- Virus

Does a mild case of COVID really damage your brain?

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SCARY HEADLINES about the long-term effects of COVID-19 gain traction easily. Recent news reports have warned that "even mild COVID can cause brain shrinkage," "memory loss" and "long term" "brain damage" that "greatly" changes the brain "as much as a decade of aging." Over time, that fear is likely to wear no better than fears that the virus could spread outdoors at beaches or on pieces of mail.

The media shouldn't underplay the danger of the pandemic, but overplaying risks can degrade public trust and focus attention on the wrong things.

Alarming news stories obscure the fact that the disease affects people in vastly different ways. Some people (most unvaccinated) die. Some get sick despite having gotten three vaccine shots, perhaps due to genetic variations in the immune system. Some end up with long COVID and report suffering for weeks or months with fatigue, problems concentrating, memory lapses and sleep disorders. And a great number of people have cold-like symptoms and recover.

The protracted symptoms of long COVID are a real problem that deserves serious attention. Widespread brain shrinkage isn't.

The brain shrinkage paper that garnered so much media attention didn't include any data on whether the patients had lingering symptoms. And it didn't show that having COVID-19 is likely to change your brain in any medically significant way. If you feel fine, you probably are fine.

"This paper might be the beginning of something — but they would have to do a lot more to show this is permanent or that the patients showed interesting changes in cognition," said Columbia University neurologist Scott Small, who was not involved with the research. Small and other neurologists I spoke with were impressed by how subtle the changes to the brain were. The researchers, who described their brain imaging work in the journal Nature, teased out shifts too tiny to be observed by a radiologist.

Health scare stories often attempt to call attention to lurking risks for those who feel healthy — and that's good if it helps real diseases get caught early. But there's a limit to how useful it is. Some cancer screenings lead to unnecessary surgery. A new study suggests that healthy people with slightly elevated cholesterol don't benefit much from statins. And it turns out that healthy people actually shouldn't take an aspirin a day to prevent strokes. Again: if you feel fine, you probably are fine.

What makes the brain study exciting scientifically is that it takes advantage of unique circumstances — a group of 785 people who had gotten brain scans before the pandemic as part of a data collection effort. Rescanning them allowed the scientists to compare before and after pictures from those who'd had COVID and those who hadn't.

To put the results in perspective, Shamik Bhattacharyya, a neurologist at Brigham and Women's Hospital in Boston, pointed out scatter plots near the bottom of this paper. The dots depict variation in the brain regions of interest. Dots representing different brain measurements on scatter plots jumped up and down, both for the people who'd had COVID and for those who had not. Little changes like these can result from hydration status, other health problems or even the time of day. Nothing in the body is perfectly static or perfectly measurable.

The individual changes measured in the study were subtle, but by extracting information from hundreds of scans together, the researchers concluded those who'd had COVID showed slightly more of a decrease in brain regions they thought might be affected by COVID — those governing memory and sense of smell. One possibility is that the loss of smell in some patients led to changes in the brain, just as human brains are known to "remodel" themselves after changes in hearing or vision. And if the sense returns, the brain might reverse this very minor shift.

Avindra Nath, a neuroimmunologist at the National Institutes of Health who is studying long COVID, said the conclusions might hold clues to what's causing long COVID, and figuring that out is critical to finding treatments. Researchers would love to see a similarly precise brain imaging study that included people with lingering symptoms.

One weird finding that nobody could explain was a slight difference between the COVID and control groups in the scans taken before the pandemic — the COVID patients actually started with smaller brains. "It's highly unclear why this was true," said Bhattacharyya.

People's gray matter does slowly shrink with age, but the changes measured in this study aren't necessarily permanent, say the neurologists. An illness can temporarily change the brain, but so can learning new skills such as juggling or driving a taxi.

Public health officials, doctors, and media outlets aren't helping if they mislead people for any reason. Those who feel they can't trust the mainstream media will migrate to fringe scientists and media figures who serve up vastly exaggerated reports of vaccine side effects, or promises of miracle cures. The sea of COVID misinformation is too vast to police — the best antidote for it is trustworthy, balanced information coming through mainstream channels.

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