Surgical Masks May Hide Neurological Diagnoses

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Abstract
COVID-19 has disrupted the routine flow of patients through emergency departments (EDs) across the globe, including the need to consider COVID-19 for nearly all presenting complaints. The constraints of mask wearing and isolation have created inherent barriers to timely stroke care. We present a case that highlights one of the many ways in which the pandemic has negatively impacted the care of the non-COVID patient. A patient presented to the ED with a chief complaint of diffuse weakness and a new-onset cough on awakening. His daughter noted that he was slurring his words. An emergency medicine resident evaluated him, ordered laboratory studies, and decided to monitor the patient. The same resident later noted the patient veering to the left when walking, prompting a more detailed neurological examination. On removing the patient’s facemask, a left lower facial weakness was evident. The resident called a Code Stroke roughly 50 min after the patient initially presented to the ED. The patient proved to have an acute infarct at the right thalamocapsular junction. Universal masking policies during the COVID-19 pandemic should not prevent the routine assessment of cranial nerve function for all patients presenting to an ED.
Introduction

The rapid identification of stroke patients presenting to an emergency department (ED) has always required vigilance on behalf of triage nurses and emergency physicians, and advances in diagnostics and treatment options coupled with increasingly aggressive timelines as defined by the American Heart Association have only intensified the need for near immediate recognition of potential stroke symptoms. COVID-19 has disrupted the routine flow of patients through EDs across the globe, and the ripple effects of the pandemic on non-COVID-19 patients have yet to be entirely understood. In particular, the need to consider COVID-19 for nearly all presenting complaints as well as the constraints of mask wearing and isolation have created inherent barriers to timely stroke care. In terms of examination in an ED setting, there is little, beyond the fundamentals of the vital signs and the clinical judgment of “sick or not sick,” that is required for every patient. Indeed, the classic text Bedside Diagnostic Examination [1] begins with the statement that “within practical limits, there is no such thing as a routine physical examination.” We present a case that highlights one of the many ways in which the pandemic has negatively impacted the care of the non-COVID-19 patient.

Case Report

An 84-year-old man with a past medical history of hypertension, hyperlipidemia, and coronary artery disease presented to the ED with a chief complaint of weakness. He felt normal at 20:00 the previous evening when he went to sleep but reported significant diffuse weakness and a new onset cough at 08:00 that morning on awakening. He denied fever or recent sick contacts. Around 13:00 that day, his daughter noted that he was slurring his words. A triage nurse assessed him in the ED at 16:52. An emergency medicine resident evaluated him at 17:19, ordered laboratory studies, and decided to monitor the patient.

The same resident later noted the patient veering to the left when walking, prompting a more detailed neurological examination. On removing the patient’s facemask, a left lower facial weakness was evident. The resident called a Code Stroke at 17:41, roughly 50 min after the patient initially presented to the ED. On initial examination, blood pressure was 186/97, heart rate 76 beats/min, respirations 18/min, oxygen saturation 97%, and temperature 98.7 F. The patient was alert and oriented to person and place. He could not identify the current month but knew his age. Without a face mask, his speech was mildly dysarthric but fluent. Naming and repetition were normal. Pupils were equal, round, and reactive to light. Extraocular movement was intact with no nystagmus, and visual fields were full. Facial sensation was intact and symmetric, but he had clear weakness of the left lower face. The palate was symmetric, and the tongue protrusion was midline. Muscle tone and bulk were normal, strength was 5/5 throughout, and sensory function was intact and symmetric. There was no extinction to double simultaneous stimulation. Reflexes were 2+ throughout, and coordination with finger-to-nose and heel-to-shin were normal. His initial NIH stroke scale was 4, for orientation, facial weakness, and dysarthria.

The non-contrast head CT showed no acute hemorrhage or territorial infarction, while noting small vessel ischemic disease. The CT angiogram of the head and neck revealed no large vessel occlusion but showed significant bilateral cavernous carotid atherosclerosis. The CT perfusion study of the brain showed no significant decrease in perfusion. Tissue plasminogen activator was not administered because the patient was outside the 4.5-h window, and endovascular treatments were not recommended due to the absence of a large vessel
occlusion. MRI brain showed a subcentimeter acute infarct at the right thalamocapsular junction.

**Discussion**

There is no standard physical examination that applies to all patients presenting to an ED. The Centers for Medicare and Medicaid Services provided some guidance in their 1997 Documentation Guidelines for Evaluation and Management Services [2], but even their criteria for a comprehensive general examination do not require examination of the mouth or facial musculature unless the reported symptoms dictate it. In this case, the patient’s complaints were of generalized weakness and cough, suggesting a systemic process and supporting the recommendation for mask wearing and screening for SARS-CoV-2.

While universal masking of patients presenting to the ED is justified in the midst of the pandemic, the rate of stroke in the SAR-CoV-2 ED population is approximately 1.6% [3]. This increased risk of stroke may warrant a policy of a universal stroke screen, such as BE-FAST [4] for every patient. This would require removal of masks to screen every patient with symptoms of SARS-CoV-2 as well as those reporting neurological symptoms. Universal masking policies during the COVID-19 pandemic should not prevent the routine assessment of cranial nerve function for all patients presenting to an ED.

**Statement of Ethics**

Ethical approval is not required in accordance with local guidelines. Written informed consent was obtained from the participant for publication of the details of his medical case. There are no accompanying images.

**Conflict of Interest Statement**

The authors have no conflicts of interest to declare.

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**Author Contributions**

Martin S. Gizzi, MD, PhD, and Andrew Amaranto, MD, drafted the manuscript for intellectual content. Ryan J. Mason, BS, abstracted the records and drafted the manuscript.

**Data Availability Statement**

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.
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