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Time for a "Second Wave" of COVID-19 Data

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Time for a “Second Wave” of COVID-19 Data



Lenin supposedly said, “There are decades when nothing happens, and there are weeks when decades happen.”¹ Although likely apocryphal, the statement is nonetheless a good summary for what 2020 has felt like. The early days of the first wave of the coronavirus disease 2019 (COVID-19) pandemic simultaneously seems like a few months ago and many years ago. In March and April, our community was dealing with the rapidly growing body of literature regarding neuroimaging findings in these patients and trying to tie this into our developing knowledge regarding the pathophysiology of this novel pathogen. By now, though, we are familiar with the common imaging appearances of some critically ill patients with COVID-19.

As a group, we have responded admirably to the pandemic in other ways, too. In addition to providing front-line services for both diagnostic and interventional neuroradiology, neuroradiologists have, during a few short months, come together to share valuable information with each other. Rather than retreating inward, the advent (and wide normalization) of regular webinars has meant that we can now attend more conferences than ever and catch up with talks later if they occur at an inconvenient time. Thanks to a plethora of communication tools, from WhatsApp groups and Twitter to mailing lists and American Society of Neuroradiology chat forums, we have come together and shared information on topics ranging from COVID-19 neuroimaging to personal protective equipment protocols and remote working tips. Thus, while we see each other less and less, in ways we are working closer than ever.

Keeping up to date with medical literature in general is a daunting task, though, and this problem has been magnified many times over when trying to keep current with COVID-19-related articles, which sometimes feels like drinking from a firehose. The first wave of such literature with regard to neuroimaging consisted of mainly single-center, retrospective case series (including contributions from our own center²), which were followed by larger retrospective, sometimes multicenter series.³ As experience has grown, some patterns are beginning to emerge. For example, it is now clear that a certain subset of critically patients with COVID-19 can present with diffuse white matter changes, thromboses (either large-vessel occlusions or microvascular thromboses), and

even hemorrhage. This information is thanks to the many published series so far.

However, even in times of an urgent need for more information about this new virus, we must not let our hunger for answers overcome our desire to seek better, higher-quality data. In the “gold rush” of articles that have come forth following the emergence of this new disease, we as a community can often eagerly rush to extrapolate an overriding story or narrative from limited or early data. One example of this came earlier this year, when a few small-denominator case reports suggested that there was a higher rate of stroke due to large-vessel occlusion (LVO) in younger patients with COVID-19. These reports received widespread media coverage, but the media did not widely report the multiple subsequent larger series that showed that, in fact, the number of LVO presentations was much less during the pandemic.

We, thus, need to try to distinguish the signal from the noise, and the truth is that there are many things that we do not yet know. We do not know how many asymptomatic patients with COVID-19 will show changes on their imaging studies or how many patients will show such changes but only demonstrate mild symptoms. We do not know how many patients who would have been admitted before the pandemic but were, instead, sent home had neurologic changes as a result of the virus. We also do not know whether some of the imaging findings we are seeing, microhemorrhages, for example, are related to their critical illness/intensive care unit syndrome or are unique to patients with COVID-19. Finally, and perhaps most important, we do not yet know the natural history of these imaging findings and how they may relate to the patient’s clinical course. What about the neurologic and neuroimaging findings in patients with so-called “long COVID” or patients who have recovered from the disease but still have the sequelae?


Much of the data we have thus far are poor-quality and retrospective in nature. This is not a criticism, but rather an observation. Such is the nature of figuring out an emerging new illness, and these case reports and case series provided very useful information at a time when it was badly needed. However, the answer to this problem is not to collate the data we have and run it through the “meta-analysis machine.” It is, instead, time for us to look forward to a second wave of

COVID-19 data, a wave of prospective, multicenter, and more long-term studies. Many such studies are ongoing, and we eagerly look forward to the results.

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