

Researchers Publish Overview of Evidence that COVID-19 Affects Much More than the Lungs

Described as a novel, “once-in-a-century” disease, COVID-19 research is evolving to include a growing body of evidence that the virus’s impact goes far beyond the pulmonary system.

Studies suggest COVID-19 patients may at first present with atypical neurologic, gastrointestinal, cardiac and musculoskeletal imaging findings, which are more likely to go undiagnosed, according to the paper [“Clinical Characteristics and Multisystem Imaging Findings of COVID-19: An Overview for Orthopedic Surgeons,”](#) published August 17 in *HSS Journal: The Musculoskeletal Journal of Hospital for Special Surgery*.



Dr. Jean Jose

“This is one of the first papers to present all of the imaging manifestations of COVID-19 known to date,” said study author Jean Jose, D.O., professor of clinical radiology, orthopedic surgery and physical medicine and rehabilitation at the University of Miami Miller School of Medicine.

The pandemic has turned medicine in specialties such as orthopedics upside down, according to study author Thomas M. Best, M.D., Ph.D., FACSM, professor of orthopedic surgery and biomedical engineering at the Miller School of Medicine and research director of the UHealth Sports Medicine Institute.

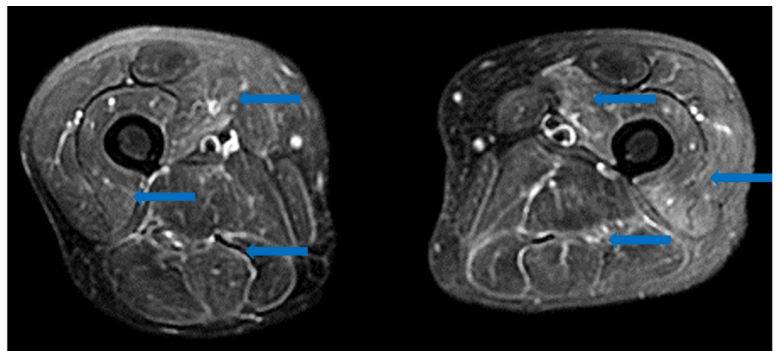
Nearly one in five health care visits in the U.S. before the pandemic were for musculoskeletal complaints, including back, hip, and knee pain. But restrictions on elective procedures during the pandemic created a tremendous backlog of orthopedic cases.

“Clinical and basic science research, as well as national public health guidance, regarding COVID-19 is rapidly and continuously evolving. Along with our medicine and public health colleagues, orthopedic surgeons and orthopedic care providers should remain up to date on the latest COVID-19 peer-reviewed evidence, not only to better respond to changes in our clinical practice and to accurately counsel surgical patients but also to ultimately practice safe and efficacious surgery for patients in a new and changing clinical environment,” Dr. Best said.

Dr. Jose, Dr. Best, and Gireesh Reddy, M.D., orthopedic surgery resident at the Miller School, collaborated with researchers at the Hospital for Special Surgery in New York on a review of literature on clinical characteristics and imaging

findings of COVID-19.

Coughing, shortness of breath, and fever remain the most common symptoms among COVID-19 patients. And most are admitted to the hospital for pneumonia and low blood oxygen.



Axial fluid sensitive MRI of the thighs demonstrates diffuse multicompartiment intramuscular high T2 signal indicative of edema and myositis.

In addition to typical pulmonary symptoms, early reports from Italy and China suggest patients also present with significant cardiac signs and symptoms, including myocarditis.

An increasing number of global studies point to COVID-19 being associated with dangerous blood clots, or thromboembolic disease, including blockages in arteries in the lungs, limbs, and brain.

Researchers are reporting more data on COVID-19-related musculoskeletal and neurologic symptoms. As many as 84% of COVID-19 patients in intensive care units have neurologic manifestations, including stroke, altered mental status, and Guillain-Barré syndrome, according to studies.

Musculoskeletal issues caused by COVID-19 remain underrecognized, according to Dr. Jose. So far, there are limited reports on isolated musculoskeletal manifestations. But there are reports on COVID-19-associated muscle pain and weakness, according to the paper.

Gastrointestinal symptoms occur in up to 20% of COVID-19 patients, with the most common symptoms being diarrhea, abdominal pain, or vomiting. Recent studies suggest COVID-19 may cause acute kidney failure. And in some cases, severe COVID-19 can result in a “cytokine storm,” including neurological and pulmonary manifestations.

The cytokine storm can lead to multi-organ system failure, the authors wrote. “How this cytokine storm affects the musculoskeletal system is largely unknown at this point but could potentially affect our patients with diseases such as rheumatoid arthritis or osteoarthritis,” Dr. Best said.

“Overall, it is imperative that all health care professionals have a broader understanding of all the possible clinical and imaging manifestations of this global pandemic to improve patient and community outcomes,” Dr. Jose said. “More research will be needed to determine the long-term consequences of this pandemic.”