



# Experiencing COVID19 pandemic and neurology: learning by the recent reports and by old literary or scientific descriptions

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The June issue of Neurological Sciences is the second one reporting articles on COVID19 pandemic, describing different experiences with this new disorder that, starting in China and other Asiatic countries, on the last February very fast expanded into Italy, Spain, France, Germany, all Europe, USA, and in all the world.

The North Italy in particularly and all the Italy were the first European areas severely infected, now with more than 240.000 patients, more than 30.000 deaths (between them 150 doctors and more than 200 nurses) and a great collapse of the health system, mainly in some regions like Lombardia, Piemonte, Veneto and Emilia and Romagna.

A lockdown was established on the beginning of march and an immediate reorganization of the hospitals was done, with increasing numbers of intensive care beds, limiting the other normal medical activities, and a need of a new type of organization to guarantee the care continuity.

The next World Federation of Neurology Congress (Rome, 3–7 october 2021) reports in the logo the sentence “Inspired by the past, to build the future of Neurology “: here we would like to remember some old description of pandemic infections, and also focus our attention on some recent articles reporting relationship between neurology and COVID19 and the future organization of the Neurology activities.

## COVID19 and neurology

COVID19 virus infection for sometimes has been considered mainly a non-neurologic disorder, but after the first article of Mao et al. [1] numerous other reports describe the relationship between neurology and COVID [2–5].

In this issue we publish an interesting very comprehensive review by Iroegbu et al. [6] reporting a detailed description of the SARS-CoV2 characteristic, the pathogenetic aspects of the different symptoms and the nervous system involvement.

Also in this issue several other articles describe a possibility or primary or secondary nervous system (central or peripheral) in COVID19 patients.

Calcagno et al. [7] summarize the evidences for the neurologic involvement of pandemic COVID19. They conclude that “as the number of cases of COVID-19 grows globally, neurologists should be vigilant for possible signs of direct and indirect involvement of the nervous system in its entirety. We should also recognize that some patients that recover from COVID-19 may complain of lasting neurological sequelae that may have been overlooked at the time of acute illness”.

Dubbioso et al. [8] report practical recommendations from the Task force of the Italian Society of Neurology (SIN), the Italian Society of Clinical Neurophysiology (SINC) and the Italian Peripheral Nervous System Association (ASNP) for patients with immune-mediated neuropathies during COVID-19 outbreak.

A possible link between COVID19 infections and immunomediated neurologic disorders has been reported by Gialluisi et al. [9] and by Ottaviani et al. [10] who describe a new case of early Guillain Barre’ syndrome in COVID.

Ferrarese et al. [11] describe an Italian multicenter retrospective-prospective observational study on neurological manifestations of COVID-19 (NEURO-COVID) in which hospitalized patients will be recruited either in neurological

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wards or in COVID wards; in the latter cases they will be referred from other specialists to participant neurologists. Outpatients with clinical signs of COVID and neurological manifestations will be also referred to participating neurologists from primary care physicians. A comprehensive data collection, in the form of electronic case report form (eCRF), will register all possible neurological manifestations involving central nervous systems, peripheral nerves and muscles, together with clinical, laboratory (including cerebrospinal fluid, if available), imaging, neurological, neurophysiological, and neuropsychological data. A follow-up at hospital discharge (in hospitalized patients), and for all patients after 3 and 6 months is also planned. The authors believe that this study may help to intercept the full spectrum of neurological manifestations of COVID-19 and, given the large diffusion at national level, can provide a large cohort of patients available for future more focused investigations. Similar observational studies might also be proposed at international level to better define the neurological involvement of COVID-19.

Since recently all the doctor's attentions have been focused on the link between COVID19 and neurologic involvement, Lovati et al. [12] report their experience on a case of herpes simplex- 1 encephalitis at the time of COVID-19 pandemic, remembering that all the other neurologic diseases exist, they need to be under the care and assistance of neurologist and that in general neurology doesn't have to completely lock down in this period.

## Telemedicine activities

As we recently reported [13], telemedicine may be of great help in the reorganization of the Neurology services during COVID19 pandemic.

Two examples are in this issue describing telemedicine and technological devices for Amyotrophic Lateral Sclerosis patient evaluation [14] and in multiple sclerosis [15].

Schirinzi et al. [16] reviewed the messages spontaneously sent by patients to an Italian PD clinic during the first two weeks of COVID-19 lockdown (9–21 March 2020), in order to highlight their main needs and then outline appropriate strategies of care for this critical period. Out of 160 message, 46% queried about clinical services; 28% communicated an acute clinical worsening for which a therapeutic change has been done in 52% of cases; 17% (those patients with younger age and milder disease) required information about the relationship between PD and COVID-19; 8% informed about an intercurrent event.

All these data suggest the request of appropriate and complete information, a timely updating on changes in clinical services, and the continuity of care, even in a remote mode,

that may also experience some direct link with patients and their needs.

## Pandemic infections in the past

In these months, doctors and health workers, politicians and all the general populations were very much involved not only to try to be protected by the infection and by the care of their patients, family members and friends, but they were also involved in the general debate about the management of this dramatic situation in all the world, discussing the cause, the general management of the pandemic, the economic and social consequences and the possibility to limit them.

Since past experiences may help to everyone to limit mistakes, I would like to remember at least two very interesting books, reporting two severe episodes of pestilence in north Italy, the first one in 1348 described by G. Boccaccio in "The Decameron" [17] and the second described by Alessandro Manzoni in the 32th and 33th chapters of the "Promessi sposi" *The Betrothed* [18].

One of the first epidemic plague in Italy was in Florence in 1348, when many people dead, not only poor people, but also big artists as Lorenzetti and others. The only possibility to save themselves was to refuge outside the city and to eliminate the external contact.

The Boccaccio's masterpiece reports the description of "quarantine", with a collection of a hundred novels that ten boys, refugees in a villa in the countryside, told each other to have fun, during their stay in that place to escape the plague. "The Decameron", in addition to being a work to draw on to understand what an epidemic entails, becomes a companion text when used as a simple reading, now that we are forced to stay in the house as long as possible. "The Decameron", with its funny and passionate stories, also explains that the Middle Age Society preferred to save the youngest and, at that time as now, the richest people was much more able to be protected [19].

In 1300 Milan, due to the political and commercial isolation in under the Visconti, was spared by the plague. This was not the case in 1576 and in the years 1629–1630 in which, as Manzoni tells us, the epidemic struck with particular violence, with a reduction of the population of the city to a quarter of that pre-pestilence.

Manzoni in *The Betrothed* (I Promessi Sposi) accurately described the causes of the plague in Milan, identifying not only the physical vehicles, but also the circumstances favoring them: the attempt by the population to deny the existence of the disease, the initial inaction of the medical and political authorities, their inability to apply effective methods and the hysteria of the masses, with the pressing demand of a procession to appease God, which had the function of further promoting the epidemic.

Both histories have many similarities to what happened in the world in these two months, suggesting that in any time a very severe infective condition induces similar reaction in the authorities, in the population, in the health community.

Another very interesting article linked to the present situation is that one published on Science in 1919 by Soper [20], regarding the influenza pandemic of 1919. I here report some of the author's suggestions, 100 years ago, that are very contemporary and actual in relationship to the COVID pandemic.

GA Sopper, who was a major of the USA sanitary corp, wrote: "The most astonishing thing about the pandemic was the complete mystery which surrounded it. Nobody seemed to know what the disease was, where it came from or how to stop it. Anxious minds are inquiring to-day whether another wave of it will come again [...]. It is necessary to shut off those who are capable of giving off the virus from those who are capable of being infected, or vice versa. This is a very difficult procedure. First, it is difficult because it is impossible to discover all the virus producers. Second, it is difficult because it is impossible to know who are and who are not immune. Complete isolation is not feasible for entire cities nor for parts of cities, nor for individuals in cities. It is feasible for some small towns and villages, and some have tried it with success. The fact that in many instances the attack has been merely postponed by no means invalidates the principle [...]. The development of the disease was undoubtedly a complicated biological phenomenon. A virus was produced which was capable of overcoming the resistance of a large proportion of those who were exposed to it [...]. First as to the things which it is desirable not to do. It is not desirable to close theaters, churches and schools unless public opinion emphatically demands it. It is not desirable to make the general wearing of masks compulsory. Patients should not be masked except when traveling from one point to another -they need air. Suspects should wear masks until their cases are positively diagnosed. Influenza patients should be kept separate from other patients. A case of influenza should be dealt with as though it was as contagious as a case of small-pox: there is danger in the presence of the sick, in his eating utensils, in his clothes and in the air into which he coughs and sneezes, if indeed these respiratory symptoms are present. He is to be regarded as much more seriously ill than his visible symptoms perhaps indicate. It is worthwhile to give more attention to the avoidance of unnecessary personal risks and to the promotion of better personal health [...].

The writer's idea of the most essential things to remember are embodied in the following twelve condensed rules which were prepared in September, recommended by the Surgeon General of the Army and published by order of the Secretary of War to be given all possible publicity: 1. Avoid needless crowding-influenza is a crowd disease. 2. Smother your coughs and sneezes-others do not want the germs which you would throw away. 3. Your nose, not your mouth was made to breathe through-get the habit. 4. Remember the three C's-a

clean mouth, clean skin, and clean clothes. 5. Try to keep cool when you walk and warm when you ride and sleep. 6. Open the windows-always at home at night; at the office when practicable. 7. Food will win the war if you give it a chance-help by choosing and chewing your food well. 8. Your fate may be in your own handswash your hands before eating. 9. Don't let the waste products of digestion accumulate-drink a glass or two of water on getting up. 10. Don't use a napkin, towel, spoon, fork, glass or cup which has been used by another person and not washed. 11. Avoid tight clothes, tight shoes, tight gloves-seek to make nature your ally not your prisoner. 12. When the air is pure breathe all of it you can-breathe deeply."

## Health professionals, the heroes of these months

The Health professionals (family doctor, hospital doctors and nurses) have been the heroes of these months, assuring the assistance and care to all people, in many cases, with frequently limited facilities to protect themselves, frequently leading to infection and death.

In this issue Mosafarchi et al. [21] from Iran focused their attention on the question: "Why don't they quit their jobs despite the lack of facilities and the certainty that they will become infectious or die, demonstrating a big self-sacrifice attitude?" .

Since, to date, most studies in this area have focused on the stewardship behavior of managers, they propose that the death of the "frontline healthcare professions" during COVID-19 are needed more studies to develop the new type of "self-sacrifices" theories in crisis management and "designated an especial part of researches to studying the brain mechanism of these healthcare professionals which they sacrifice themselves, can be a minor substitute to their effort in the frontline of fighting with COVID-19" .

We accepted this suggestion and we hope that a debate and new research projects may be focused on this area.

## Conclusions

We fully agree with all the authors reporting that Neurology cannot be lockdown in this period, but it is necessary to be reorganized in a new way in order to continue to have the care continuity for the neurologic patients. In the future, hoping that the pandemic will be limited soon, we need to reconquer for Neurology a primary role in the medical culture and consequently in the care system, in relationship to the number of our patients, to the severity of their symptoms, to the centrality of the Nervous System in the coordination of all the body functions, to the utility of an early treatments of its

dysfunction, and finally in relationship to the specific role on the Neurology and Neuroscience research and teaching. In according to all these data, the Board of the Italian Professor of Neurology [22] reports their consideration on the COVID19 pandemic and the present and future organization of the Neurology in Italy, considerations that has been supported in the past and after COVID19 by many other reports. [4, 23–28].

Going back to the lessons from the other pandemics, everything was changed afterward: in the 1348, in Italy the democracy of the town-state finished, substituted by the power of the Vatican and the other European Empires, and later the period of the Renaissance of arts and beauties started with Lorenzo de' Medici, Leonardo da Vinci, Michelangelo, Galileo, Caravaggio, Raffaello, etc. For the Milan plague, Manzoni described that it finished after a big rain, sent by the Providence and God, but poverty remained for decades. It was mitigated by the new illuministic era in which more science and research were developed. The Spanish pandemic coincided with the end of the 1st world war, with all the economic and social difficulties that a war leaves.

After the COVID19 dramatic experience, I think and hope that everything will change, with more solidarity and welfare in the world, more global organization, no wars, less economic differences between rich and poor persons and countries, more freedoms and connections between the different institutions, more interaction and coordination between scientists.

Similarly to all the scientific journals, Neurologic Sciences is trying to give its contribution to the best knowledge about what is happening, in order to find the best solutions.

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