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Telemedicine and the challenge of epilepsy management at the time of COVID-19 pandemic[☆]

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To the Editor

The entire world is currently facing a pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This unprecedented situation is posing an enormous burden on the healthcare systems worldwide and is reshaping the way in which chronic disorders are managed. The current governmental measures of lockdown, social distancing, and self-isolation aimed at slowing the spread of the viral infection, minimizing contacts between potentially infected individuals and healthy subjects. However, they can complicate the management of patients with neurological chronic diseases by causing or worsening concomitant anxiety and depression, hampering the contacts with physicians, and leading to shortages or erratic supply of medicines.

With about 50 million people affected worldwide, epilepsy is one of the most common neurological diseases globally and an important cause of disability and mortality [1] deeply affecting quality of life and social aspects such as driving or work, requiring long-term management. Although current antiseizure medications can effectively control seizures in the majority of patients, one-third of them continue experiencing seizures (drug-resistant epilepsy). Regular outpatient consultations are therefore important for optimizing antiseizure therapy, managing epilepsy-related behavioral or psychological problems, treating concomitant neurological disorders, conveying psychological support, counseling on family planning, and releasing certifications for driving license or fitness for work. All these activities can be severely hampered by the containment measures established to face the pandemic. The rearrangement of the healthcare systems has inevitably prioritized the management of patients with COVID-19 infection, reducing the hospital access of patients with other chronic disorders (including those with epilepsy), postponing, rescheduling, or even canceling appointments and examinations. Furthermore, the industrial lockdown can lead to reduced supplies of antiseizure medications.

Telemedicine services can prove extremely useful in supporting remote healthcare in persons with epilepsy during the current COVID-19 pandemic, particularly for their role in facilitating the interactive exchange of information between patients and physicians [2]. Telemedicine is not inferior to traditional face-to-face visits with regard to seizure control, hospitalizations, emergency room visits, or medication adherence [3,4].

The use of smartphones applications can greatly facilitate the communication and the sharing of information between patients, their families, and the caring physicians [5]. Instant messaging through WhatsApp, social media (e.g., Instagram, Twitter, or Facebook), or the traditional short message service (SMS) allows patients to rapidly and directly contact their physicians, asking urgent questions and exchanging information. However, these interaction systems require the availability and the consent of the treating physician to be contacted or involved in social media. This carries the risk of ethical issues, including setting and maintaining boundaries in the patient–doctor relationship and securing and sharing patient information on social media or on personal online communication, preserving medical confidentiality [6].

Although they cannot fully substitute traditional face-to-face visits, video teleconferencing provides the opportunity for maintaining the patient–doctor relationship, addressing urgent questions, advising on drug-related adverse effects, and conveying other general information for the epilepsy management [7]. Video teleconferencing allows communication and interaction through audio and video but obviously depends on a certain amount of technological knowledge and expertise and the availability of a personal computer or an electronic device to install the teleconferencing platform/software. Patients or caregivers with cognitive impairment, limited education, or low economic resources can hence find it difficult to easily and effectively access this technology. Furthermore, the efficient implementation of this telemedicine service to deliver consultations to improve the remote management of epilepsy relies on the availability of high-speed connection and webcam/microphone quality and on a stable and widespread internet connection.

Electronic seizure diaries are useful resources for recording seizures, monitoring or identifying provocative factors or triggers, reminding patients to take anti-seizure medications keeping track of appointments, and helping the caring physicians to constantly review the antiepileptic treatment [8]. They are used as alternative to traditional paper-based seizure diaries but, compared with the latter, could be more effective in rapidly and directly sharing information using digital devices (e.g., emails, WhatsApp messages, etc.).

The wide availability of smartphones incorporating a camera makes it possible to obtain a video recording of the ictal event, which can be easily sent to the caring neurologist using online communication tools, such as instant messaging (e.g., emails or WhatsApp) or remote document sharing/file exchange. Examining these home-made video recordings can improve diagnostic accuracy, helping in the differential diagnosis with other nonepileptic paroxysmal disorders or in the classification of epileptic seizures [9].

Other digital devices incorporated into mobile phone applications can be useful to detect seizure-like motion (e.g., recording abnormal repetitive motion and/or elevated heart rate), helping to alert emergency contacts (e.g., SeizeAlarm©, http://seizalarm.com/; SmartWatch©, [10], etc.).

Ideally, an effective telemedicine service addressed to patients with epilepsy should incorporate an electronic seizure diary, a video camera for seizure recording, a reminder for drug administration, and a system of video- and audio-communication for exchange of information with the caring physician [11]. Such a tool should be inexpensive or free, have a user-friendly interface to facilitate its use, work on different mobile operating systems (Android, iOS) and operating environment (e.g., Windows, Linux, Mac), and storage confidential data securely. Recently, a health application including all these features has been developed and is going to

be marketed for use in Android and Apple mobile phones under the name PurpleCare™ (information can be found online at: www.dhygee.com). As part of the medical community, we hope that healthcare authorities will support this kind of technology in the near future.

Hopefully, in the next months, restrictive measures of isolation will be progressively reduced allowing a safe return to normality. During this phase, it will be still mandatory to reduce unnecessary access of people to hospital to minimize or prevent the risk of reoccurrence of viral outbreaks. All the features of telemedicine services mentioned above will surely have a positive impact on the remote management of patients with epilepsy during this critical transition phase and even thereafter. In any case, urgent care and assessment by a healthcare professional are always required also during the COVID-19 pandemic in patients with a first-ever seizure, status epilepticus (including nonconvulsive status epilepticus), impaired vital parameters after the seizure(s), seizure-related injury, or convulsive seizure(s) occurring in subjects with diabetes, heart disease, or pregnancy [12,13].

In conclusion, the enormous challenges posed by the current COVID-19 pandemic should be exploited to implement telemedicine services for improving the management of epilepsy. Effective telemedicine tools supported by adequate digital technology will surely prove useful for the long-term management of these patients even once the emergency is over, contributing to reshape care delivery and putting healthcare at the heart of the modernization process.

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Footnotes

☆Names and affiliations of Members of the Study Group are reported at the end of the manuscript.

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