Arch Bronconeumol. 2016;52(2):63–69

ARCHIVOS DE BRONCONEUMOLOGIA

www.archbronconeumol.org

Original Article

Validity of a Spanish Version of the Leicester Cough Questionnaire in Children With Cystic Fibrosis☆

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ARTICLE INFO

Article history:
Received 7 October 2014
Accepted 28 January 2015
Available online 5 August 2015

Keywords:
Cystic fibrosis
Cough
Cough questionnaire and health related quality of life

ABSTRACT

Background: Cystic fibrosis (CF) patients present chronic cough as one of the main symptoms, which has an important effect on quality of life and social relations. Our goal was to validate the Spanish version of the Leicester Cough Questionnaire (LCQ) in a group of children and teenagers with CF.
Methods: After adapting to Spanish by standardized translation and retro-translation methodology, a sample of 58 stable CF patients from 7 to 18 years were recruited from three CF specialized centers in Spain. The questionnaire was administered twice; the second administration (LCQ_2) was performed between 2 and 4 weeks later than the first one (LCQ_1), in order to analyze the reliability and validity of the Spanish version. To correlate results with health related quality of life (HRQoL) we used the Cystic Fibrosis Questionnaire-Revised (CFQ-R).
Results: Population was composed by 62% male, age 11.7 ± 3.1 years and body mass index (BMI) $19 \pm 3\ kg/m^2$. Total scores from LCQ were: LCQ1 19 (17.75–21) vs LCQ2 19 (16–21) (P=.199). Cronbach's Alpha coefficient was 0.83 for the LCQ_{total} and for each specific domain was: 0.82 $LCQ_{physical}$; 0.74 $LCQ_{psychological}$ and 0.62 LCQ_{social}. Intraclass correlation coefficient was: 0.69 $LCQ_{physical}$; 0.59 $LCQ_{psychological}$; 0.45 LCQ_{social} and 0.71 LCQ_{total} (good reliability). Relations with CFQ-R showed moderated and significant results: LCQ_{total} $r = 0.51$ (P<.001) and respiratory symptoms domain r=0.67 (P<.05).
Conclusion: The Spanish version of the Leicester Cough Questionnaire is reliable and valid for children and adolescents with CF and it has good relations with health related quality of life in this population.

Validez de la versión en español del Cuestionario de Tos Leicester en niños con fibrosis quística

Palabras clave:
Fibrosis quística
Tos
Cuestionario de tos y calidad de vida relacionada con la salud

RESUMEN

Antecedentes: Uno de los síntomas destacados de la fibrosis quística (FQ) es la tos crónica, que afecta a la calidad de vida y a las relaciones sociales de los pacientes que la padecen. Nos propusimos analizar la fiabilidad y la validez de la versión en español del Cuestionario de Tos Leicester (*Leicester Cough Questionnaire* [LCQ]) en niños y adolescentes con FQ.

☆ Please cite this article as: del Corral T, Percegona J, López N, Valiente A, Garriga M, Seborga M, et al. Validez de la versión en español del Cuestionario de Tos Leicester en niños con fibrosis quística. Arch Bronconeumol. 2016;52:63–69.

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1579-2129/

Métodos: Tras adaptar el cuestionario al español por el método normalizado de traducción y traducción inversa, 3 centros españoles especializados en FQ reclutaron 58 pacientes de 7 a 18 años de edad con FQ estable. El cuestionario se administró en 2 ocasiones (LCQ_1 y LCQ_2), dejando transcurrir un intervalo 2–4 semanas entre ambas administraciones. Para correlacionar los resultados con la calidad de vida (CdVRS) se utilizó la versión revisada del Cuestionario de Fibrosis Quística (CFQ-R).
Resultados: La población estudiada estuvo compuesta por un 62% de pacientes varones; la media de edad fue de $11{,}7 \pm 3{,}1$ años y el promedio de índice de masa corporal de 19 ± 3 kg/m^2. Las medias de las puntuaciones totales del LCQ fueron las siguientes: 19 (17,75–21) en el LCQ_1 frente a 19 (16–21) en el LCQ_2 ($p = 0{,}199$). Se obtuvieron los siguientes coeficientes alfa de Cronbach: LCQ_{total} 0,83; $LCQ_{físico}$ 0,82; $LCQ_{psicológico}$ 0,74, y LCQ_{social} 0,62. Los coeficientes de correlación intraclase de las puntuaciones de los dominios $LCQ_{físico}$, $LCQ_{psicológico}$, LCQ_{social} y de la puntuación LCQ_{total} fueron de 0,69, 0,59, 0,45 y 0,71, respectivamente. Las puntuaciones más bien correlacionadas con el CFQ-R fueron la LCQ_{total} ($r = 0{,}51$; $p < 0{,}001$) y la puntuación del dominio de síntomas respiratorios ($r = 0{,}67$; $p < 0{,}05$).
Conclusión: La versión en español del Cuestionario de Tos Leicester es fiable y válida en niños y adolescentes con FQ; además, en esta población el cuestionario se correlaciona bien con la calidad de vida.

Introduction

Cystic fibrosis (CF) is a chronic, progressive, genetic disease that affects the exocrine glands, causing multiple organ damage in the respiratory tract, pancreas, liver, sweat glands and reproductive system.[1] Pulmonary pathophysiology is characterized by an absent or defective cystic fibrosis transmembrane regulator protein (CFTR) function, which causes abnormal regulation of periciliary liquid volume, decreasing mucociliary clearance and producing mucus plugging and lung obstruction.[2] Productive cough is a universal symptom in CF that becomes chronic as the disease progresses.[3] Pulmonary exacerbations are defined as an increase in cough and sputum production with loss of appetite and exercise capacity, which has a global impact on school absenteeism.[4] As CF progresses, exacerbations occur more frequently and cough becomes a common daily symptom.[5]

Cough also has a direct influence on survival, and is an important measure of the progress and effective treatment of the disease.[6–8] Clinical experience suggests that chronic cough interferes in three dimensions of patients' lives, namely the physical, the emotional and the social, causing considerable loss of quality of life and affecting social relations.[9,10] By monitoring health-related quality of life and the impact of cough, it may be possible to improve treatment efficiency, prolong longevity and decrease the economic impact of the disease.[11] Furthermore, cough might be an important factor for predicting and preventing possible exacerbations.[12]

Health-related quality of life (HRQoL) assessment provides the basis for evaluating the impact of the disease and treatment on activities of daily living not reflected by conventional clinical tests.[11,13] Although HRQoL questionnaires correlate with chronic cough, it is poorly represented in these questionnaires,[10] so its impact on patients' lives is not fully characterized, especially in children. Cough is an exacerbation marker which significantly alters HRQoL, and becomes more significant in adolescents with CF.[14]

NThe Leicester Cough Questionnaire (LCQ) was designed for the objective evaluation of chronic cough and its impact on daily life. It is divided into three domains: physical, psychological and social.[15] Murray et al.[16] reported good results when it was applied in adults with non-cystic fibrosis bronchiectasis. LCQ has been translated into multiple languages, including Dutch and Chinese,[17,18] and is commonly used for assessing the impact of cough in different respiratory diseases. The results are robust, even when cough is acute.[19] However, little is known about cough assessment in CF[20]; these evaluations are generally limited to exacerbations and it is poorly analyzed in children.[21]

According to recent evidence, the LCQ may be an appropriate tool for assessing cough in a young CF population, but it has not been investigated previously in this specific group.

The aim of this study was to translate and validate the Spanish Version of the Leicester Cough Questionnaire in children and teenagers with cystic fibrosis, in order to provide a new tool for analyzing the impact of cough on this population. The Spanish version of the Leicester Cough Questionnaire could constitute a simple, easily administered instrument for the assessment of cough in young CF patients.

Methods

Participants

The study population was recruited in Spain from the Hospital de Sabadell, Corporació Sanitària Universitària Parc Taulí, Sabadell (Barcelona), Hospital Ramón y Cajal and the Asociación Madrileña de Fibrosis Quística in Madrid. All participants were enrolled between May and September 2013. Inclusion criteria were clinically stable CF patients aged 7 to 18 years old, with no exacerbations during the month before study inclusion, who could read and understand the questionnaires. Initially, 60 patients were included, but 2 were excluded due to a respiratory exacerbation during the course of the study (Fig. 1).

The study was approved by the Ethics Committee of the Hospital de Sabadell, Corporació Sanitària Universitària Parc Taulí and Pompeu Fabra University in Barcelona, Spain. Before the study, patients over 14 years of age signed the informed consent form, and for children under 14, consent was signed by parents who agreed to allow their child to participate in the study.

For the purpose of characterization, all patients performed conventional lung function tests[22] using a portable spirometer Easyone™ Bluetooth Cradle model 2010BLT (Zurich, Switzerland) in the Madrid hospitals, and Datospir-600 Sibelmed (Barcelona Spain) in Sabadell.

Cough Questionnaire

The Leicester Cough Questionnaire (LCQ) measures the impact of cough on quality of life.[15] It is a self-administered questionnaire composed of 19 items divided into three domains: physical (8 items), psychological (7 items), and social (4 items). Answers are recorded on a 7-point Likert scale. The total score, ranging from 3 to 21, is obtained by adding the domain scores and dividing by three: