# Urinary symptoms are very frequent in people with chronic respiratory disease attending pulmonary rehabilitation

*To the Editor,*

Chronic respiratory diseases (CRD) progressively lead to physical inactivity and worsening dyspnoea,[1] and cause disability and mortality.[2] Strong evidence shows that pulmonary rehabilitation (PR) improves dyspnoea, fatigue, emotional status, exercise capacity and reduces exacerbations.[3,4] However, one in two people with CRD referred for PR never attend, and up to one third do not complete the program.[5] Others who complete the program have few clinical benefits.[6] We recently discussed how urinary symptoms (US), which are frequent in CRD,[7] might be a major barrier to participation, completion and response to PR.[8] However, our discourse was speculative because no data are available about the relationship between US and PR. A first step to address this question would be to determine its frequency and to characterize the type of symptoms in people with CRD attending PR. Hence, we report the results of a study aimed to assess the frequency and types of US, and their relationship with baseline demographic and cardiorespiratory characteristics, in people with CRD attending PR.

A retrospective chart review of people attending PR between December 2019 and March 2020 was conducted in ADIR Association, Rouen University Hospital, France. Inclusion criteria were adults with CRD (any type) and referral to PR. Ethical approval was granted (E2020-71) and informed consent was not required.

US were assessed during the first PR session using the Urinary Symptom Profile (USP) questionnaire[9] which evaluates stress US, urge US and dysuria. No thresholds have been established to define the presence of symptoms, therefore we considered a score above the upper bound of the 95% CI of the mean score for asymptomatic people[9] to indicate US. Thus: stress incontinence = score above 1/9, urge incontinence = score above 4/9 and dysuria = score above 1/9.

Continuous data were expressed as means (standard deviation) or medians ($25^{th}$–75th percentile) and qualitative data as counts and percentages, and their corresponding 95% CI were calculated. The overall rate of US was calculated as the occurrence of at least one type of US. US were also compared between obstructive and non-obstructive CRD using a Fisher test. The relationship between US and demographic or cardiorespiratory characteristics was analysed using a binomial logistic relationship. A p-value <0.05 was considered significant. GraphPad Prism 5.03 and R 3.6.1. software were used.

Thirty people with CRD (43% female, median age 61 years (range 53–67), mean body mass index 26.2 kg/m$^2$ (SD 4.9)) were included. Eighteen (60%) had obstructive CRD, 5 (17%) had lung cancer, 5 (17%) had interstitial lung disease and 2 (7%) had other restrictive CRD. Five (17%) were long term oxygen therapy users. Twelve participants (40%, 95% CI 25–58) experienced at least one type of US; urge US was the most frequent (Fig. 1A). There was no difference in the proportion of participants who experienced at least

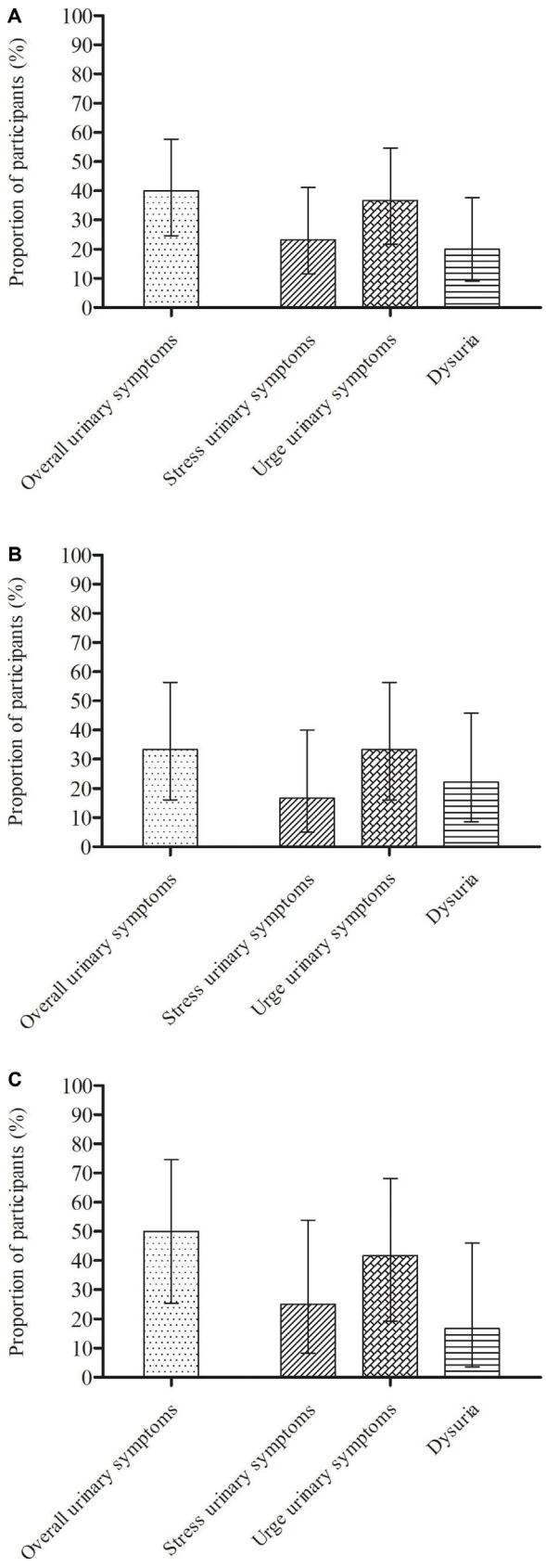


**Figure 1** Overall and specific rates of urinary symptoms in (A) the whole cohort, (B) participants with obstructive chronic respiratory diseases and (C) participants with non-obstructive chronic respiratory diseases.
Data are shown as proportions with 95% confidence intervals.

one type of US between obstructive and non-obstructive CRD ($p = 0.26$) (Fig. 1B and C). US was not significantly related to demographic or cardiorespiratory characteristics.

The results of this study revealed that US are very frequent in people attending PR. Furthermore, the true rate may be higher since US were assessed on the first day of PR and previous physical inactivity may have masked some symptoms.[8] Indeed, PR involves regular and sustained physical exercise, therefore it may both reveal and worsen US, leading participants to reduce their participation or even drop out.[8] Since the physiological effects of PR depend on training intensity, lack of adherence considerably reduces the benefits.[8,10] In addition, US can worsen the quality of life of people with CRD.[11] These results therefore highlight a concerning issue that must be considered in both research and clinical practice.

Importantly, the occurrence of US was similar between participants with obstructive and non-obstructive CRD. It was beyond the scope of this study to evaluate the causes of US, but several risk factors may be common between obstructive and non-obstructive CRD (particularly for tobacco-induced lung cancer). Impaired diaphragm and expiratory muscle biomechanics alter both the stability of the lumbopelvic muscle system and intra-abdominal pressure regulation[12] and thus may be a cause of US in people with restrictive CRD or interstitial lung disease.

This study has several limitations. Firstly, the sample size was small and the design was retrospective. The lack of a relationship between US and demographic and cardiorespiratory characteristics may therefore be due to a lack of power. The presence of US was based on threshold scores for the USP that have not been specifically determined[9] and may therefore be somewhat inaccurate.

Despite these limitations, the high frequency of US in people with all types of CRD attending PR is concerning. Large, prospective studies are now warranted to evaluate the impact of US on PR adherence and outcomes. Clinicians should screen PR participants for US and provide appropriate treatment to facilitate adherence.

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## Ethical approval and consent to participate

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## Conflicts of interest

The authors have no conflicts of interest to declare.

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# Acute respiratory distress due to a bronchogenic cyst submitted to percutaneous drainage followed by thoracoscopic resection

*Dear Editor,*

A clinical case of severe respiratory distress due to a mediastinal bronchogenic cyst (BC) that was managed exclusively by a minimally invasive approach is here presented.

## Case report

A 2-year-old boy was referred to the pediatric intensive care unit in acute respiratory distress. He was febrile and presented tachypnea, dyspnea, stridor, global chest retraction and hypoxia. Over the previous 25 days, he had been admitted twice due to cough, wheeze and mild respiratory distress with poor response to medical treatment. Thoracic computed tomography scan revealed a well-circumscribed, bilobed cyst ($48 \times 46 \times 30$ mm) in the superior and posterior mediastinum, causing displacement of the supra-aortic vessels, and compressing the esophagus and the trachea; there was a cervical extension, contiguous to the left thyroid lobe and common carotid artery (Fig. 1A, B).

Due to the severe respiratory distress, in an attempt to stabilize the patient condition and improve ventilation, a decision was made to perform percutaneous cyst drainage.

Under ultrasound and fluoroscopic guidance, an 8 Fr pigtail catheter was inserted into the cyst with aspiration of 40 cc of fluid, which resulted in near complete collapse of the cyst and immediate clinical improvement (Fig. 1C). Elective thoracoscopic excision of the mass was then planned.

With the patient in modified right lateral decubitus, three 5 mm trocars were inserted. The cyst was identified posterior to the left subclavian artery (Fig. 2A–C); because of the intimate relation with the esophageal wall, an intraoperative upper endoscopy was performed to assist the dissection. The cystic mass was then removed *en bloc*, the resulting muscle defect of esophageal wall being closed with interrupted absorbable sutures; a thoracic tube was left in place through one port.

The postoperative course was uneventful. After removal of the thoracic tube, the child was discharged home on postoperative day 1. Histological examination revealed a uniloculated cyst lined by respiratory type epithelium with underlying fascicles of smooth muscle, respiratory-type mucous glands and cartilage, consistent with a bronchogenic cyst.

At 2-year follow-up, the child is doing well with no digestive or respiratory symptoms; the scars are almost imperceptible.

## Comment

Foregut cystic malformations are rare congenital entities. Bronchogenic cysts (BC) in the mediastinum form early in fetal development from abnormal buds of tracheobronchial tree. Most of them are asymptomatic in the early stages, thus they are rare in infancy and often recognized in young adults. In fact, most diagnoses occur when the BC become infected or grow large enough to compress adjacent organs.[1,2]

The treatment of asymptomatic BC is not consensual. In adults, conservative management under close long-term follow-up is an option.[3] In children, both symptomatic and asymptomatic cysts should be surgically excised because of risk of enlargement/compression (due to secreting mucosa