ORIGINAL ARTICLE

PHYSIOTHERAPY OF FACIAL PARALYSIS BETWEEN PRE-COVID 19 AND COVID-19 PANDEMIC PERIODS

Covid-19 Öncesi ve Covid-19 Pandemi Dönemlerinde Fasiyal Paralizi Fizyoterapisi

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ABSTRACT

Objective: The purpose of this study to crosscheck the clinical features and physiotherapy program of peripheral facial paralysis (PFP) between the 3 years before COVID-19 pandemic and last 3 years after COVID-19 pandemic.

Material and Methods: Obtained using medical records of patients diagnosed with PFP between March 2017 and March 2023.

Results: A total of 812 patients were included in study. 408 (50.2%) were diagnosed in pre-COVID -19 period, 404 (49.8%) were diagnosed in post- COVID -19 period. Parameters such as age, gender, House-Brackmann staging and facial palsy side, additional comorbidities, recurrens, and ratio of application to Physical Medicine and Rehabilitationin were similar, in our study. In the post-COVID-19 period, inpatient physical therapy was less than in the pre-COVID-19 period (p=0.021).

Conclusion: We think that it reflects the effect of COVID-19 on PFF numbers more realistically considering that our study evaluated a wide range, such as 3 years before and 3 years after COVID-19, and the sample size was higher than other studies. The only difference is that in the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period.

Keywords: *Peripheral Facial Paralysis; COVID-19 Pandemic; Physiotherapy Program; Treatment Type*

ÖZET

Amaç: Bu çalışmanın amacı, periferik fasiyal paralizi (PFF) klinik özelliklerini ve fizyoterapi programını, COVID-19 pandemisinden önceki 3 yıl ile COVID-19 pandemisinden sonraki son 3 yıl arasında karşılaştırmaktır.

Gereç ve Yöntemler: Mart 2017 ile Mart 2023 tarihleri arasında PFF tanısı alan hastaların tıbbi kayıtları tarandı.

Bulgular: Çalışmaya toplam 812 hasta dahil edildi. Çalışmamızda 408 (%50,2) hasta Covid-19 öncesi dönemde, 404 (%49,8) hasta ise Covid-19 sonrası dönemde tanı aldı. Çalışmamızda yaş, cinsiyet, House-Brackmann evrelemesi ve fasiyal paralizi tarafı, ek komorbiditeler, nüksler ve Fiziksel Tıp ve Rehabilitasyon polikliniğine başvuru oranı gibi parametreler benzerdi. COVİD-19 sonrası dönemde yatarak görülen fizik tedavi COVİD-19 öncesi döneme göre daha azdı (p=0,021).

Sonuç: Çalışmamızın, COVİD-19'dan 3 yıl önce ve 3 yıl sonrası gibi geniş bir aralığı değerlendirdiği ve diğer çalışmalara göre örneklem sayısının fazla olduğu göz önüne alındığında, COVİD-19'un PFF sayısı üzerine etkisinin daha gerçekçi yansıttığını düşünüyoruz. Çalışmamızda COVİD-19 sonrası dönemde salonda fizik tedavi gören hasta sayısında istatistiksel olarak anlamlı azalma olduğu belirlendi.

Anahtar Kelimeler: *Periferik Fasiyal Paralizi; COVİD-19 Pandemisi; Fizyoterapi Programı; Tedavi Türü*

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INTRODUCTION

Peripheral facial paralysis (PFP) is an acute partial or complete paralysis of unknown etiology that usually affects only one side of the face. Bilateral incidence is 0.3%. It constitutes approximately 70% of all facial paralysis. Its incidence is 15-40/100.000. It usually occurs between the ages of 15-45, equally in men and women. 9% of the patients have a history of facial paralysis (1). Although many cases are idiopathic, some are associated with identifiable causes. Whatever the cause, 85% of patients partially regain function, and more than 70% achieve a full recovery (2). Facial paralysis (FP) not only has a devastating effect on the patient's mood and quality of life, but also puts a serious physiological burden on the person's daily life. Therefore, FP treatment, which includes conventional pharmacological therapy, physical therapy and surgical options, may often require a complex multidisciplinary approach (3). Current treatment of PFP consists of alternative and complementary treatments such as corticosteroid, antiviral therapy, surgical treatment, electrical stimulation, exercise, massage application, botox application and acupuncture. The main aim of the treatment is to accelerate the recovery and cure the disease without leaving any sequelae (3).

While Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first seen in Wuhan, China in December 2019; Coronavirus 2019 (COVID-19) pandemic was declared in Turkey on March 11, 2020. Although comorbidities such as advanced age, cardiovascular disease, diabetes mellitus (DM), obesity are risk factors for the development of serious disease, serious clinics that require intensive care follow-up occur in approximately 5% of patients. Required measures for patients with acute symptomatic COVID-19 include oxygen support and mechanical ventilation, corticosteroid and thromboembolic prophylaxis. Treatment recommendations and preventive measures are constantly changing and developing (4). COVID-19 can present in different forms, ranging from asymptomatic clinical to mild upper respiratory tract infection, and acute respiratory failure. SARS-CoV-2 can cause a multitude of extrapulmonary manifestations, including acute coronary syndromes, gastrointestinal manifestations, kidney damage, skin manifestations, and neurological complications (5).

Derollez et al. reported the case of a 57-year-old woman presenting with facial nerve palsy as the first presentation of COVID-19 (6). In addition to this case, very few cases of COVID-19 presenting with PFP have been reported in the literature (7, 8). Islamoğlu Y et al. found that the COVID-19 antibody test was positive in 24.3% of the patients in a prospective study conducted on 41 patients with PFP in 2021 (9). Patients admitted due to PFP in the COVID-19 pandemic year and the last 4 years were screened in a retrospective study conducted in 2021, and the number of patients with PFP detected during the COVID-19 pandemic were similar to previous years (10).

Although there were studies showing that COVID-19 increased peripheral facial palsy, these studies had a small number of patients and a short time span. There was no study on how many of the patients diagnosed with peripheral facial palsy during the COVID -19 pandemic could be applied a physiotherapy program. We aimed to compare the clinical features and physiotherapy program of PFP between the 3 years before the COVID-19 pandemic period and the last 3 years after the COVID-19 pandemic period.

MATERIAL AND METHODS

This retrospective study was conducted between March 2017 and March 2023, due to we scanned 3 years before and after Covid-19 since the COVID-19 case was seen on the province basis in Turkey on March 11, 2020. University the Clinical Research Ethics Committee approval was obtained before starting the study (2017-KAEK-189_2022.10.27_04). Provincial Health Directorate's Scientific Research Commission and adhered to the principles of the Helsinki Declaration.

Patients who were examined in the city hospital's Ear Nose Throat, Head and Neck Surgery (OHNS) and Physical Medicine and Rehabilitation (PTR) clinics and diagnosed with PFP, whose contact information was accessible in the hospital data system and who regularly attended follow-ups were included; patients whose contact information was not accessible in the hospital data system, who did not regularly attend follow-ups and whose file data were incomplete were not included in the study.

Patients' age, gender, comorbidity, duration of

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admission, direction of paralysis, stage of paralysis and application to the PMR clinic and whether a physiotherapy program was applied were taken from hospital archive records

The House-Brackmann (HB) staging system is the most commonly used subjective staging system in practice to evaluate facial nerve function. There are 6 stages in total and the number of stages increases as the disease worsens

Statistical Analysis

All analyses were carried out with SPSS 26.0 (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp). The findings of the study are expressed as frequency and percentages. Normality analysis was carried out using Kolmogorov-Smirnov test. Descriptive statistics mean and standard deviation (mean±SD) were used for normally distributed variables, mean and minimum-maximum values ere used for non-normally distributed variables. Numeric dependent variables with abnormal distribution were compared with the Mann-Whitney U test. Categorical variables were compared using the Chi-Square test. A P value less than 0.05 was considered to be statistically significant.

RESULTS

A total of 812 patients were included in the study, 408 (50.2%) of whom were diagnosed in the pre-COVID-19 period (Group I) and 404 (49.8%) of whom were diagnosed in the post-COVID-19 period (Group II). The mean age and female/male ratio were similar between the groups (Table 1).

When the patients were viewed according to the direction of facial paralysis, in group I, 172 (42.2%) patients were on the right side, 236 (57.8%) patients were on the left side; In group II, 172 (42.6%) patients were detected on the right side and 232 (57.4%)

Table 1. Demographic and clinical characteristics of the patients

		Pre-Covid-19 Pandemic Group I	Covid-19 Pandemic Periods Group II	p
Gender	Male	208	218	0.400
	Female	200	186	
Age (Mean± Std)		42.76±18.67	44.07±19.37	0.592
Side	Right	172	172	0.943
	Left	236	232	
HB Grade	1	3	2	
	2	227	156	
	3	81	144	
	4	78	75	
	5	17	15	
	6	2	12	
Recurrens	No	391	395	0.162
	Yes	17	9	
Co-diseases	None	238	256	
	HT	23	33	
	DM	17	17	
	DM+HT	64	54	
	HT+CAD	47	24	
	Others	19	20	
Type of Physiotherapy Treatment	Outpatient	390	398	0.021*
	Inpatient	18	6	
Total		408	404	

HT: Hypertension, HB Grade: The House-Brackmann (HB) staging system, DM: Diabetes Mellitus, CAD: Coronary Artery Disease

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patients on the left side. The direction of facial paralysis and the rate of recurrent PFP were similar between the groups (Table 1).

Considering the type of treatment, Group I received 390 (95.6%) outpatient treatment, 18 (4.4%) received inpatient treatment, while Group II received 398 (98.5%) outpatient treatment and 6 (1.5%) inpatient treatment. In the post-COVID-19 period, inpatient physical therapy was less than in the pre-COVID-19 period (p=0.021). Demographic and clinical characteristics of the individuals were given in Table 1. While 96 (23.5%) patients in Group I applied to the physical therapy outpatient clinic, 96 (23.8%) patients in Group II applied to the physical therapy outpatient clinic, and the rates of application to the physical therapy outpatient clinic were similar between the groups (p=0.502). While 50 (12,25%) patients in Group I received treatment in the PMR unit, 31 (7.67%) patients in Group II received treatment, and in the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period (p=0.019) (Table 2).

DISCUSSION

A total of 812 patients were included in study. 408 (50.2%) were diagnosed in pre-COVID -19 period, 404 (49.8%) were diagnosed in post- COVID -19 period. Parameters such as age, gender, House-Brackmann staging and facial palsy side, additional comorbidities, recurrens, and ratio of application to Physical Medicine and Rehabilitationin were similar, in our study. In the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period.

Mutlu A et al. screened patients diagnosed with PFP between March 2016 and February 2021 and made 5 groups according to the date of application. They found the number of patients in the 5 groups to be 155, 164, 145, 169, and 153, respectively, and only 2 of the 153 patients diagnosed in the Pandemic year tested COVID positive (10). Srinivas C et al diagnosed 30 patients with PFP during the COVID pandemic in 2020, and found the percentage of Bell's palsy cases to be 0.8% compared to 0.05% in the pre-COVID-19 aera (11). Patients who came to the emergency unit for Bell's palsy in a 6 months period were screened in a study conducted in 2021,and COVID test was found positive in 8 of 34 patients (12). SARS-CoV-2 IgG + IgM values were measured twice in 41 patients with acute PFP in 2021 and the COVID test was found positive in 24.3% of patients with Bell's palsy (9). Pure tone audiometry, COVID-19 PCR tests and contrast-enhanced ear MRIs were performed on 45 patients with idiopathic PFP in 2022 and the PCR test was positive for COVID-19 in only one participant (2.2%) at the first admission (13). 408 (50.2%) were diagnosed in the pre-COVID -19 period, 404 (49.8%) were diagnosed in the post-COVID -19 vid period in our study. We think that it reflects the effect of COVID-19 on PFF numbers more realistically considering that our study evaluated a wide range, such as 3 years before and 3 years after COVID-19, and the sample size was higher than other studies.

Patients diagnosed with PFP for 1 year before and after COVID-19 were screened in a retrospective study conducted in 2022, 45 patients before COVID-19 and 58 patients after COVID-19 were diagnosed with PFP.

Table 2. Application to PMR and practice of a physiotherapy program

		Pre-Covid-19 Pandemic Group I	Covid-19 Pandemic Periods Group II	p
Application to PMR				0.502
	Yes	96	96	
	No	312	308	
Practice of a Physiotherapy Program				0.019*
	Yes	50	31	
	No	358	373	
Total physiotherapy Program (day)	15	2	2	
	20	38	21	
	30	10	8	

PMR: Physical Medicine and Rehabilitation

Parameters such as age, gender, HB staging and facial palsy side, audiogram results, treatment given, time to recovery, and additional comorbidities and symptoms to facial paralysis were similar in their study (14). Patients diagnosed with PFP in the 1 year before and after COVID-19 were examined in another retrospective study, and 325 cases from 2019 and 291 cases from 2020 were included in their study. While the incidence of Bell's palsy was 0.059% in 2019, it was 0.071% in 2020, and they found a significant difference between years; and the mean of age and female/male ratio were similar (15). Unlike these studies, treatment type, and practice of a physiotherapy program were statistically different in our study. While outpatient treatment is organized for some of these patients; inpatient treatment is applied to patients with additional diseases such as DM. In the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period. This may have been due to patients not wanting to be treated in hospital during the COVID-19 outbreak.

How many of the patients who applied to the OHNS outpatient clinic with the diagnosis of PFP applied to PMR clinics, and which patients received physiotherapy according to which factor not examined in the literature. It has been seen that studies in the field of PFP rehabilitation are mostly related to the therapy method applied. Cappeli et al. reported that all physical therapy modalities in PFP applied showed the same results in their Cohort study on 33 patients with PFP (16). In our study, in the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period. This may have been due to the fact that patients do not want to receive inpatient treatment during the pandemic period and that the physical therapy units were closed at the peak of the pandemic.

The limitations of our study are that it was single-centered, the medical treatment received by the patients was not evaluated, and the disease grade could not be reached after physical treatment.

CONCLUSION

Our study is the first to compare the clinical features and physiotherapy program of PFP before and after the COVID-19 pandemic. A total of 812 patients were included in study. 408 (50.2%) were diagnosed in pre-COVID -19 period, 404 (49.8%) were diagnosed in post- COVID -19 period. We think that it reflects the effect of COVID-19 on PFF numbers more realistically considering that our study evaluated a wide range, such as 3 years before and 3 years after COVID-19, and the sample size was higher than other studies. In our study, in the post-COVID-19 period, physical therapy was less than in the pre-COVID-19 period. More studies are needed on the effect of COVID-19 on the physiotherapy program applied in patients diagnosed with peripheral facial paralysis.

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