Portable MRI—Coming to the ICU?

A portable magnetic resonance imaging (MRI) scanner used to assess brain injury at the bedside was feasible and safe in a study involving 50 critically ill patients at Yale New Haven Hospital’s intensive care units (ICUs). The prototype portable MRI plugs into a standard wall outlet and maneuvers easily in an ICU room, researchers reported in *JAMA Neurology*.

Twenty patients had coronavirus disease 2019 (COVID-19) with altered mental status, while the rest presented with an ischemic or hemorrhagic stroke, subarachnoid hemorrhage, traumatic brain injury, or brain tumor. The bedside scans found abnormalities among 40% of patients with COVID-19 and 97% of patients without the infection. No adverse events or complications arose.

MRI data can now be acquired at low magnetic field strength, allowing for an open scanner design that makes patient handling and positioning easier. The prototype’s low-field strength also means it’s compatible with ferromagnetic materials. All ICU equipment—including vital sign monitors, intravenous infusion pumps, ventilators, and compressed gas tanks—remained in the patients’ rooms, along with the bedside nurse and MRI operator. Eighteen patients were mechanically ventilated and 3 received continuous kidney replacement therapy during the imaging, which took about 35 minutes on average.

For the most part, the bedside findings agreed with those from conventional MRI or computed tomography among the 40 patients who received both. However, the portable MRI missed a diffuse subarachnoid hemorrhage. The device needs further validation in prospective multicenter studies, the authors wrote.

Combining Rapid PCR and Antibody Tests Improved COVID-19 Diagnosis

Nose and throat swab polymerase chain reaction (PCR) testing can miss up to 50% of coronavirus disease 2019 (COVID-19) cases, in part because the virus may have already cleared the upper respiratory tract. But by then, patients may have developed antibodies against the virus. An approach that combines rapid PCR and antibody testing could help physicians quickly diagnose more cases, a recent small study of hospitalized patients with suspected COVID-19 suggested.

A University of Cambridge–led team analyzed previously collected data from the COVIDx Study, in which they clinically validated a simple amplification-based assay known as SAMBA II, a rapid PCR test to detect severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Developed by a Cambridge spinoff company with partial US National Institutes of Health funding, the point-of-care (POC) test is now in routine clinical use in the UK.

In the new analysis, the researchers also included stored sera from a subset of 45 patients, which allowed for antibody testing. They collected the patients’ swabs and sera samples a median of 7 days after their symptoms emerged. About half of this group had COVID-19.

The SAMBA II group had about 1 in 5 positive cases based on a reference standard that combined laboratory-based PCR and neutralizing antibody testing. But when the researchers combined the SAMBA II results with those from either of 2 rapid lateral flow antibody assays, the positive predictive value increased to 100%.

The POC antibody tests had 100% negative predictive agreement with the laboratory-based neutralizing antibody test in a separate analysis of fresh finger prick blood from 128 patients with suspected COVID-19 who were not part of the COVIDx Study. Importantly, the assays detected antibodies induced by a now-dominant SARS-CoV-2 variant that wasn’t widespread when the tests were developed.

“[R]apid combined testing could be important in diagnosis and management of COVID-19,” the authors wrote in *Cell Reports Medicine*. “We envisage a deployment approach whereby both test samples, finger prick whole blood and nose/throat swab, are taken at the same time on admission to hospital.”

Heritable Genome Editing Not Ready for the Clinic, Panel Says

Two years after the “CRISPR babies” controversy, a committee of international experts has concluded in a new consensus report that pregnancies with genome-edited human embryos aren’t ready for prime time.

Before scientists attempt to facilitate pregnancies with modified human embryos, more research must show that precise genomic changes can be made efficiently and reliably—without causing unwanted changes. Once the science is in place, heritable human genome editing, where permitted, should proceed incrementally, the experts said in a series of recommendations. The first applications should be limited to prospective parents whose children would otherwise inherit a serious single-gene disease that causes severe illness or early death.

The report comes from the International Commission on the Clinical Use of Human Germline Genome Editing, a group of experts from 10 countries convened by the US National Academy of Medicine, the US National Academy of Sciences, and the UK’s Royal Society. The document focuses on scientific considerations and lays out a “responsible pathway for clinical use” of heritable human genome editing. The group also called for the formation of an international scientific advisory panel of independent experts that can assess any technique’s safety and effectiveness before it’s used clinically. —Jennifer Abbasi

**Note:** Source references are available through embedded hyperlinks in the article text online.