ISSN 2689-8268 | Volume 5

American Journal of Surgery and Clinical Case Reports

Case Series Open Access

Anosmia, Ageusia, Dysphagia and Death: A Case Series of Patients Admitted for COVID-19

Ulrich MT[1,2], Oh NJ[2], Rodrigues M[2], Kirchner G[1], Byward C[1] and Garrison RC[1,2]

[1]Riverside University Health System Medical Center, Moreno Valley, CA, USA 26520 Cactus Avenue Moreno Valley, California 92555

[2]Loma Linda University Medical Center, School of Medicine, Loma Linda, CA, USA 11234 Anderson St, Loma Linda, CA 92354

***Corresponding author:**

Michael T. Ulrich,
Riverside University Health System Medical Center, Moreno Valley, 11234 Anderson St, Loma Linda, CA, 92354, USA, E-mail: m.ulrich@ruhealth.org

Received: 15 Jul 2022
Accepted: 25 Jul 2022
Published: 30 Jul 2022
J Short Name: AJSCCR

Citation:

Ulrich MT. Anosmia, Ageusia, Dysphagia and Death: A Case Series of Patients Admitted for COVID-19. Ame J Surg Clin Case Rep. 2022; 5(4): 1-4

1. Abstract

1.1. Introduction: The SARS-CoV-2 pandemic has reached every corners of the world killing more than 6.1 million patients worldwide. Anosmia and ageusia are relatively common manifestations of this disease. Dysphagia resulting from prolonged hospitalization and ageusia increases risk of aspiration and death. Case presentation: We present four cases of dysphagia in patients with SARS-CoV-2 infection that had no history of dysphagia. In all of these patients the dysphagia complicated their hospital course and in one case led to the patient's death. Discussion: Severe COVID-19 infection with ageusia can lead to significant disuse atrophy of oropharyngeal muscles and recent data indicating the neuroinvasive nature of COVID-19, the potential for dysphagia sequalae of COVID-19 disease should not be dismissed.

2. Background

The SARS-CoV-2 pandemic has reached every corner of the world and at the time of this article, killed more than 6.1 million patients worldwide [1]. In the early months of the pandemic little was known about the pathophysiology or disease progression of those infected with the virus; however, our knowledge has grown significantly and providers now have some understanding of the symptomatology and disease progression for most patients. COVID-19 symptoms that are reported most commonly are fever, cough, sore throat, breathlessness, fatigue, and malaise [2, 3]. Anosmia and ageusia are also relatively common symptoms of SARS-CoV-2 infection and most patients who develop these symptoms recover [4, 5].

Dysphagia is defined as difficulty with swallowing and is associated with multiple disease processes. Dysphagia is a common clinical entity for hospitalized patients and increases the risk of aspirating oropharyngeal contents [6]. Aspiration pneumonia and pneumonitis are significant causes of morbidity and mortality in hospitalized patients [7]. Dysphagia with aspiration has been reported in patients with SARS-CoV-2 infection; however, these cases were in patients who had undergone endotracheal intubation [8]. The act of swallowing is controlled and executed by the cerebral cortex, subcortex, brainstem, cranial nerves and oropharyngeal muscles which may be affected by COVID-19 through direct neuroinvasion of the virus [9, 10], and associated disuse atrophy of oropharyngeal musculature.

Our clinical experience has identified a subset of patients with a protracted recovery period marked by prolonged ageusia or anosmia, decreased oral intake, shortness of breath or hypoxia when eating and eventually dysphagia. These patients had no prior history of common causes of dysphagia such as advanced dementia, cerebral vascular disease or endotracheal intubation. In one of these cases, the patient eventually developed oropharyngeal dysphagia and could no longer manage their secretions, eventually resulting in aspiration, cardiac arrest, and death. The mechanism for these symptoms is unknown; however, may reflect neuroinvasion of the SARS-CoV-2 infection and disuse atrophy of the oropharyngeal musculature. Below we present four cases.

3. Case Summaries

84-year-old COVID-19 positive female who was transferred from a Skilled Nursing Facility (SNF) for acute symptomatic anemia in the setting of acute pyelonephritis with a past medical history of hypertension, hyperlipidemia, dementia, T2DM, carotid artery stenosis, and complete heart block status post pacemaker placement. The patient was alert and oriented to name only, which was not her baseline of being alert and oriented x 4 with good menta-

tion. Initial laboratory data were significant for WBC 15.6, Hgb 5.0, Hct 16.7, platelets 484, Na 135, BUN 48, Cr 1.61, lactate 1.3, procalcitonin 0.75, albumin 2.3. UA had trace ketones, positive proteins, positive nitrites, large leukocyte esterase, and pH 5.0. Her admission weight was 64.7 kg (142 lb 9.5 oz). She also had difficulty swallowing pills early upon admission with no previous history of swallowing difficulties, which prompted Speech-Language Pathology (SLP) consultation for clinical evaluation of swallowing. Previously at the SNF, she was consuming a regular texture diet with thin liquids. Swallow evaluation during this admission revealed mild-moderate oral dysphagia characterized by decreased oral bolus retrieval, as well as suspected pharyngeal phase dysphagia characterized by multiple swallows per bolus and suspected decreased hyolaryngeal elevation. The patient had signs of suspected airway invasion after swallowing food with regular textures which was evidenced by coughing. The patient's recommended diet was puree and thin liquids, which was tolerated without acute pulmonary complications. During subsequent sessions of swallowing therapy, the patient demonstrated improvement in her mental status and oral bolus awareness; however, she continued to have mild confusion and difficulty participating in treatment. SLP recommended diet texture advancement to mechanical soft chopped solids and thin liquids in the following week, which was determined to be the least restrictive and safest diet consistency at the time of her discharge.

79-year-old male who was admitted from a SNF with shortness of breath and a positive COVID-19 test. He was at the SNF for physical rehabilitation after an acetabular fracture. The patient had a history of prostatic hypertrophy, hypertension, and dyslipidemia. Admission laboratory data were significant for a WBC of 6.2, Hgb 13.5, Hct 40.6, platelets 231, fibrinogen 859, d-dimer 3.96, ESR 102, Na 135, K 4.4, BUN 20, Cr 0.840, Albumin 2.5 and LDH 526. Admission weight was 61.3 kg. On the day of admission, the patient was oriented to person and date only. He was consuming a regular texture and thin liquid diet. Throughout the hospital course, he experienced worsening hypoxia and his oxygen requirements fluctuated between 2L/min and 40L/min via High Flow Nasal Cannula (HFNC). The patient did not require intubation. During the third week of admission, he began showing signs of delirium and acute encephalopathy, likely secondary to sepsis due to COVID-19. He developed difficulty swallowing medications and was kept nothing by mouth (NPO). At the time of his swallowing evaluation he required 40L/min oxygen via High Flow Nasal Canula and was alert and oriented x 1 only. Swallow evaluation revealed suspected pharyngeal dysphagia characterized by coughing with swallowing trials, indicative of suspected aspiration. The patient's swallowing deficits were likely due to impaired coordination of breathing and swallowing, and the patient was kept NPO with ice chips along with tube feedings through a nasogastric (NG) tube. During subsequent swallow evaluations, difficulty with coordinating mastication and breathing resulted in oxygen desaturations and an increased respiratory rate. He presented with suspected pharyngeal phase dysphagia characterized by multiple swallows per bolus and possible decreased hyolaryngeal elevation. Overt signs and symptoms of aspiration with all oral trials were characterized by increased wet breath sounds, throat clearing and coughing episodes. The patient and family desired to change his focus of care to comfort measures and therefore further dysphagia interventions were discontinued. The patient was discharged with hospice and recommendations for oral intake as tolerated for oral gratification.

79-year-old male with a past medical history of hypertension was admitted due to dyspnea, fever, chills, fatigue, dry cough, sore throat, and diarrhea. He first noted symptoms 4 days prior to his Emergency Department (ED) visit. The patient was admitted for COVID-19 pneumonia after receiving a positive COVID-19 test. Admission laboratory data were significant for WBC 6.5, Hgb 17.2, Hct 49.9, platelets 142, fibrinogen 731, d-dimer 1.50, ESR 58, CRP 15.3, Na 136, K 3.0, BUN 28, Cr 1.18, albumin 3.5, LDH 426, lactate 1.68 and ferritin 801.1. The patient's admission weight was 72.6 kg (160 lb). The patient's oxygen requirement increased early in his hospitalization and he was placed on a high flow nasal cannula and eventually on a Vapotherm oxygen delivery system. Approximately 2 weeks into the hospital course, the patient started to have difficulty swallowing pills and was also choking while drinking water. He had no previous history of dysphagia prior to this hospitalization. The clinical swallow evaluation by SLP revealed dysphagia due to difficulty coordinating breathing and swallowing in the setting of COVID-19 pneumonia. The recommendation was made to change his diet to mechanical soft ground solids and thin liquids, along with swallowing therapy. During subsequent SLP swallowing therapy sessions, the patient fatigued and had a suspected aspiration event, which led to a recommendation to keep patient NPO with ice chips and oral medications crushed in pureed solutions. The patient was able to tolerate small amounts of a pureed diet and ongoing dysphagia interventions with SLP; however, the patient sustained a cardiopulmonary arrest and did not survive the resuscitative efforts.

87-year-old female with a past medical history significant for hypertension, congestive heart failure, hyperlipidemia, Alzheimer's disease, peptic ulcer disease, atrial fibrillation, and pacemaker insertion presented to the ED with acute encephalopathy secondary to acute liver failure. Admission laboratory data were significant for WBC 10.9, Hgb 10.5, Hct 32.8, platelets 133, PT 20.3, INR 1.8, PTT 29, Na 133, K 5.3, BUN 67, Cr 3.03, Albumin 3.3, AST 1164, ALT 632, Alk phos 164, LDH 1562, lipase 261, total bilirubin 1.4, CRP 2.77, and a positive COVID-19 test. The patient did not have any respiratory symptoms noted prior to her positive COVID-19 test. She was recommended to remain NPO until swallowing evaluation by SLP. Swallow evaluation revealed functional swallow-

ing ability with no overt signs of aspiration; however, the patient endorsed significant odynophagia due to a sore throat. She also denied a history of dysphagia prior to hospital admission. SLP recommended a mechanical soft diet and thin liquids. Due to reduced oral intake, a nasogastric tube was inserted on the 4th day of hospitalization to assure adequate nutrition and hydration. At day 7 of hospitalization, a repeat swallow evaluation was performed by SLP due to apparent worsening of the patient's mental status, which found diminished oropharyngeal function compared to the initial evaluation. The SLP assessment found moderate oral phase dysphagia complicated by poor oral bolus awareness and retrieval; impaired oral cavity maintenance and oral control with pocketing in anterior sulci; and prolonged oral transit time. In addition, there was suspected pharyngeal phase dysphagia evidenced by multiple swallows per bolus and suspected incomplete hyolaryngeal elevation to palpation. Overt signs of aspiration were observed, characterized by increased wet breath sounds, wet vocal quality, throat clearing, and coughing with mild oxygen desaturations. The patient was recommended to remain NPO with nutrition via NG tube. Ongoing diagnostic assessment of dysphagia revealed severe oropharyngeal dysfunction and no improvement in swallow function. The patient's prognosis was deemed poor and after discussion with family she was discharged to hospice care.

4. Discussion/Conclusion

It may be that the COVID-19 positive status in these patients was simply correlated with the development of dysphagia; however, in the context of suspected disuse atrophy of oropharyngeal muscles and recent data indicating the neuroinvasive nature of COVID-19, the potential for dysphagia sequalae of COVID-19 disease should not be dismissed. Elderly patients often have medical comorbidities that increase their risk of dysphagia; however, these patients did not. Even mild or moderate COVID-19 disease can result in reduced physical mobility, anosmia, ageusia and decreased PO intake which can persist for weeks. We hypothesize that these symptoms can result in disuse atrophy of oropharyngeal muscles and eventually result in swallowing dysfunction with the potential for aspiration. In the hospitalized patient this may prompt NPO status and nasogastric tube placement for medications and enteral nutrition. In the critically ill COVID-19 patient, respiration and swallowing are interdependent and incoordination between these two processes can result in aspiration and poor oral intake. Impaired coordination of breathing and swallowing likely resulted in reduced airway protection for two of the patients discussed. In at least one of our cases, the patient became hypoxic and dyspneic while attempting to eat which resulted in further clinical decompensation. We have observed in this patient population that nutrition is often limited. Risk factors for dysphagia and aspiration identified in prior studies include advanced age, dementia, reduced functional status and malnutrition [6, 11]. The use of high-flow nasal cannula oxygen delivery has been implicated in one study; however, the statistical significance of the results were somewhat limited P value of 0.05 [12].

Our assessment and treatment approaches continue to change as our knowledge of the COVID-19 disease process grows. It should be noted that instrumental evaluation of swallowing (e.g., video fluoroscopic swallowing study and flexible endoscopic evaluation of swallowing) is required to define the pathophysiology of pharyngeal dysphagia, verify presence or absence of pharyngeal residue/penetration/aspiration, and test the utility of compensatory strategies that may improve swallow function [13]. The cases presented were from the initial spike of the pandemic, at which time it was advised by the Centers for Disease Control and Prevention to limit all non-urgent procedures due to increased likelihood of virus spread (due to transportation of infected patients to other hospital departments, aerosol generation, etc.) as well as conservation of personal protective equipment. Since this time, hospital policies were developed to facilitate instrumental evaluation and risk-benefit analysis is utilized to influence service delivery for each individual case.

These cases highlight the importance of early identification of patients who may be at greater risk for developing dysphagia and tracheobronchial aspiration. While further observational studies are needed to determine if COVID-19 is an independent risk factor for the development of dysphagia and aspiration, monitoring of both cognition and swallowing throughout a patient's hospital course may be useful to prevent malnutrition and aspiration.

References

1. University JH. Corona Virus Resource Center. 2021.
2. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, Qiu Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. The Lancet. 2020; 395: 507-13.
3. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus–Infected Pneumonia in Wuhan, China. JAMA. 2020; 323: 1061.
4. Lee Y, Min P, Lee S, Kim SW. Prevalence and Duration of Acute Loss of Smell or Taste in COVID-19 Patients. Journal of Korean Medical Science. 2020; 35.
5. Stokes AK, Anderson KN, Marder EP, Raz KM, Felix SEB, Fullerton KE. Coronavirus Disease 2019 Case Surveillance - United States, January 22–May 30, 2020. In: Prevention CfDCa (ed.). 2020.
6. Aslam M. Dysphagia in the Elderly. Gastroenterology & Hepatology. 2013; 9.
7. Patel DA, Krishnaswami S, Steger E, Conover E, Vaezi MF, Ciucci MR, et al. Economic and survival burden of dysphagia among inpatients in the United States. Diseases of the Esophagus. 2018; 31.
8. Finegold SM. Aspiration Pneumonia. Reviews of Infectious Diseases. 1991; 13: 373-42.
9. Mohan R, Mohapatra B. Shedding Light on Dysphagia Associ-

ated With COVID-19: The What and Why. OTO Open. 2020; 4: 2473974X2093477.

10. Bougakov D, Podell K, Goldberg E. Multiple Neuroinvasive Pathways in COVID-19. Molecular Neurobiology. 2021; 58: 564-75.
11. Wirth R, Dziewas R, Beck AM, Clave P, Heppner HJ, Langmore S, et al. Oropharyngeal dysphagia in older persons – from pathophysiology to adequate intervention: a review and summary of an international expert meeting. Clinical Interventions in Aging. 2016; 189.
12. Oomagari M, Fujishima I, Katagiri N, Arizono S, Watanabe K, Ohno T, et al. Swallowing function during high-flow nasal cannula therapy. European Respiratory Journal. 2015; 46: PA4199.
13. Susan E, Langmore A, Logemann J. After the Clinical Bedside Swallowing Examination: What Next? American Journal of Speech-Language Pathology. 1991.