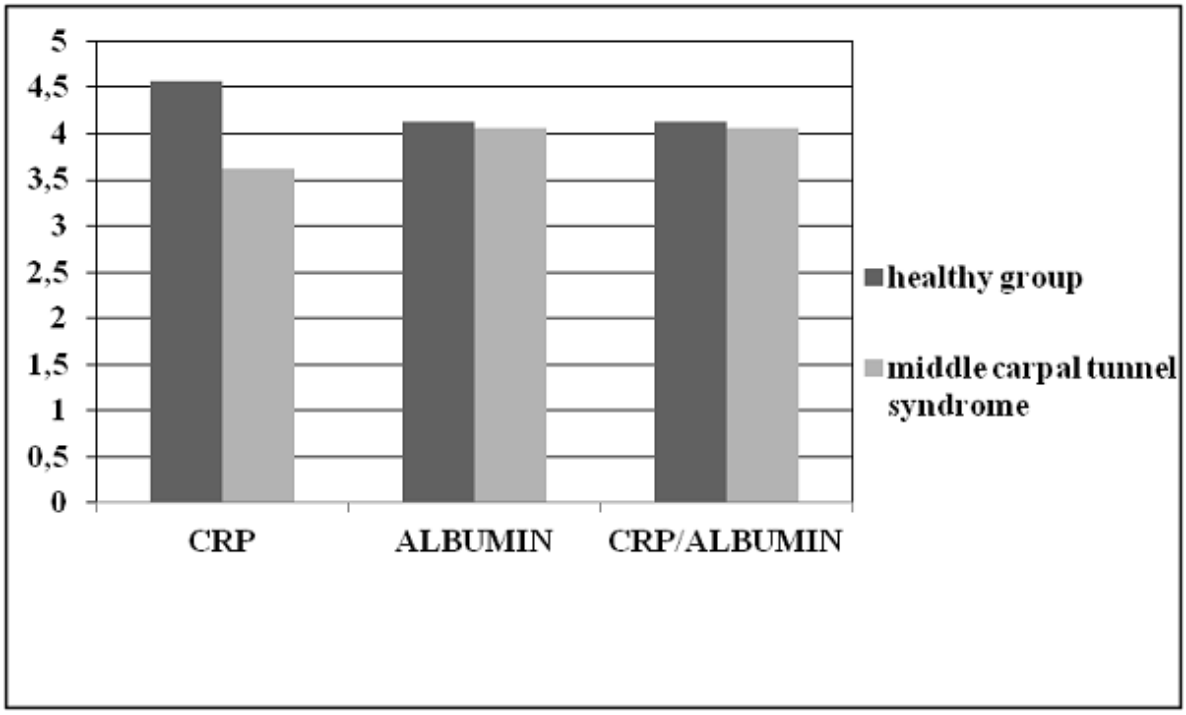

Figure 1. Middle carpal tunnel syndrome patients - healthy group CRP, albumin and CRP/albumin ratio, they weren't found statistically significant

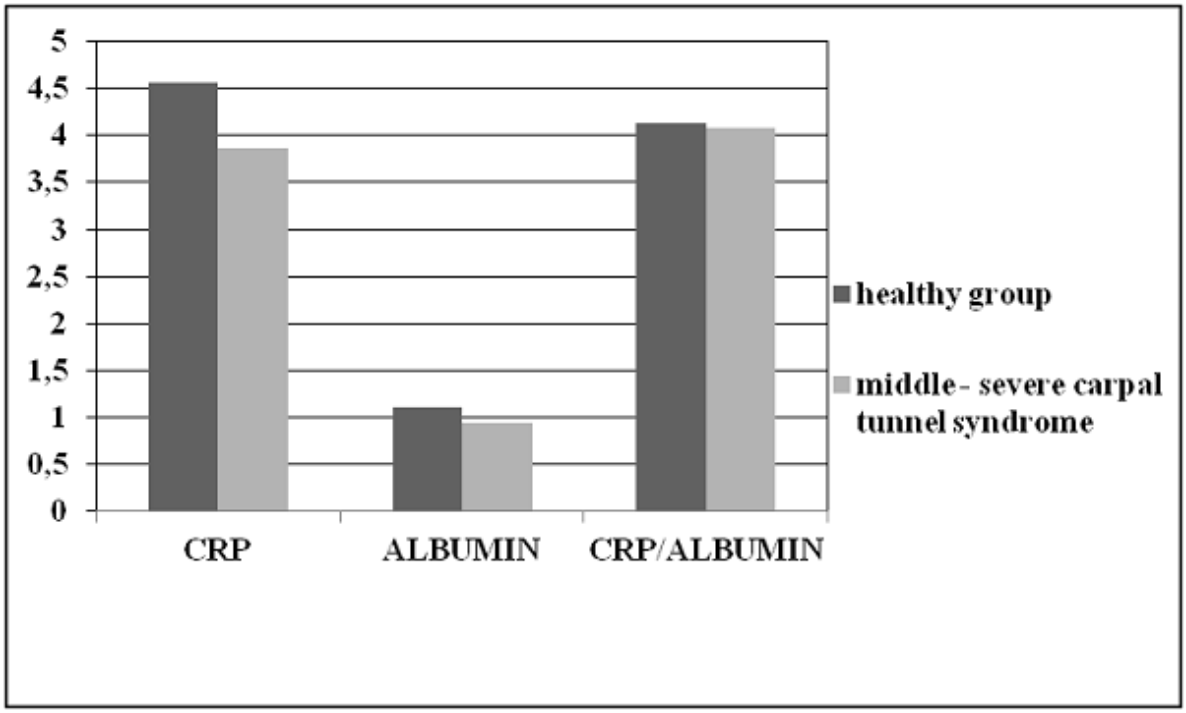

Figure 2. Middle- severe carpal tunnel syndrome patients- healthy group CRP, albumin and CRP/albumin ratio, they weren't found statistically significant

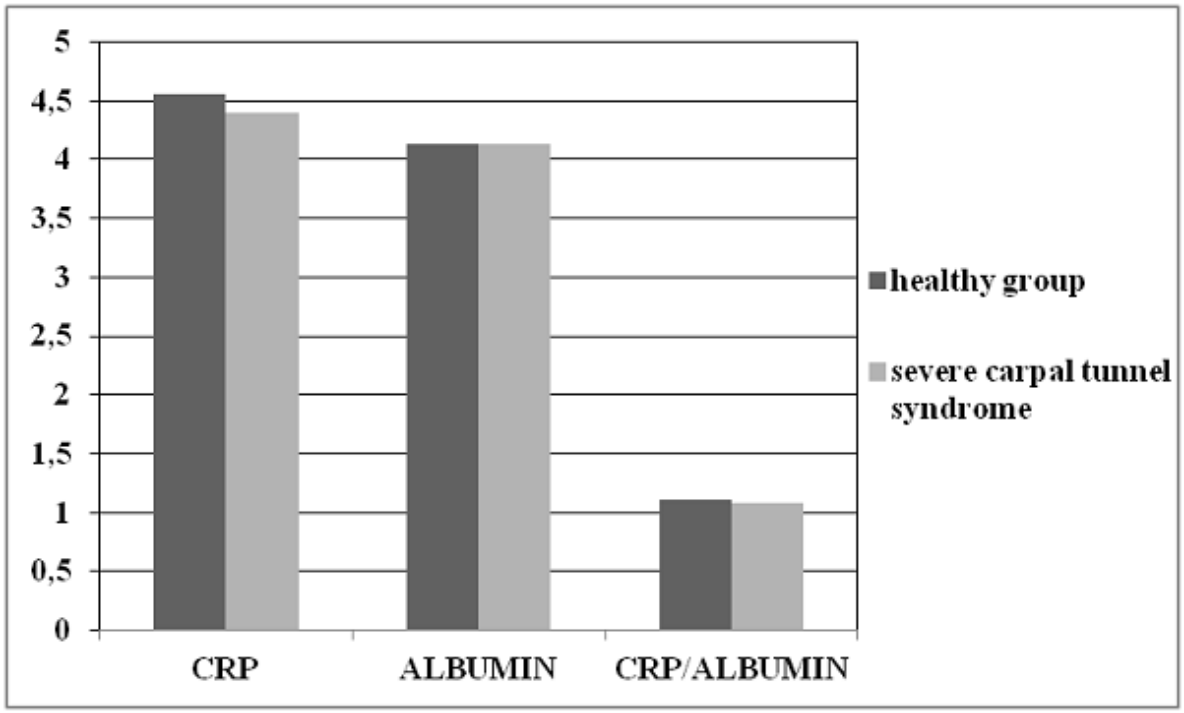

Figure 3. Severe carpal tunnel syndrome patients- healthy group CRP, albumin and CRP/albumin ratio, they weren't found statistically significant

DISCUSSION

The pathogenesis of carpal tunnel syndrome is complex and is caused by the interaction of various mechanisms. As a result of the combination of multiple mechanisms, symptoms arise as a result of an increase in carpal tunnel pressure and edema of the median nerve, a decrease in venous flow, development of ischemia and neuronal damage. As a result of localized deformation of the nerve in chronic nerve compression and the

development of segmental demyelination in myelinated nerve fibres, it leads to impulse-conduction block in some fibres, and localized slowing of nerve conduction and axonal degeneration in others. In addition, localized construction and thickening of proximal and sometimes distal of it are observed in chronic cases (4). CRP is an acute phase protein synthesized in hepatocytes in response to proinflammatory cytokines during inflammatory / infectious processes. Acute inflammation is known as a biomarker, but many large-scale prospective studies report that CRP is also associated with chronic inflammation (5). Hypoalbuminemia is an acute phase response associated with inflammation and oxidative stress. Homocysteine, uric acid, albumin and bilirubin are defined as laboratory parameters associated with oxidative stress. In a recent study, no difference was found in patients with carpal tunnel syndrome compared to the control group, while CRP was not significantly different, with a high level of procalcitonin (6). Since CRP and albumin parameters are more prominent in acute tissue damage and active infection conditions, CRP may increase in chronic diseases, but not increase in carpal tunnel syndrome may be related to chronic process. Perhaps these values increase in the acute process and return to normal in the chronic process. Since our cases are subacute and chronic, we may not have found CRP increase and albumin decrease in this process. The fact that the serum CRP / albumin ratio does not differ in carpal tunnel syndrome patient group as compared to the control group as a biomarker of inflammation and oxidative stress supports the hypothesis that it cannot be related to the subacute-chronic process in the etiopathogenetic process. Therefore, when planning medical treatment in subacute and chronic patient groups, it would be more beneficial to consider medical treatments with analgesic properties instead of anti-inflammatory agents. The limitations of our study are the low number of patients, the absence of patients in the acute process and the absence of double-blind randomized controlled trials.

CONCLUSION

This retrospective study is important in terms of guiding the etiopathogenesis and medical treatment selection. This study may be advanced with larger patient populations.

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Conflict of Interest: The author has no conflict of interest related to this article.

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