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Rapid Evidence Search and Summary

Question submitted to RapidInfo4U

To what degree are people with Long COVID presenting with dysphagia and/or voice difficulties?

To what degree are mildly symptomatic / asymptomatic patients post COVID presenting with dysphagia and/or voice difficulties?

Answer

Long COVID has not yet been well-studied and research is underway in this area. Much current information is anecdotal and many of the studies of dysphagia and voice difficulties are observational or prospective studies with small sample sizes and varying lengths of follow-up. The evidence for dysphagia/voice disorders in long-COVID is limited at this point. Studies mainly focus on dysphagia and voice difficulties following acute respiratory distress syndrome (ARDS) and/or the associated respiratory support interventions such as intubation and tracheostomy. The limited evidence suggests people with who have been hospitalised for COVID-19 and particularly, those who have experienced ARDS and undergone associated medical interventions, are at increased risk of dysphagia and/or voice difficulties. There is preliminary evidence that dysphagia can be addressed through rehabilitation, reducing long-term effects. There is insufficient evidence to assess the degree to which mildly symptomatic or asymptomatic patients present with dysphagia and/or voice difficulties post COVID-19.

Details of answer

Long COVID is not well understood or defined and there is limited evidence on this topic. The UK National Institute for Health and Care Excellence (NICE) states that the term 'long COVID' Is used to refer to both ongoing symptomatic COVID-19 (from 4 to 12 weeks) and post-COVID-19 syndrome (12 weeks or more). This document can be accessed here. The US Centers for Disease Control and Prevention (CDC) outline the most commonly reported symptoms of long

COVID (access here). This includes fatigue, shortness of breath, cough, joint pain and chest pain.

Dysphagia or voice difficulties following intubation and/or tracheostomy for COVID-19

Acute respiratory distress syndrome (ARDS) is common in critically ill COVID-19 patients [1]. These patients require invasive or non-invasive respiratory support in the ICU. Dysphagia may result from 'respiratory-swallowing incoordination' which commonly occurs with ARDS or may result from respiratory support interventions such as endotracheal intubation or mechanical ventilation. A review in May 2020 highlighted that data on the incidence and risks of COVID-19 post intubation were not available at that time [2]. It was highlighted that the risk of dysphagia increases post-intubation, however, the estimated prevalence varies depending on the methods used. The review highlighted possible mechanisms of post intubation dysphagia in COVID-19 patients derived from a previous paper [3]. These include:

- Oropharyngeal and laryngeal trauma
- Neuromuscular weakness
- Reduced laryngeal sensitivity
- Altered sensorium
- Gastroesophageal reflux
- Impaired synchronization of breathing and swallowing

The authors also highlight that COVID-19 patients have additional characteristics which may affect the risk for dysphagia such as reduced lung function which could limit physical activity in early stages of rehabilitation [2].

A limited number of small-scale studies have provided information on the incidence and nature of dysphagia post intubation for COVID-19. An observational study assessed swallowing of 101 patients with COVID-19 24 hours after extubation [4]. The authors found that 20 individuals (19.8%) were not able to swallow safely while 54 (53.5%) were classified as needing some diet restrictions and cues to compensatory strategies with swallowing considered safe. The

American Speech-Language-Hearing Association National Outcome Measurement System (ASHA NOMS) was used to classify patients.

A prospective study of 41 patients who underwent tracheostomy for COVID-19 examined outcomes at 2 months following discharge from hospital, with the intention of further follow-up [5]. At follow-up, 12 patients (30%) were reported to have abnormal swallow as indicated by Eating Assessment Tool (EAT-10). This study also examined voice difficulties. At follow-up, five patients (13.2%) had an abnormal score on the Voice-Handicap Index (VHI-10) and five patients (12.8%) reported laryngopharyngeal reflux symptoms on the Reflux Symptom Index (RSI). It was found that 22 patients (53.7%) had abnormalities in voice quality as measured by the GRBAS with asthenia (weakness of voice) being the highest scoring abnormality.

Dysphagia or voice difficulties in people hospitalised for COVID-19

Some studies have focused on hospitalised patients, inclusive of those with and without experience of intubation and tracheostomy. A prospective study examined 720 patients admitted to a tertiary hospital with COVID-19 for greater than 3 days [6]. Of these, 208 (28.9%) were referred to the speech and language therapy team. 102 of the 208 received intensive care involving mechanical ventilation or tracheostomy. The following were the main presenting features: 'delirium – hyperactive or hypoactive presentation; laryngeal compromise – vocal cord fold palsy and or laryngeal oedema; respiratory swallow co-ordination challenge; burden of secretions and constant expectoration; and fatigue.' Dysphagia was noted to be complicated by other factors such as delirium, expectoration and fatigue. This study also measured the impact of intensive swallow rehabilitation. This rehabilitation helped the majority of patients regain normal swallow function prior to discharge.

A prospective observational cohort study of 116 patients who had been hospitalised with COVID-19 and received otolaryngologists referral found that 20.6% had dysphagia and 19.8% had voice impairment [7]. A study of 20 patients with laryngological complaints following

COVID-19 infection found that 13/20 patients had been intubated and 9 had undergone tracheostomy [8]. 60% reported voice related complaints and 30% reported swallowing complaints. For the 7 non-intubated patients, it was reported that 'the most common presenting complaints were similar to the group as a whole (voice in 42.9%, breathing in 28.6%, globus in 28.6%, neck pain in 28.6%, and swallowing in 14.3%).' The patients that did not undergo intubation did not present with some abnormalities observed in laryngoscopy for those who had been intubated such as lottis stenosis, subglottic stenosis, or vocal fold paralysis.

Some longer term data is available, though this data has limitations in the way it is collected. The COVID-19 Symptoms Study tracked the symptoms of COVID-19 in the long-term using data from an app which includes people who were hospitalised or managed COVID-19 at home [9]. 13.3% (558 out 4182 app users) had symptoms lasting more than 28 days (long COVID) and these individuals with long COVID were more likely to have had hospital assessment during the acute stage of disease. Of those 13.3% who had symptoms lasting 28 days or longer, close to half had hoarse voice. Dysphagia was not reported. A cross-sectional evaluation of 100 COVID-19 patients at 4-8 weeks post discharge from hospital studied the prevalence of swallow and voice problems, comparing those who had ICU stay (32 patients) versus ward stay (68 patients) in hospital [10]. Swallow problems were present in 5.9 % of ward patients and 12.5% of ICU patients. Voice change was present in 17.6% of ward patients and 25% of ICU patients.

Neurological manifestations have been described in patients with COVID-19. In one study 36.4% of hospitalised patients (78/214) had neurological manifestations such as acute cerebrovascular diseases/stroke, impaired consciousness, and skeletal muscle injury [11]. The mechanisms through which the virus may contribute to neurological impairment are unclear though inflammation is suggested to play a role. An observational cohort study was published on swallowing and voice outcomes in patients hospitalised with COVID-19 [12]. Of the 164 patients included, 52.4% had a tracheostomy and 78.7% had been intubated. The study

identified some evidence of new neurological impairment in 13.4% while 69.5% evidenced delirium. However, the authors note that patients who had persistent dysphagia who had not undergone intubation had a history of neurological dysfunction or pre-existing dysphagia 'suggesting that the most important mechanisms at play are intubation or premorbid impairment'.

Dysphagia or voice difficulties following mildly symptomatic/asymptomatic COVID-19

No studies were found on dysphagia/voice difficulties following asymptomatic COVID-19. A study of 702 patients with mild-to-moderate COVID-19 found that 188 (26.8%) patients experienced dysphonia [13]. These patients were either hospitalised or home managed. Physicians collected information via questionnaires with symptoms assessed on a scale ranging from 0 (no symptom) to 4 (very severe symptom). There were a greater number of smokers in the group reporting dysphonia. Significant associations were found between the level of dysphonia and dysphagia in the sample. This data seems to pertain to during COVID-19 infection and not to the post-acute infection stage.

Conclusion

People with who have been hospitalised with COVID-19 and particularly, those who have experienced ARDS and undergone associated medical interventions, are at increased risk of dysphagia and/or voice difficulties. There is limited information available on these symptoms in the long-term or in Long-COVID, though preliminary evidence indicates that these effects can be reduced in the long-term. There is insufficient evidence to assess the degree to which mildly symptomatic or asymptomatic patients present with dysphagia and/or voice difficulties post COVID-19.

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Rapid Evidence Search & Summary (RESS)

Our team of multidisciplinary researchers and clinicians in conjunction with the University of Limerick Library and Information Services have developed a detailed protocol for conducting a Rapid Evidence Search & Summary (RESS) to answer questions submitted to RapidInfo4U. Our RESS protocol uses PICO or PEO methods to refine your question and follows a detailed search procedure capturing guidance documents from governments, institutions and professional bodies; searching clinical and COVID specific repositories; and identifying the most recent reviews and RCTs in the scientific literature using established databases.

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