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Letter to the Editor
Carta ao Editor

Coronavirus pandemic (COVID-19): what speech therapists should know

Pandemia de coronavírus (COVID-19): o que os fonoaudiólogos devem saber

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The world is perplexed by the outbreak of a new severe acute respiratory syndrome. The new coronavirus (COVID-19), reported in December 2019, had its epicenter in Wuhan, Hubei province, in the People's Republic of China and has spread to several countries on all continents[1].

On January 30th, 2020, the World Health Organization (WHO) declared the outbreak of COVID-19 as the sixth public health emergency of international interest after H1N1 (2009), polio (2014), Ebola in West Africa (2014)), Zika (2016) and Ebola in the Democratic Republic of Congo (2019). Therefore, health workers, governments and the general population need to cooperate globally to prevent its spread[1,2]. On February 11, 2020, the Coronavirus Study Group of the International Virus Taxonomy Committee designated it as coronavirus 2 for severe acute respiratory syndrome (SARS-CoV-2) based on phylogeny, taxonomy, and established practice. Soon after, the WHO named the disease caused by this coronavirus as Coronavirus Disease 2019 (COVID-19)[1].

Based on current data, it is possible that SARS-CoV-2 may have initially lodged in bats and was transmitted to humans via pangolin or other wild animals sold in the Huanan seafood market in China[2].

Coronavirus is a single-stranded, ribonucleic acid, named for its solar corona appearance due to surface peaks 9 to 12 nm in length[3]. Studies indicate that its main route of transmission is through contact and respiratory droplets[2].

The initial clinical sign of the disease, which allowed the detection and differentiation of cases, was pneumonia. Observations to date suggest an average viral incubation period of five days[4]. Symptomatic patients present clinical manifestations of the disease usually in less than a week (but it can range from zero to 20 days), consisting of fever, cough, nasal congestion, fatigue and other signs of upper respiratory tract infections. More recent reports also describe gastrointestinal symptoms and asymptomatic infections, especially among young children[5].

The proportion of individuals infected with COVID-19 who remain asymptomatic during the infection has not yet been definitively estimated; however, there are reports that 80% of cases may present no symptoms[6].

Informal evidence is rapidly accumulating on websites around the world that anosmia and dysgeusia can be symptoms associated with COVID-19 infection. Anosmia has been observed in asymptomatic patients with positive results for coronavirus, and therefore can be used as a screening tool. On March 22, the American Academy of Otorhinolaryngology - Head and Neck Surgery (AAO-HNS) website published information suggesting that anosmia, hyposmia and dysgeusia, in the absence of other respiratory diseases, such as allergic rhinitis, acute rhinosinusitis or chronic rhinosinusitis, should alert doctors to the possibility of COVID-19 infection, and justify serious consideration for the isolation and testing of these individuals[7].

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The infection can progress to greater impairment of dyspnea and chest symptoms corresponding to severe pneumonia in approximately 15% of patients[8,9]. Pneumonia occurs mainly in the second or third week of symptomatic infection. Prominent signs of viral pneumonia include decreased oxygen saturation, shunting of blood gases, changes visible through chest X-ray, and other imaging tests[10].

The case detection rate changes daily and can be tracked in almost real time by different media. Several studies began to be written and published, the vast majority based on observations of data from the initial outbreak in China, describing the affected population. These are retrospective studies and the vast majority present casuistry with selection bias due to the lack of scientific criteria that the pandemic imposes. The studies share reports of a median age of 56 years, a high percentage of men (62%), and almost half of patients with comorbidities (48%)[4]. Among adult patients, fever was the most reported symptom (92.8%), followed by cough (69.8%), dyspnea (34.5%), myalgia (27.7%), headache (7.2%) and diarrhea (6.1%). Rhinorrhea was observed in only 4%, sore throat in 5.1%, and pain in the pharynx in 17.4% of patients with relevant clinical information[4].

The syndrome of acute respiratory failure is a complication of the infection by the virus COVID-19, more common in the elderly, with low immunity and association of comorbidities, especially hypertension, diabetes, coronary artery disease, bronchitis, ischemic changes in the central nerve system, and Parkinson's disease. Risk factors for pulmonary complications and increased death rates are increasing age and the accumulation of comorbidities[11].

If respiratory failure cannot be improved or worsens continuously over a short period of time, there is a consensus among reports that intubation must be performed immediately. It is estimated that approximately 5% of patients become critical requiring orotracheal intubation and invasive ventilation[5].

Invasive ventilation through an orotracheal tube is common during this outbreak and is currently considered the best ventilation strategy with the most effective isolation from the airway (less spread of the virus). This procedure was performed on 2.3% of the 1,099 confirmed COVID-19 patients, based on a cohort of patients from 552 hospitals in 30 provinces, autonomous regions and municipalities in China[4]. Reports in the literature on pulmonary recovery days after treatment show that the extent of lesions is reduced, accompanied by partial consolidation and organ fibrosis[12].

Considering that the elderly is the population with the highest risk of complications, that the treatment of choice for severe cases so far is invasive ventilation with the chance of pulmonary sequelae, the context is characterized as a risk for dysphagia. The degree of dysfunction may vary depending on several factors such as the patient's age, the association or not with a presbyphagia condition, time of orotracheal intubation and other comorbidities, which may justify previous swallowing changes and the extension of pulmonary fibrosis in the post treatment.

For approximately 140 years there has been concern with the compromises resulting from an inadequate and/or prolonged orotracheal intubation[13]. The literature describes a period of more than 48 hours as prolonged, which represents a greater risk for the development of swallowing disorders[14]. In China, it was found that invasive ventilation in patients with COVID-19 was maintained on average for approximately 12 days[4].

The passage of the tube orally through the oropharynx and larynx and the use of neuromuscular blockers or sedative agents during the period of mechanical ventilation can cause several changes like: changes in the glottic anatomy, atrophy or inactivity of the skeletal muscles responsible for swallowing, changes in the chemoreceptors and mechanoreceptors present in the mucous membranes of the pharynx and larynx, deficits in the cough reflex and intra oral sensitivity[13-16].

These pathological changes resulting from orotracheal intubation can be aggravated in elderly individuals[3,16]. Loss of weight and muscle mass, changes in the cervical spine, reduced mobility and elasticity of tissues, reduced saliva production, impaired dental status, reduced oral and pharyngeal sensitivity, reduced olfactory and taste function are aspects of aging that add up dysphagia resulting from the treatment of respiratory syndrome[15,17].

The literature states prevalent change in swallowing after orotracheal intubation, requiring specialized assessment and monitoring, and that the rates of dysphagia and bronchoaspiration in this population are underestimated[14,16,17]. Therefore, it is essential to understand that there is a large portion of post-COVID-19 patients who will need speech therapy, considering the absolute need for an artificial airway in critically ill patients in addition to the presence or absence of comorbidities.

After recovery, individuals with COVID-19 will present some degree of pulmonary impairment (12). Respiratory diseases such as pulmonary fibrosis and obstructive sleep apnea are known to be closely associated with pathological deficits in the coordination of swallowing and breathing, a risk aspect for dysphagia and bronchoaspiration[18,19].

It is evident that patients seriously ill with COVID-19 in need of orotracheal intubation have no indication for speech therapy during the period of mechanical ventilation; however, it is feasible that the majority will need evaluation and specialized monitoring for the treatment of their swallowing deficits after the critical period. Presbyphagia, prolonged oral intubation and possible pulmonary impairments are risk factors for the development of dysphagia in this group.

In the therapeutic planning for the rehabilitation of these patients, it is necessary to pay attention to all standard precautionary measures, with the use of personal protective equipment suitable for the protection of the skin and mucous membranes, which are being largely guided by regulatory bodies.

Specifically, in the therapeutic aspect, the procedures must be carefully chosen to minimize the formation of aerosols. There are reports that oral tissue cells, especially in the tongue epithelial cells, can provide possible routes of potential risk of COVID-19 infection[20]. There are still no reliable reports on the average time that acute infection with COVID-19 occurs and on the time it takes for the patient to be free of the virus. Therefore, until the tests no longer detect the presence of the virus, it is advisable that rehabilitation strategies exclude direct manipulation of the oral cavity mucosa, avoiding procedures such as deflating the cuff, coughing, as well as the use of devices

that may increase the possibility of contamination (laryngoscopy and endoscopy for example).

For patients in outpatient rehabilitation, who need to remain in quarantine, the need to protect the healthcare team is a major concern when maintaining rehabilitation is vital. In this context, a universal therapy program, which can be extended for longer periods and can be continued at home, thus avoiding continuous care is advisable. When this is not possible, there is also the option of tele-rehabilitation, which has the additional advantage of maintaining rehabilitation, with remote supervision, without risk of exposure to the virus. In this context, the Federal Council of Speech Therapy published on its website, on March 17, guidelines on tele-attendance, considering emergency conditions, which can be used during the months of March and April 2020 or while the pandemic lasts[21].

Currently, each hospital bed is essential and the discharge of patients as early as possible is vital to reduce the rate of contamination, making speech therapy an essential work. The speech therapist must evaluate the performance of patients with clinical priorities, to enable early and safe discharge from the hospital. It is important to investigate the biomechanics of swallowing and guide the best strategy for rehabilitation and reintroduction of oral feeding in line with the condition evolution; respecting the limits imposed by a pathology that is still little known, and favoring the prompt recovery of the patient and assisting discharge in a time when the lack of available hospital beds can be the main cause of mortality.

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Author contributions

ASF participated in the idealization of the study, data interpretation and writing of the article; GMZ participated in the idealization of the study, analysis and interpretation of data and writing of the article; CLA review of the manuscript.