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Original Article / Özgün Araştırma

Patient Communication and Consultation Experience with Tele-medicine in Patients with Movement Dısorders in COVID-19 Pandemic: Its Usability, Benefits and Problems

COVID-19 Pandemisinde Hareket Bozuklukları Hastalarında Tele-tıp ile Hasta İletişimi ve Danışmanlık Deneyimi: Kullanılabilirliği, Kazandırdıkları ve Sorunları

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Abstract

Objective: Access to health centers was restricted during the coronavirus disease-2019 pandemic, which hit our country in March 2020. Ensuring the medical control of patients who were followed up in the neurology outpatient clinic with the tele-medicine method was an important step to decrease the viral load of patients and physicians. This study aimed to share our tele-medicine experience with patients with movement disorders.

Materials and Methods: The data of 71 patients with movement disorder who communicated with our unit between March 11, 2020 and June 20, 2020 were retrospectively analyzed.

Results: A total of 117 verbal and written interviews with 71 patients were mostly conducted via WhatsApp®. The evaluation of reasons for physician consultation revealed that patients most frequently communicated for worsening rigidity and prescription-drug requests. Of these interviews, 25 (21.4%) resulted in setting patient appointments for a physical examination. The tele-medicine service in 92 (78.6%) interviews solved the problem without physical contact with patients.

Conclusion: Movement disorder evaluations are suitable through teleconference. Therefore, our teleneurology application, which we actively use, is effective in reducing the risk of viral transmission to both patients and healthcare workers during the pandemic. Developing telemedical applications is necessary in terms of their legal aspects and implementation in the world, especially in our country.

Keywords: Tele-medicine applications, movement disorders, teleneurology

Öz

Amaç: Mart 2020 itibari ile ülkemizi de etkisi altına almış olan koronavirüs hastalığı-2019 pandemisi sırasında, sağlık merkezlerine erişim kısıtlanmışken, nöroloji polikliniğinde hareket bozuklukları nedeniyle takipli olan hastaların tele-tıp yöntemi ile tıbbi kontrollerinin sağlanabilmesi, hastalar ve hekimlerin viral yükünü azaltmak adına önemli bir adımdır. Makalemizde, hareket bozuklukları hastalarımızla olan tele-tıp aracılı danışmanlık deneyimimizi paylaşmayı amaçladık.

Gereç ve Yöntem: Çalışmada, 11 Mart-20 Haziran 2020 tarihleri arasında ünitemiz ile iletişim kuran 71 hareket bozukluğu hastasının verileri retrospektif olarak incelenmiştir.

Bulgular: Yetmiş bir hasta ile yapılan, çoğunluğu WhatsApp® üzerinden gerçekleştirilen toplam 117 yazılı ve sözlü görüşmede, hastaların hekime danışma nedenleri ayrıntılı incelendiğinde; hastaların en sık kötüleşme-katılık ve reçete-rapor istemi ile iletişim kurdukları görüldü. Bu görüşmelerin 25'i (%21,4) hastalara fiziki muayene için randevu verilmesi ile sonuçlanmıştır. Tele-tıp hizmeti ile 92 (%78,6) görüşmede hasta ile fiziki temas kurmadan sorun çözülebilmiştir.

Sonuç: Hareket bozuklukları telekonferans aracılığı ile değerlendirmeye oldukça uygundur. Bunu da göz önünde bulundurarak aktif olarak kullandığımız tele-nöroloji uygulamamızın, pandemi sürecinde hem hastalar hem de sağlık çalışanlarının bulaş riskinin azaltılması açısından yararlı olduğunu düşünmekteyiz. Tele-tıp uygulamaların dünyada ve ülkemizde yasal yönleri ve kullanımının yaygınlaştırılması açısından geliştirilmesine ihtiyaç vardır.

Anahtar Kelimeler: Tele-tıp uygulamaları, hareket bozuklukları, tele-nöroloji

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Introduction

The new type of coronavirus caused by severe acute respiratory syndrome coronavirus 2 and named coronavirus disease-2019 (COVID-19) has become a pandemic. It started in Wuhan, China in December 2019 and spread worldwide, and first appeared in our country on March 10th, 2020 (1). Social isolation, which has been applied in all areas due to the pandemic, has also started in the field of health; therefore, many hospitals have started to provide health services only to patients with COVID-19 and have limited their routine patient admission. Additionally, patients with chronic diseases have been adversely affected by this situation, and hospital admission has become very difficult, especially for elderly patients with neurologic diseases (2). Tele-medicine is the general name given to the communication system for remote healthcare services to be used in clinical monitoring, treatment, and clinical practice. With this system, patients are evaluated by the physician using audio or video communication tools before coming to the hospital (3).

During the pandemic, according to the rules of both the Ministry of Health and hospital management, the physical examinations of patients with chronic diseases who are followed in the Movement Disorders Unit of our Neurology Department were restricted to ensure social isolation, and minimize physical contact and transmission. Our clinic utilized verbal and written communication with patients who were currently under follow-up with a consultancy service system similar to tele-medicine in order to follow-up and solve the problems they experienced. This study aimed to share our patient follow-up experience with the tele-medicine-like system that we have implemented during the COVID-19 pandemic.

Material and Methods

This study retrospectively analyzed the data of 71 patients who were followed up by the Movement Disorders Unit of the Neurology Clinic of Eskisehir Osmangazi University and who communicated with our unit between March 11 and June 20, 2020, during the COVID-19 pandemic. This communication system was established in the movement disorders outpatient clinic approximately a year before the onset of the pandemic for patients with follow-up to use in emergencies and receive appointment or consultancy services. It started as a tele-medicine-like consultancy system that included a hospital intercom, an e-mail address, and a GSM number with the WhatsApp® application installed, and was kept open for communication during the pandemic period. This system aimed to provide consultancy services for the problems that patients can solve before coming to the hospital or making an appointment when a face-to-face examination is necessary. With this system, illegal practices, such as initiating new drugs or prescribing drug, were not followed with patients. In the first three months of the COVID-19 pandemic, problems of patients in quarantine were evaluated through this system and appropriate recommendations were provided. Through video calls, an appointment was made for patients who needed face-to-face meetings or physical examinations, considering the COVID-19 precautions. Interviews with the patient in a written form were deleted after the patient's problem was added to his/her file, and written and verbal consent was obtained from all patients regarding the interviews at the time the system was first started. The age, gender, and disease information of patients, whether they received device-assisted treatment, the type of treatment they received, the period and number of communications, the reasons for consultation, and our recommendations were retrospectively reviewed from the records. The study was approved by the Osmangazi University Ethics Committee on 01.09.2020 with the document numbered E-25403353-050.99-101440.

Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Sciences version 11.5 for Windows. Mean ± standard deviation and median [(minimum (min)-maximum (max)] values were given for quantitative variables as descriptive statistics, and the number of patients (percentage) was given for qualitative variables.

Results

A total of 71 patients communicated with our clinic 117 times via a tele-medicine-like system between March and June 2020. Of whom, 56 (78.9%) were over 50 years old and 15 (21.1%) were under 50 years old. Among 36 female and 35 male patients, 56 had Parkinson's disease (PD) and 15 had dystonia. Additionally, dementia was present in 13 patients with PD. Deep brain stimulation (DBS) was applied to 22 patients and levodopa carbidopa intestinal gel therapy was applied to 3 patients as device-assisted therapy. The age, gender, diagnosis, and device-assisted treatment information of patients are summarized in Table 1.

Most patients reached our unit in April (37 patients) and May (50 patients) via WhatsApp® (99 patients). The mean number of communications that patients made with our unit was 1.63±1.09, whereas the median value was 1 (min: 1, max: 6). The communication method, time, and number of patients are shown in Table 2.

Table 1. Descriptive data of patients communicating via tele-medicine method

	Number of patients (total: 71)	Percentage % (total: 100%)
Age		
>50 years	56	78.9
<50 years	15	21.1
Gender		
Female	36	50.7
Male	35	49.3
Diagnosis		
Parkinson's disease	43	60.6
Dystonia	15	21.1
Parkinson's disease dementia	13	18.3
Device-assisted therapy status		
No device	46	64.8
DBS*	22	31.0
LCIJ**	3	4.2

*DBS: Deep brain stimulation, **LCIG: Levodopa carbidopa intestinal gel

Our patients communicated with our unit most frequently due to worsening stiffness in their clinical conditions and the need for prescription or report as presented in Table 3. Of the 117 interviews made with our unit, 25 (21.4%) resulted in appointments for a physical examination. Additionally, 92 (78.6%) interviews with written and verbal tele-medicine-like counseling solved the problem without making physical contact with the patient.

The detailed examination of the reasons for communication in 117 interviews revealed that 43 (36.8%) were made for worsening rigidity in patients with PD, 25 (21.4%) for prescription or report request, 11 (9.8%) for psychosis, 10 (8.5%) for drug use counseling, 8 (6.8%) for consultation, 5 (4.2%) for the need for botulinum toxin injection, 3 (2.6%) for dyskinesia, 3 (2.6%) for fatigue, and 9 (7.6%) for other reasons.

Table 2. Communication method, period, and the number of patients communicating with tele-medicine method during the pandemic process

	Number of patients (total: 117)	Percentage % (total: 100%)
Communication method		
Telephone call	12	10.3
WhatsApp® call	99	84.6
E-mail	6	5.1
Communication period		
March	18	15.4
April	37	31.6
May	50	42.7
June	12	10.3
Number of communications		
1	47	40.2
2	12	10.3
3	6	5.1
4	4	3.4
5	1	0.9
6	1	0.9

The evaluation of recommendations for patients revealed that dose changes were recommended for 36 (30.8%) counseling sessions, in which 25 were for worsening rigidity, 9 for psychosis, 1 for botulinum toxin injection, and 1 for dyskinesia. Suggestions were given about the frequency, number, and time of drugs that they were using, as well as about drug discontinuation. Patients who needed to add a new drug were not prescribed with drugs and were called for a face-to-face interview with an appointment.

Patients from 28 (23.9%) interviews received medical advice, with 5 patients receiving it owing to worsening rigidity, 1 for psychosis, 8 for medication, 4 for consultation on the need for a control appointment, 2 for botulinum toxin injection, 1 for fatigue, and 7 for other reasons.

A total of 24 (20.5%) patients were recommended to come for a physical appointment, including 11 patients for worsening rigidity, 1 for psychosis, 2 for medication use counseling, 4 for a follow-up appointment, 1 for botulinum toxin injection, 2 for dyskinesia, 2 for fatigue, and 1 for other reasons.

An interview (0.9%) for botulinum injection planned to add a new medical treatment to the patient's regimen and an appointment was made for prescription writing.

In 26 (22.2%) interviews, including 1 for worsening stiffness and 25 for prescription or drug report requests, the patients were informed that the duration of the current drug reports was extended by the Ministry of Health and that they could buy their medicines from pharmacies without a prescription.

A patient communicating with worsening rigidity was called for an interview for the necessity of DBS programming. The distribution of consultation reasons and recommendations are shown in Table 3.

Discussion

Along with the whole world, our country has been trying to cope with the COVID-19 pandemic since March 2020 (1).

Table 3. Reasons for patient consultations and our recommendations

Recommendation Reason for consultation	Change of medication	Medical advice	Making appointment	Adding medical treatment	Referral to pharmacy	Other	DBS setting	Total n (%)
All communications (n) All communications (%)	36	28 (23.9)	24 (20.5)	1 (0.9)	26 (22.2)	1 (0.9)	1 (0.9)	117 (100)
Worsening rigidity	(30.8)	28	11	-	1	-	1	43 (36.8)
Prescription-report request	(23.9)	24	-	-	25	-	-	25 (21.4)
Psychosis	(20.5)	1	1	-	-	-	-	11 (9.8)
Consultation for medication use	(0.9)	26	2	-	-	-	-	10 (8.5)
Control appointment	(22.2)	1	4	-	-	-	-	8 (6.8)
Botulinum toxin injection	(0.9)	1	1	1	-	-	-	5 (4.2)
Dyskinesia	(0.9)	117	2	-	-	-	-	3 (2.6)
Weakness	(100)	1	2	-	-	-	-	3 (2.6)
Other	-	7	1	-	-	1		9 (7.6)

Therefore, concepts, such as "social distance," "increased hygiene recommendations," and "social isolation," have come forward to reduce disease spread, which has not been experienced before. These measures were implemented in our country, as well as worldwide, and the daily life routine has completely changed due to social and economic restrictions. The curfew applied, especially for individuals over the age of 65 years, the anxiety caused by being in health institutions in the risk of transmission, and the fact that hospitals have been converted into pandemic hospitals and only served patients with suspected COVID-19 caused health access problems to our patients who have been followed up for chronic diseases, such as PD, dystonia, and dementia (2).

During this state of emergency, tele-medicine applications have gained importance worldwide (4). Tele-medicine applications are the general name of remote health services that are used in the follow-up of many chronic diseases (5). These health services include interactive imaging methods, telephone application, e-mail services, and informatics applications. Telehealth is defined by the World Health Organization as "health care provided when patients and health care providers are far from each other" (6). Tele-medicine methods enable the patient to communicate with the physician or a health worker without visiting the hospital. Communication can be made with video or voice calls. It can be used to reach patients in emergencies, such as pandemics, earthquakes, floods, and hurricanes. As it has been used before in pandemic situations in the world, it has also been used in the COVID-19 pandemic. The importance of reaching patients with chronic diseases via tele-medicine and obtaining expert opinion in this way has been reported in regions where obtaining health services is difficult (7).

Tele-medicine applications that are used in neurological diseases are called teleneurology (8,9). For the evaluation of movement disorders, abnormal involuntary (hyperkinetic) movements, such as dystonia, tic, chorea, tremor, and/or hypokinetic movements, like decreased movement and slowing down (bradykinesia), are examined. These symptoms are very suitable for visual evaluation by tele-medicine method (10). The evaluation of PD with interactive video conferencing was first validated in 1992 (11). Repeated studies have shown that tele-medicine applications are effective. The exxamination of gait, balance, bradykinesia, evaluation with manipulative movements, and the determination of normal and abnormal patterns of movements, which is used in the evaluation of PD, can be evaluated by video conference method. However, evaluating pull test and rigidity examination, which guide disease follow-up and treatment selection, are impossible with tele-medicine methods.

The Movement Disorders Association modified the Unified PD Rating Scale (UPDRS) by removing the stiffness and postural instability scores and validated the online version of UPDRS in English (12). In five randomized controlled studies that compare tele-medicine applications and normal follow-up, it was reported that the quality of life results of tele-medicine examination in PD were equal to or better than the results of standard face-to-face examination (13,14,15,16). Additionally, the use of tele-medicine is a suitable method for cost-effectiveness compared with face-to-face meeting with the patient.

The evaluations of other movement disorders with the tele-medicine method by a recent study that evaluates patients with cervical dystonia revealed a compatible evaluation of Toronto Western Spasmodic Torticollis rating scale with tele-medicine application, sufficient dystonia evaluation, and high patient and physician satisfactions (17). Additionally, a study showed that the questionnaire that was answered by the patients and the uploaded videos on a website created for patients in Japan were evaluated by clinicians using the cyber consultation (remote diagnosis) method and that oromandibular dystonia could be evaluated by examination via video-tele-medicine over SkypeTM, if necessary (18). In short, tele-medicine methods seem to be useful in the diagnosis and follow-up of patients with movement disorders. In this study, a visual examination was not performed with our patients due to legal and regulatory barriers in our country; however, movement disorder evaluation with video-tele-medicine applications was encouraging for future applications.

Looking at the situation of tele-medicine applications in our country, the "health information network" project was started by the Ministry of Health in 2015, and "tele-medicine and teleradiology" systems within E-Pulse were established. This project aimed to provide safe access to health data of patients on the internet 24 hours a day, 7 days a week in institutions and organizations that provide health services, and enable teleconsultation between physicians (19). Additionally, especially during the pandemic period, a university's tele-medicine outpatient clinic was started in our country, and many private hospitals started to give health services to patients with remote tele-medicine methods (20).

During the pandemic, our tele-medicine application has enabled us to communicate with our patients who are living outside the city, as there is a travel ban and inter-provincial transportation restrictions in our country. Manufacturers of DBS devices used for treating PD and dystonia are working on remote DBS programming with the tele-medicine method (21). However, it has not yet been put into practical use. In a study, the preoperative assessment of patients with movement disorders who were candidates for DBS surgery was compared between video-tele-medicine method and face-to-face interview method, and it revealed no significant difference in the rates of suitability for surgery and clinical follow-ups after surgery (22).

Patients with PD and dystonia can contact our Movement Disorders Unit via an e-mail address, WhatsApp® line, and phone number that was active before the pandemic. Our unit stopped its outpatient service during the pandemic process and our hospital was converted into a pandemic hospital; therefore, we communicated with our patients through these networks. Due to legal requirements, video calls were not done with our patients. Most patients preferred to use the WhatsApp® line. In total, 71 patients who were admitted to our teleneurology system communicated with our unit 117 times. Fifty-six of 71 patients, 36 of whom were females, were over 50 years of age. Older patients also complied with the tele-medicine method, indicating that this method can be used effectively in the future. Although our application excluded video call applications, it did include written and verbal communication, which is more commonly used in everyday life and might increase patient compliance.

In 2020, the Tele-medicine Working Group of the International Parkinson's and Movement Disorders Association formed by 40 countries (4 from Europe, 5 from North America, 3 from Central America, 6 from South America, 6 from East Asia, and 10 from Africa, and Australia, New Zealand, Pakistan, Israel, and Saudi Arabia) published research on the use of tele-medicine

for movement disorders before and during the pandemic, in which movement disorder experts were surveyed. In this study, 27 (67.5%) countries reported using video visits particularly before the pandemic, whereas the remaining countries communicated with patients using phone calls, e-mails, or texts.

Specific software was not always mentioned; however, the most cited platform was WhatsApp® (also reported by 14 countries), similar to our study. Zoom and Skype applications were also frequently cited. Before the COVID-19 pandemic, half of the countries had regulations regarding the use of tele-medicine, and these were distributed across all represented continents (23). Tele-medicine applications were not legally established in only one country (South Korea) (23).

In this study, the problems of most patients were resolved in the first two meetings; however, 12 patients needed to be interviewed 3-6 times. This finding could be considered an indication that the interviews were effective. Our patients often preferred to communicate in April and May, when the pandemic related restrictions were intense. Of our patients, 21.4% were contacted for drug reports and prescription needs. In this process, the regulation of the Ministry of Health, which provided the extension of the medication reports of patients with chronic diseases and the elimination of the prescription requirement, played an active role in troubleshooting. The problem of 26 (22.2%) patients was solved by directing them to purchase their drugs from the pharmacy without a prescription, for which a report had already been prepared.

The most common reason for communication was "worsening and rigidity in the current state of the disease" in 43 (30.8%) interviews. Considering the reason for this consultation, the inactivity of patients and the concerns experienced due to the restrictions during the pandemic period might worsen the clinical status of our patients. In these circumstances, being easily accessible to our patients allowed us to prevent further deterioration by interfering with their treatment, and to reassure our patients by making them feel safe. Only 21.4% (n=25) of our patients were given an appointment since a physical interview was necessary. The problem of 78.6% of patients was resolved with dose changes and/or non-drug medical advice without hospital visits. The problem of 78.6% of patients was resolved without hospital visits, with dose changes and/or non-drug medical advice. During the pandemic, our consulting practice, which includes tele-medicine tools, helps reduce the risk of transmission for both patients and healthcare workers.

Study Limitations

The e-mail, WhatsApp® line, and telephone systems that we mainly used during the crisis were the communication tools that we routinely used for consultation or appointment setting in the pre-pandemic period. Since our ministry or university did not have a tele-medicine system that was put into practice, we aimed to help our patients by maintaining this tele-medicine-like system to communicate with our patients with our means. Another limitation was that a standardized communication system was unavailable. The reason for this limitation was to ensure that maximum patients could reach us, rather than creating a standardized system since the aforementioned system was used in patients who were being followed up. Our most important limitation was that we did not have a more general tele-medicine application that was accepted on a legal basis. No visual neurologic examination or interview was conducted with patients due to legal requirements. Oral and written recommendations were made. With tele-medicine service provided with the video screen application, our solution rate would be higher and appointments would be made with fewer patients. Additionally, since patient records were retrospectively evaluated, all age and education data could not be reached, and the ages of patients could only be categorized as over or under 50 years. Another limitation was that the study was single-centered.

Suggestions

This period has shown that the telemedical infrastructure of the healthcare system should be developed in a way that is appropriate for patient evaluation. Legal obligations must be regulated.

Conclusion

Tele-medicine application was of great benefit in times of crisis. The most common reason for patients to communicate was the worsening of the current condition and stiffness in one out of every three patients. The problems of four of the five patients were resolved without hospital visits. Only one-fifth of our patients were given an appointment since a face-to-face meeting was necessary. Our teleneurology application helped reduce the risk of transmission in both patients and healthcare workers during the pandemic. As it is unertain how long the COVID-19 pandemic will continue, this is neither the first nor the last pandemic the Earth will have to deal with. Therefore, developing telemedical applications in terms of their legal aspects and their implementation in the world and our country are necessary.

Ethics

Ethics Committee Approval: The study was approved by the Osmangazi University Ethics Committee on 01.09.2020 with the document numbered E-25403353-050.99-101440.

Informed Consent: Since the records were reviewed retrospectively, specific consent was not obtained for the study. However, a general information is given that records are kept and can be used in scientific research from time to time, while patients communicate through the tele-medicine system.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Concept: N.D.Ç., M.K.K., S.Ö., Design: N.D.Ç., M.K.K., S.Ö., Data Collection or Processing: N.D.Ç., M.K.K., Analysis or Interpretation: N.D.Ç., M.K.K., S.T.A., S.Ö., Literature Search: N.D.Ç., M.K.K., S.T.A., S.Ö., Writing: N.D.Ç., M.K.K., S.T.A., S.Ö.

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