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Effects of Covid-19 pandemic on algology practice: single-center clinical study results

Covid-19 Pandemisinin algoloji pratiğine etkileri: Tek merkezli klinik çalışma sonuçları

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ABSTRACT

Aim: During the Covid-19 pandemic, the number of patients examined in the outpatient clinic of many health institutions was limited and some changes were made in the treatment protocols. Regional Anesthesia and Pain Associations also recommended steroid administration and opioid use restriction, especially in chronic pain. In our study, we aimed to evaluate the clinical diagnosis of the patients who applied to our clinic with complaints of pain, the treatments they received, and whether our approach to chronic pain was by the guidelines during the Covid-19 pandemic period.

Material and Methods: Demographic data, clinical diagnoses, interventional procedures, and medical treatments given to the patients who applied to the Ege University Faculty of Medicine, Algology Department outpatient clinic between March 2020 and May 2021 were evaluated statistically by retrospective analysis.

Results: The mean age of 444 patients included in the study was 56.8±15.9 years. It was found that 29 (6.5%) of the patients applied for acute pain and 415 patients (93.5%) for chronic pain. While the number of patients who received only pharmacological treatment was 230 (51.8%), it was determined that 199 (44.8%) patients received both pharmacological treatment and interventional procedure, and 15 (3.3%) patients received only interventional procedure. When the patients were investigated in terms of pharmacological treatment, we observed that 229 (57.1%) patients received only paracetamol treatment, 99 (24.6%) patients received only non-steroidal anti-inflammatory (NSAI) drug therapy, and 73 (18.2%) patients received both paracetamol and NSAI therapy. It was determined that 243 (96.8%) of the patients who received medical treatment received weak opioids, 3 (1.3%) patients received strong opioids, and 5 (1.9%) patients received both weak and strong combined opioid treatment. Steroid injection was observed in only 16.3% of 214 patients who underwent interventional procedures.

Conclusion: It was observed that chronic pain patients were in the majority during the pandemic period and the use of strong opioids and steroid injections were minimized in these patients. Since it may cause changes in immune responses, applications that will pose the least risk in pain patients should be chosen during the pandemic period.

Keywords: Covid-19 pandemic, chronic pain, opioids, steroids.

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ÖZ

Amaç: *Covid-19 pandemisi sırasında birçok sağlık kuruluşunda poliklinikte bakılan hasta sayıları kısıtlanmış ve tedavi protokollerinde bazı değişiklikler yapılmıştır. Rejyonel Anestezi ve Ağrı dernekleri de özellikle kronik ağrıda steroid uygulamasının ve opioid kullanımının kısıtlanmasını önermişlerdir. Çalışmamızda, Covid-19 döneminde, kliniğimize ağrı şikâyeti ile başvuran hastaların klinik tanılarını, aldıkları tedavileri ve kronik ağrıdaki yaklaşımımızın rehberlere uygun olup olmadığını değerlendirmeyi amaçladık.*

Gereç ve Yöntem: *Mart 2020- Mayıs 2021 tarihleri arasında Ege Üniversitesi Tıp Fakültesi, Algoloji Bilim Dalı polikliniğine ağrı şikâyeti ile başvuran hastaların demografik verileri, klinik tanıları, uygulanan girişimsel işlemler ve verilen medikal tedaviler retrospektif incelenerek istatistiksel olarak değerlendirildi.*

Bulgular: *Çalışmaya dahil edilen 444 hastanın yaş ortalaması 56,8±15,9 olarak belirlendi. Hastaların 29'unun (%6,5%) akut ağrı, 415'nin ise (%93,5) kronik ağrı nedeniyle başvurduğu saptandı. Sadece farmakolojik tedavi alan hasta sayısı 230 (%51,8) iken, 199 (%44,8) hastaya hem farmakolojik tedavi hem de girişimsel işlem uygulandığı, 15 (%3,3) hastaya ise sadece girişimsel işlem uygulandığı belirlendi. Farmakolojik tedavi alan hastaların 229 (%57,1)'unun sadece parasetamol tedavisi; 99 (%24,6)'unun sadece non-steroid antiinflamatuar (NSAI) ilaç tedavisi, 73 (%18,2)'ünün ise hem parasetamol hem de NSAI tedavisi aldığı saptandı. Medikal tedavi uygulanan hastaların 243 (%96,8)'ünün zayıf opioid, 3 (%1,3)'ünün güçlü opioid, 5 (%1,9)'inin ise hem zayıf hem de güçlü kombine opioid tedavi aldığı belirlendi. Girişimsel işlem uygulanan toplam 214 hastanın ise %16,3'üne steroid enjeksiyonu uygulandığı görüldü.*

Sonuç: *Pandemi döneminde kronik ağrı hastalarının çoğunlukta olduğu ve bu hastalarda güçlü opioidlerin kullanımının ve steroid enjeksiyonlarının en aza indirildiği görüldü. İmmün yanıtlarda değişikliklere yol açabileceğinden pandemi döneminde ağrı hastalarında en az risk oluşturacak uygulamaların seçilmesi gerekir.*

Anahtar Sözcükler: *Covid-19 pandemisi, kronik ağrı, opioidler, steroidler.*

INTRODUCTION

Pneumonia due to the newly identified SARS-CoV-2 agent, which was seen in Wuhan, China in December 2019, was defined as Coronavirus disease 2019 (Covid-19) (1,2). In January 2020, the World Health Organization (WHO) declared a new type of Coronavirus (SARS-CoV-2) pandemic due to increasing cases (3). During the pandemic period, there were distributions in many health services, except for Covid-19, due to reducing the infection exposure of patients and health care providers and using resources most efficiently and most of the patients could not be provided with these services (4).

Pain is a clinical condition that has a high incidence and seriously affects the quality of life of the people it affects (5,6). Especially, chronic pain is a multidimensional experience that seriously compromises the quality of life and limits work, sleep patterns, and social contact with family and friends (7, 8). Chronic pain may cause changes in the immune response for many reasons and chronic pain patients may be more susceptible to Covid-19 infection because they are usually elderly with multiple comorbidities (4).

To reduce viral spread during the Covid-19 pandemic, the use of remote treatment has been made mandatory, except in emergencies (9). However, when considering emergency and semi-emergency patients, any delay in required treatment has the risk of causing significant morbidity in patients (4). In chronic pain patients, discontinuation of treatment services may cause loss of work power, anxiety, depression, and disruptions in opioid treatment (10, 11). For this reason, in the guide published by the American Society of Regional Anesthesia and Pain Medicine (ASRA) and the European Society of Regional Anesthesia and Pain Therapy (ESRA), conditions that are algological considered urgent and semi-emergency are defined, and some arrangements have been made the treatment of chronic pain considering the applications deemed necessary for the treatment of Covid-19 and the interaction between drugs used (4).

In this study, we aimed to investigate the general characteristics, diagnosis, and treatments of patients who applied to the pain outpatient clinic during the Covid-19 pandemic period, and the reflections of the restrictions on the use of

steroids and opioids in chronic pain in line with the recommendations published by the associations (ASRA, ESRA) during the pandemic period.

MATERIALS and METHODS

After obtaining approval from the Ege University ethics committee (ethics committee approval number: 21-5.1T/57, date:2.6.2021), the study was carried out the patients who applied to Ege University Faculty of Medicine, Algology Department outpatient clinic with complaints of pain between March 2020 and May 2021. The patient files in the hospital registry system were scanned and their information was recorded retrospectively. Demographic data such as age, height, weight, and gender of the patients included in the study, clinical diagnoses, pain types (nociceptive/neuropathic/mixed), cancer or non-cancer characteristic of pain, medical treatments (non-opioid/opioid/adjuvant), interventional pain procedures (facet median nerve blockage / radiofrequency applications, dorsal root ganglion radiofrequency application, trigger point injection, intra-articular injection, epicondylitis/bursitis injections, greater occipital nerve (GON) block, sympathetic blockages, infraorbital/supraorbital/mental block) were recorded.

All data were evaluated using the SPSS 26.0 (IBM, Chicago, USA) statistical package program. In descriptive statistical data, arithmetic means, and standard deviation values were given for continuous variables, and median and percentage values were given for categorical variables.

RESULTS

A total of 444 patients were included in this study and the mean age of the patients was 56.8±15.9 years. While 271 (61%) patients were female, 173 (39%) patients were male. Although 148 (33.3%) patients were regularly followed up, 296 (66.7%) patients were newly diagnosed. We treated 67 (15.1%) patients due to cancer-related reasons and 377 (84.9%) patients due to non-cancer pain reasons. We revealed that the interventional pain procedure was applied to 172 (80.3%) patients who were classified as emergency or semi-urgent according to the ASRA and ESRA classification.

We observed acute pain in 29 (6.5%) patients and chronic pain in 415 (93.5%) patients who applied to the pain outpatient clinic. We revealed nociceptive pain in 178 (40.1%) patients, neuropathic pain in 132 (29.7%) patients, and mixed pain in 134 (30.2%) patients. The mean VAS score of all patients was calculated as 7.23±1.24 points.

While the number of patients who received only pharmacological treatment was 230 (51.8%), it was determined that 199 (44.8%) patients received both pharmacological treatment and interventional pain procedure, and 15 (3.3%) patients received only interventional procedure. When the patients receiving non-opioid treatment were examined; it was observed that 229 (57.1%) patients received paracetamol treatment; 99 (24.6%) patients received NSAI treatment, and 73 (18.2%) patients received both paracetamol and NSAI treatment. If the patients receiving opioid treatment are examined; we observed a total of 251 (58.5%) patients received opioid treatment. Among these patients who received opioid treatment; 243 (96.8%) patients received weak opioid therapy, 3 (1.3%) patients received strong opioid therapy, and 5 (1.9%) patients received both weak and strong opioid combined therapy. It was found that a strong opioid drug was preferred in 1.86% of all patients who received pharmacological treatment.

We observed that 214 (48.2%) patients were treated with an algological interventional procedure (15 patients received only interventional procedures). Patient distribution who underwent algological interventional procedures was summarized in Figure-1. We found that steroid injections were applied to 16.3% of all interventional pain procedures. Of these, a total of 35 patients; 18 (47.3%) were epidural steroid injections due to disc herniation, and 17 (44.7%) were intra-articular steroid injections.

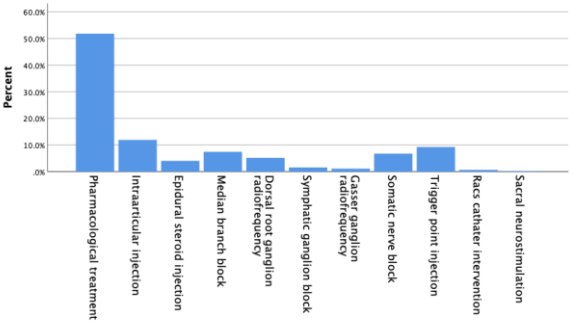

Figure-1. Distrubution of algologic procedures.

DISCUSSION

In this study, we evaluated the patients who were referred to our outpatient clinic after telemedicine application during the Covid-19 pandemic, in line with ASRA and ESRA recommendations, and found that interventional pain procedures were applied to most of the patients classified as emergency or semi-urgent. In addition, we determined that most of the patients were chronic pain patients and steroid injection and strong opioid use decreased in these patients.

In several studies, it has been reported that the use of paracetamol and NSAI could cause late diagnosis, decrease the severity of the disease, and therefore life-threatening complications and even death by suppressing the symptoms of Covid-19 (12). Therefore, paracetamol administration was recommended alone in the first period of the pandemic. However, it was reported that there was no obstacle to the safe use of paracetamol and NSAI drugs in Covid-19 cases in studies conducted in the later stages of the pandemic (13, 14). In our study, it was found that the number of patients who received paracetamol treatment in this period was higher than the patients who received both paracetamol and NSAI treatment. We also questioned the symptoms of Covid-19 in patients who were planned for paracetamol and NSAI treatment, and limited the duration of use.

It was recommended to limit the use of opioid drugs during the covid-19 pandemic, as opioids are considered to cause immunosuppression (15). In an animal study on rats, it was shown that morphine acts through the dopamine D1 receptors in the nucleus, increasing the release of neuropeptide-Y in this way and reducing the cytotoxic effects of natural killer cells (NK) in the spleen (16). In another study, it was reported that high-dose and long-term opioid treatment increased the risk of immunosuppression, however, it could also cause different side effects depending on the type of opioid used. It has been reported that fentanyl and morphine are the opioids that cause the most immunosuppression, while buprenorphine is the least immunosuppressive. Tramadol, a weakly effective opioid, has been reported to have no immunosuppressive activity (17). In studies on codeine, it has been reported that although it has an immunosuppressive effect, it does not increase the risk of pneumonia when used for less than 90 days (18, 19). Covid-19 patients taking opioids may be more susceptible to respiratory depression and fentanyl absorption could increase due to high fever, particularly during transdermal fentanyl administration (4, 20). A study was carried out investigating the opioid treatment due to cancer pain in a pain clinic before the Covid-19 pandemic was reported that 57.6% of the patients diagnosed with various cancer were using weak opioid drugs and 22.8% of them were strong opioid group drugs (21). In our study, although weak opioid usage was similar to this study, strong opioid usage rates were extremely low due to complying with the recommendation of the ASRA and ESRA. We preferred to use weak opioids as the first choice in patients for whom we consider opioid treatment during the Covid-19 pandemic. As a requirement of stepped pain treatment, opioid drugs are used for pain that cannot be controlled with non-opioid drugs. However, the use of weak opioids (tramadol, codeine) was primarily preferred in our clinic, either to minimize side effects such as respiratory depression and immunosuppression which were important during the pandemic or to provide stepwise pain treatment. Strong opioid treatment (morphine, oxycodone, and fentanyl) was also given to a limited number of patients who did not respond to weak opioid treatment, considering the profit/loss ratio.

For physicians dealing with pain, the interaction between pain medications and the immune system needs to be considered during the Covid-19 pandemic. Various challenges arise in terms of the risks associated with both inadequate treatment and inappropriate treatment. Untreated chronic pain can affect the immune system, causing immunosuppression in some patients (22). In addition, the relationship between chronic pain, comorbid diseases, and advanced age can increase the risk of infection or mortality when considering the Covid-19 disease (23, 24). Pain treatments can also endanger the immune system, especially with the use of steroids. Oral or injected steroids can cause secondary adrenal insufficiency which alters the immune response (25). Studies have shown that intra-articular corticosteroid injection can also increase the risk of infection. For this reason, it is recommended that steroid injections should be performed by evaluating the benefit/harm ratio during the pandemic period and low doses should be applied for high-risk patients (4, 26). Arici et al, reported that steroid treatment was administered

to 40.6% of the patients who applied to the algology clinic before the Covid-19 pandemic period. It was determined that 22.4% of these patients who received steroids were intra-articular and 18.2% were epidural steroid injections (27). In our study, it was found that only 16.3% of the patients who underwent all intervention procedures were injected with steroids. These procedures, which were administered only as epidural steroid injections for disc herniation and intra-articular steroid injections for joint pain, were resistant to pharmacological treatment and progressed with functional limitation.

There are some limiting factors associated with our study. As a result of the continuation of treatment primarily with telemedicine, some patients who first received opioid treatment for chronic pain caused by cancer, did not apply later to the outpatient clinic. We think that this factor may have affected our opioid preference results partially, in outpatient clinic data. Another limiting factor of our study is that although the patients were questioned in terms of Covid-19 pneumonia symptoms before the outpatient clinic application and the interventional procedure, data on whether the risk of catching Covid-19 pneumonia increased after treatment could not be reached due to the limitation of follow-up. Therefore, the relationship between the treatments given for pain and Covid-19 pneumonia could not be evaluated.

CONCLUSION

It was observed that the patients who applied to our clinic during the pandemic period were mostly chronic pain patients, and the use of strong opioids and steroid injections was minimized in these patients in line with the recommendations of the ASRA, ESRA, and Turkish Society of Algology. It was concluded that the applications that will pose the least risk during the pandemic period should be selected for chronic pain patients who may experience changes in immune responses.

Conflicts of interest: The authors declare that they have no conflicts of interest.

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