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SHORT COMMUNICATION

Clinical history in gastroesophageal cough

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Summary Gastroesophageal disease, a common cause of chronic cough, is often poorly recognised. We reviewed the presenting history of 47 chronic cough patients who had been proven to have gastroesophageal disease by oesophageal function testing. Fourty-seven patients (26 female), were enroled. Symptoms which were most common included: cough on phonation, on rising from bed, associated with certain foods or with eating in general. Symptoms known to be associated with laryngopharyngeal reflux, such as throat clearing, dysphonia, globus and dysphagia were also associated. Heartburn or indigestion was present in 63% of those questioned. These data show that symptoms associated with reflux in chronic coughers differ from those commonly perceived to be characteristic of classical heartburn-associated reflux. These data suggest that, contrary to previous reports, a symptom complex which is characteristic of reflux cough can be identified.

Introduction

Gastroesophageal reflux (GOR) has long been established as a common cause of chronic cough.[1,2] However, opinion remains divided as to the ideal methodology for diagnosing gastroesophageal cough and, as a result, estimates of prevalence vary considerably from one study to the next.[3] Although reflux of acid into the oesophagus, the main cause of pathology in patients with classical heartburn-type reflux, can be associated with gastroesophageal cough, other oesophageal problems such as dysmotility and non-acid reflux also appear to be important.[4,5] For this reason, patients with chronic cough related to GOR often do not complain of obvious symptoms of reflux, such as heartburn and dyspepsia.[4,6]

In the past, it has been suggested that the clinical history is not helpful in determining the cause of chronic cough.[7] However, in recent years, understanding of the mechanisms which underpin the pathogenesis of GOR-related cough and knowledge of the physiology of the lower oesophageal sphincter (LOS) has improved. It should therefore be possible to identify other, generally unappreciated, indicators of GOR in the history.

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A substantial body of evidence demonstrates that the majority of reflux events are due to physiological episodes of transient LOS relaxation. These transient relaxations can occur spontaneously, most commonly in the 3-h after food intake,[8] and can be induced experimentally by mechanical stimulation of the laryngopharynx.[9] It has also been demonstrated that LOS relaxations and reflux are much less likely to occur during true sleep, but do occur during periods of full wakefulness or sleep arousals.[10] Furthermore, since the crural diaphragm forms part of the mechanism which maintains closure of the LOS,[11] movement of the diaphragm, for example during phonation, may disrupt the sphincter and precipitate a reflux event. We hypothesised that cough which occurs predominantly at times when transient LOS relaxations are known to be more common may characterise the history of GOR-related cough.

Similarly, in some patients the laryngopharyngeal variant of GOR predominates. Symptoms of laryngeal irritation such as hoarseness, throat clearing and globus, which are not commonly recognised as being related to GOR have been shown to be useful indicators of laryngopharyngeal reflux.[12] The symptom of post-nasal drip has also been identified in validated symptom scores for laryngopharyngeal reflux, but in the context of cough has been related to rhinitis in the past. Its significance in directing a clinician towards a diagnosis, in the absence of other supporting symptoms of either rhinitis or GOR, is therefore unclear at present.[13]

This report describes the history reported at presentation to a specialist cough clinic by patients who were subsequently confirmed to have GOR disease.

Methods

A semi-structured history was instituted in the Hull Cough Clinic between January 2002 and March 2004 for all newly referred patients. All patients had a chest radiograph and spirometry with reversibility to nebulised salbutamol performed to screen for major respiratory pathology. They then underwent investigations according to our probability-based management algorithm.[14] Those who subsequently had gastroesophageal disease shown on oesophageal manometry and/or 24 h oesophageal pH monitoring were enroled and their case notes reviewed. Presenting symptoms were then collated to determine the characteristic history of GOR-related cough.

A 24 h ambulatory pH monitoring and manometry testing were performed according to previously published procedural guidelines.[15,16] Oesophageal dysmotility was diagnosed when the number of non-transmitted contractions was $\geqslant 30\%$ of the total number of swallows or when low amplitude peristaltic contractions were $<15\,cm\,H_2O$. Low gastroesophageal pressure was defined as a pressure of $<10\,cm\,H_2O$ (abdominal component). A reflux event was defined as a fall in pH to $\leqslant 4$ for $>12\,s$ and overall pH monitoring was considered abnormal when a pH of <4 was recorded for $\geqslant 4.0\%$ of the total 24 h period.

Results

Here, 47 patients (26 female) with a mean age of 54.3 (SD 8.93) years were enroled. All of these patients had gastroesophageal disease in the form of acid reflux, oesophageal dysmotility, low gastroesophageal sphincter pressure or a combination of two or more of these abnormalities demonstrated by oesophageal function testing. Presence of each symptom in this group of patients is summarised as the percentage of patients for whom a response was recorded, since the presence or absence of all symptoms was not recorded in all cases. The results are summarised in Table 1.

Discussion

This study confirms that the profile of symptoms commonly associated with confirmed cases of GOR-related cough includes several features which have not previously been widely recognised as characteristic of classical heartburn-associated reflux. Although heartburn, indigestion or acid reflux was reported in over 60% of cases, the most commonly reported symptoms were those where the cough was temporally associated with activities known to cause opening of the LOS, such as rising from bed, phonation and eating. Symptoms related to extra-oesophageal reflux, such as globus, choking episodes and dysphagia, were slightly less frequent than this, but nevertheless affected more than half of those questioned. Symptoms thought to be suggestive of asthma (wheeze, exertional dyspnoea and cough on first waking), rhinitis (rhinorrhoea and nasal congestion) and bronchitis/bronchiectasis (haemoptysis and coloured sputum) were much less common, although not absent in this group of patients.

The diagnosis of gastroesophageal cough is a controversial area. Symptoms often thought to be synonymous with GOR disease, such as heartburn

Table 1 Symptom prevalence in the presenting history of patients with gastroesophageal reflux and chronic cough.

Symptom	No. of patients for whom a response was recorded	Percentage of patients with the symptom
Cough on phonation	30	90.0
Cough on rising	30	86.7
Throat clearing	40	82.5
Cough with certain foods	34	76.5
Cough on eating	39	74.4
Heartburn, indigestion or acid reflux	43	62.8
Dysphonia	28	60.7
Breathing difficulty/choking episodes	31	58.1
Globus	26	57.7
Cough on lying	33	54.5
Dysphagia	22	50.0
Post-nasal drip	38	47.4
Woken by cough	38	34.2
Exertional wheeze/dyspnoea	34	32.4
Nasal congestion	36	27.8
Coloured sputum	43	20.9
Wheeze/chest tightness	39	20.5
Rhinorrhoea	34	17.6
Haemoptysis	41	2.4
>1 cup sputum/day	43	0.0

Total $n = 47$.

and dyspepsia, may be absent in as many as 40% of patients with gastroesophageal cough.[4,6,17] Similarly, detection of acid reflux in the oesophagus on 24 h pH monitoring does not always predict response of a cough to anti-reflux therapy, nor does absence of acid reflux preclude it.[4,18,19] Furthermore, response of the cough to therapy is also difficult to use as a diagnostic criterion as the therapies currently available have limited efficacy and placebo effect is high. Since there is currently no agreed gold standard for the diagnosis of GOR-related cough, defining a study population is the main challenge in designing any investigation in this area. For the present study, subjects were defined as people with chronic cough who had a demonstrable abnormality on oesophageal manometry or pH monitoring or both. Although we do not propose that this group represents the entire population with chronic gastroesophageal cough, it is a clearly defined group of patients with chronic cough who undeniably have abnormal oesophageal physiology, as defined by a well-validated set of criteria.

Ideally, we would have liked to include a control group in the current study, but accurately identifying a group of chronic cough patients who definitely have no GOR was problematic. It is difficult to be certain about other diagnoses as reflux can lead to bronchial hyperresponsiveness[20] and may cause upper airways symptoms.[21,22] The advent of multichannel intraluminal impedance monitoring may provide greater clarity and diagnostic certainty in this area in the future.

In 1996, Mello et al.[7] concluded that a careful history of the character, timing and complications of chronic cough was not helpful in diagnosing the cause. Some of the characteristics which they studied were non-specific, such as brassy cough, or honking cough and it is therefore not surprising that they found no significant relationship with any particular diagnosis. They did look at some features of the timing of cough, such as cough with meals, post-prandially or on waking and found no significant correlation with any particular diagnosis. However, because the study population included patients with any cause of cough and indeed some with multiple diagnoses, the analysis was poorly discriminative. This apparent discrepancy with the findings of the present study can most easily be explained by differences in the criteria used to diagnose GOR-related cough, resulting in the possible inclusion of patients suffering with reflux cough in other diagnostic categories

The retrospective nature of this data does limit the quantitative value of these results. Only patients with a high clinical suspicion of GOR underwent oesophageal function testing and

several patients declined this demanding investigation preferring to be managed using trials of therapy. Thus the study population is a subset of patients likely to have GOR. For this reason, it would not be appropriate to extrapolate any conclusions regarding the prevalence of certain symptoms in GOR-related cough, or to calculate the predictive value of any given symptom in making the diagnosis. However, the high frequency with which certain symptoms, especially those thought to be related to the known physiology of transient LOS relaxation,[11] were reported in these subjects does give a qualitative impression of a symptom complex associated with this diagnosis. Knowledge of this characteristic symptom profile for GOR-related cough may help clinicians to identify the cause of cough in patients who previously posed a diagnostic conundrum. Future prospective evaluation may help clarify the significance of these findings.

Conclusion

A characteristic clinical history can be identified in patients with chronic cough and proven gastro-esophageal disease. This includes features such as cough which occurs on phonation, on rising from bed and which is associated with mealtimes or with certain foods, throat clearing, dysphonia, dysphagia and globus as well as the commonly recognised symptoms of heartburn and acid reflux.

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