

INTRODUCTION

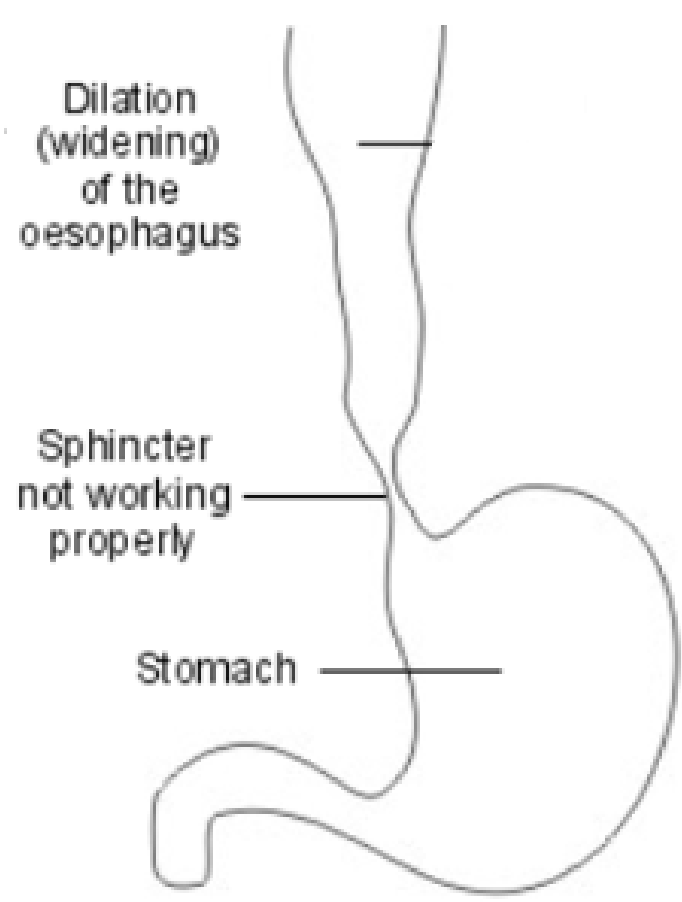


Fig. 1: Achalasia pathophysiology

Achalasia is a rare esophageal motor disorder characterized by functional loss of inhibitory myenteric plexus neuronal cells in the distal esophagus that disrupt esophageal peristalsis. Several studies have shown an association between achalasia and neurotropic viruses, with evidence supporting immune reaction to viral infections as a possible mechanism for development of achalasia.

PURPOSE

The novel virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused a global pandemic of coronavirus disease 2019 (COVID-19), with significant morbidity and mortality worldwide. We conducted a systematic review to assess the prevalence of Covid-19 infection amongst patients presenting with new-onset achalasia.

MATERIALS & METHODS

We searched Pubmed and Google Scholar from 2020 to November 2023 using the terms achalasia OR Covid-19. Inclusion criteria: Patients with new-onset achalasia in setting of Covid-19 infection. Patients with prior history of achalasia were excluded.

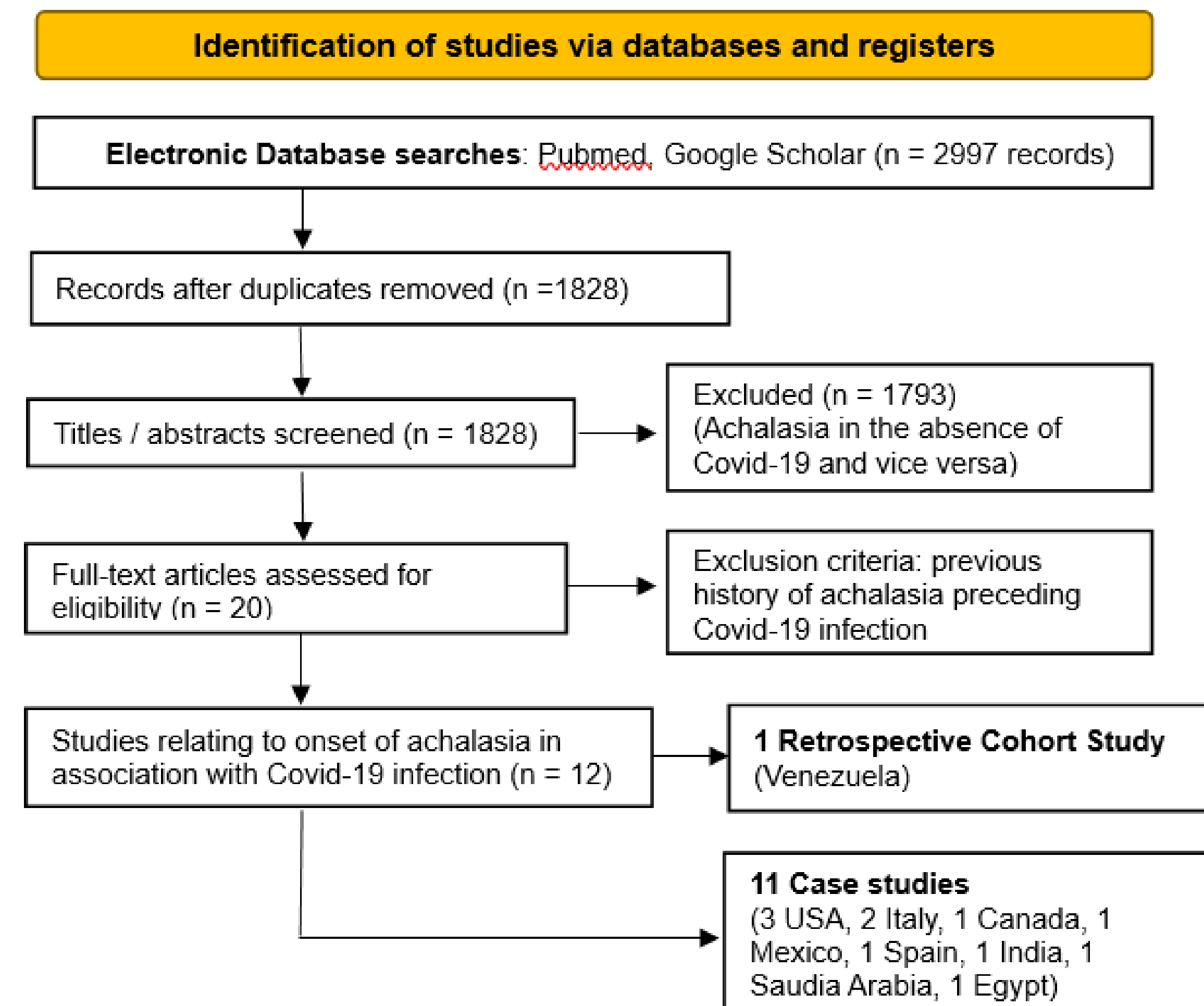


Fig. 2: This search yielded 1 retrospective cohort study with 19 patients and 11 case studies with cumulative of 30 patients. Demographics, medical history, endoscopic and manometric findings, and treatments corresponding to the study period were reviewed.

RESULTS

- A study conducted in Venezuela observed a significantly higher incidence of achalasia cases in the years 2020 and 2021 compared to previous years—with approximately two-thirds (66%) of achalasia patients having a documented history of prior COVID-19 infection. In 2021, a significant proportion of achalasia patients had either confirmed or suspected COVID-19, with all of them presenting type II achalasia. Overall, approximately two-thirds of achalasia patients had evidence of prior COVID-19 infection.
- Nearly all patients presented with symptoms of nausea, vomiting, and/or dysphagia (+/- accompanying weight loss) as well as markedly dilated esophagus with distal narrowing and significant food esophageal residue on imaging.
- Patients who developed achalasia associated with Covid-19 infection were relatively older, predominantly males, and more likely to have other existing autoimmune disorders (hypothyroidism, myasthenia gravis).
- Of note, many of the case studies did not report PCR confirmation of Covid-19 diagnosis (n = 19).

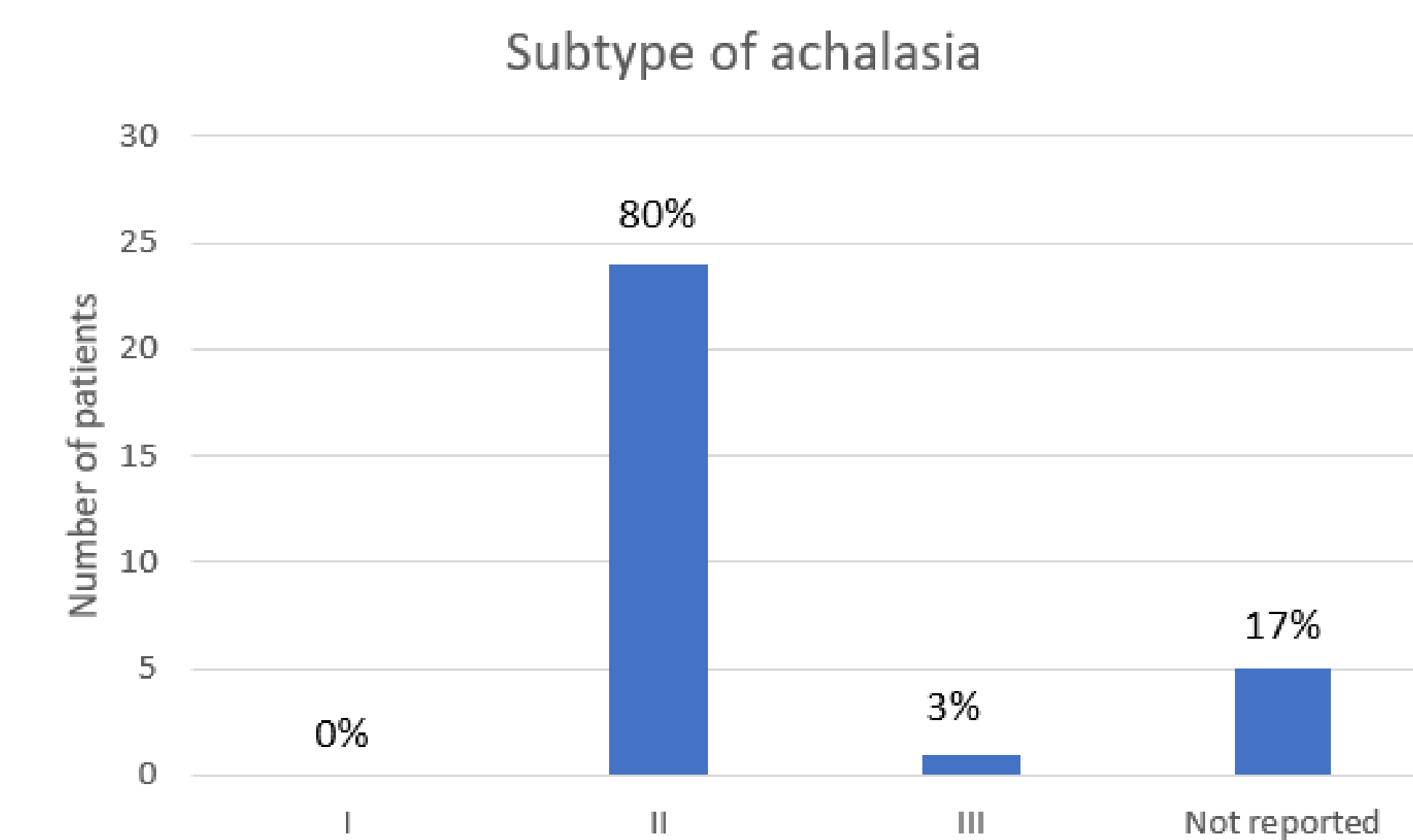


Fig. 3: High-resolution manometry (HRM) was used to confirm the diagnosis of achalasia in majority of patients (n = 25, 83%). Most patients' achalasia subtype was classified as type II achalasia (83%) with HRM, while a smaller proportion had type III achalasia.

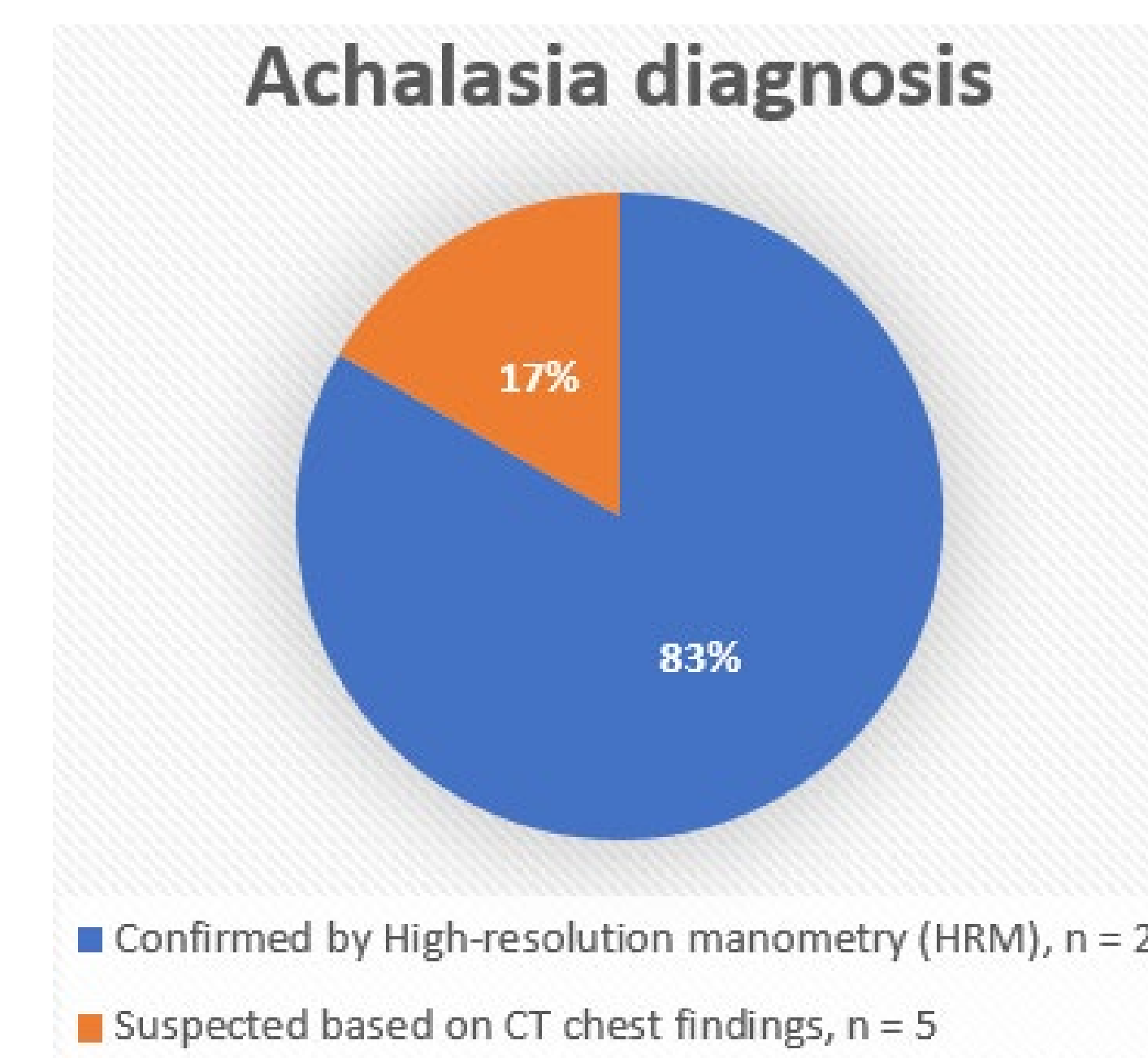


Fig. 4. Method of achalasia diagnosis

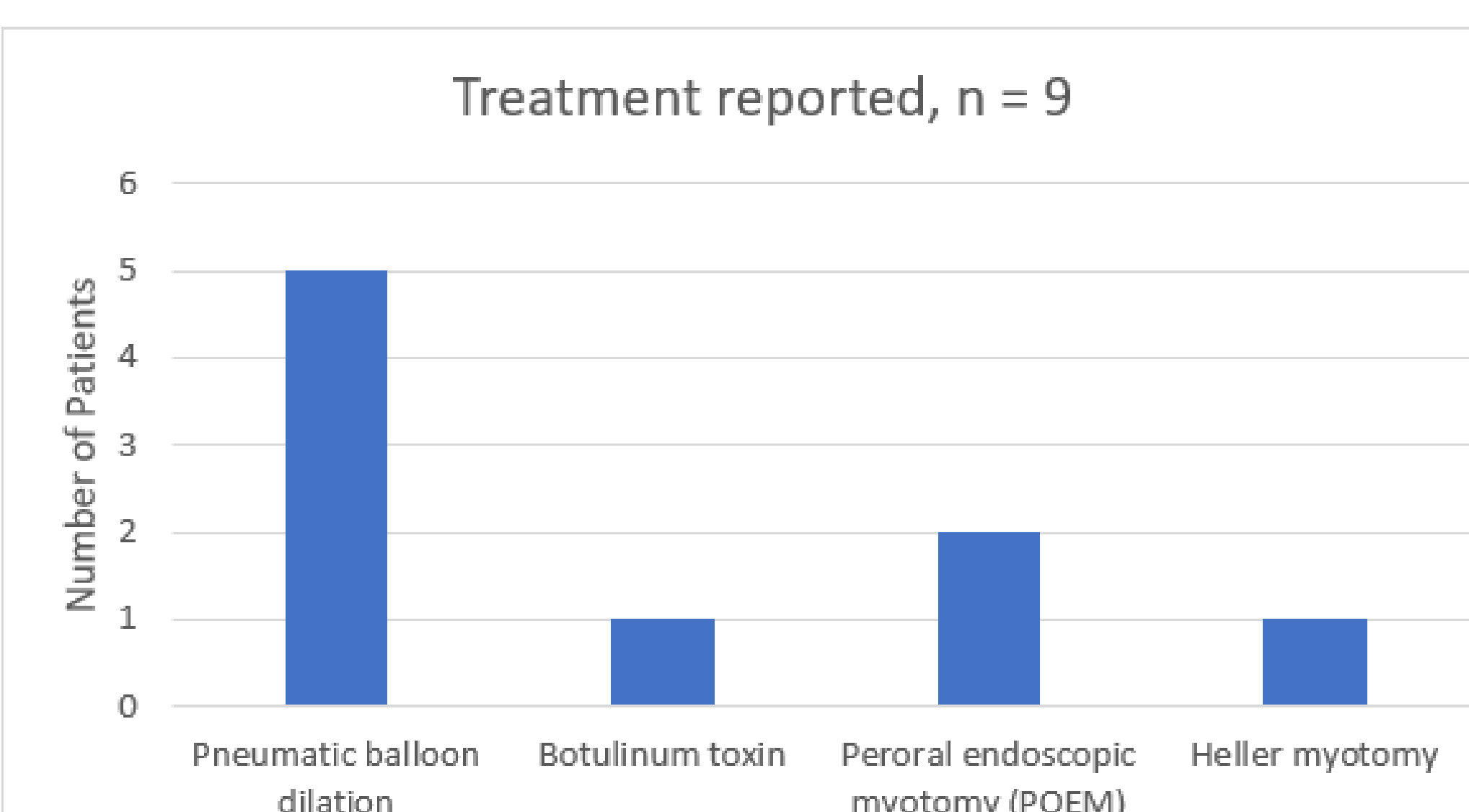


Fig. 5: Cumulative distribution of corresponding treatments offered in cases

Covid diagnosis

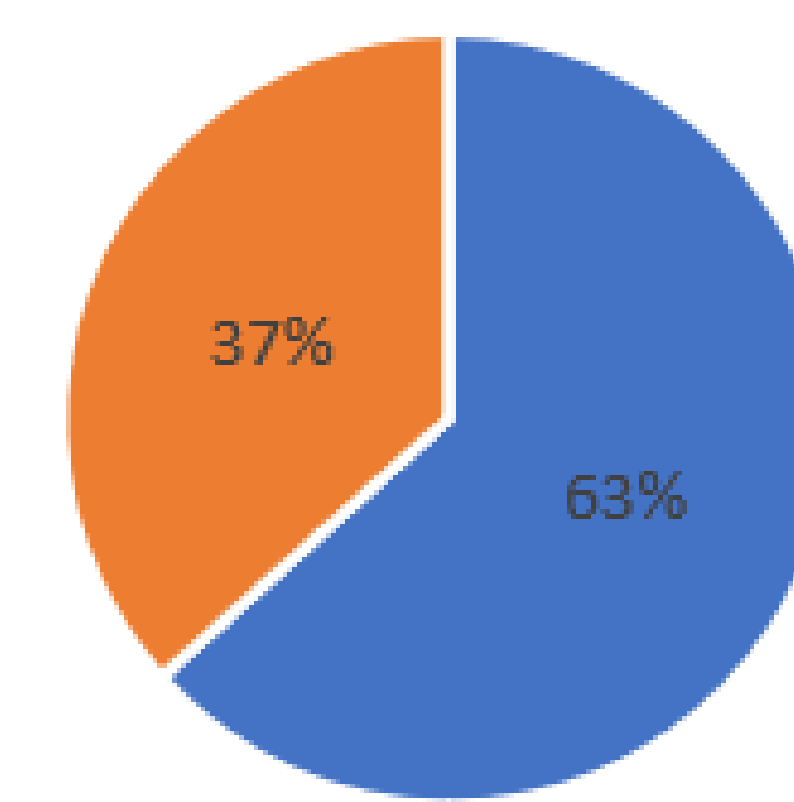


Fig. 6. Method of Covid-19 diagnosis in cumulative cases

Variables	N	%
Age ≥60 years	6	55%
Gender		
Male	8	73%
Female	3	27%
Presence of autoimmune disease	4	13%
Myasthenia Gravis	2	7%
Hypothyroidism	1	3%
Systemic sclerosis	1	3%
Total cases	30	100%

Fig. 7. Medical history and demographics of patients diagnosed with achalasia following Covid-19 infection

PROPOSED PATHOPHYSIOLOGY: ACE2 receptor

SARS-CoV-2 enters host cells via the angiotensin-converting enzyme-2 (ACE2) receptor which is found on several cell types throughout the human body - including the lining of the esophagus. When SARS-CoV-2 infects the host cell, it multiplies and triggers an inflammatory cytokine response, especially IL-6, which mediates the numerous GI symptoms.

While ACE-2 depletion and neuronal infiltrates are seen with acute Covid-19 infections, the development of autoantibodies following Covid-19 may be another mechanism precipitating onset of achalasia.

DISCUSSION

The results appear to suggest that patients with recent achalasia and a history of COVID-19 infection may have developed achalasia as a sequela to the viral infection. It is important to consider the possibility of achalasia in patients with persistent dysphagia following COVID-19. Further investigation is warranted to better understand the incidence and pathophysiology of achalasia and other motility disorders following COVID-19 and their response to treatment.

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