

Acute bronchitis and clinical outcome three years later: prospective cohort study

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Acute bronchitis is a common disorder¹ usually assumed to be caused by a viral infection² with no beneficial effect resulting from antibiotic treatment.³ We examined whether acute bronchitis in a healthy individual should be regarded as an isolated event or a predictor of chronic lung disorders that has not yet clearly manifested itself clinically—that is, as bronchial hyperresponsiveness, asthma, or chronic bronchitis.

Material, methods, and results

In a previous study on the aetiology of acute bronchitis among adults in Gardabaer (7800 inhabitants), a suburban town south of Reykjavik, all patients diagnosed with acute bronchitis were included.⁴ The definition of acute bronchitis in that study was: cough (with or without expectoration) and rhonchi or coarse rales on auscultation in patients without any known underlying lung disease (according to the patients' medical records) or clinical signs of pneumonia. That prospective study was carried out in 1992-3 and comprised 138 patients. Three years later, in 1995-6, the original study group still living in Gardabaer (n = 119) was invited to take part in the present study.

We sent these patients a questionnaire with the same questions as used in the Icelandic version of the European community respiratory health survey⁵ about respiratory symptoms, along with some additional questions. All were invited to participate in an examination with spirometry, a methacholine challenge test, and a skin prick test. If patients did not return the questionnaire, information about asthma and recurrent acute bronchitis was collected from medical records.

Ninety five of the 119 (80%) subjects (44 men, 51 women) returned the questionnaire. The respondents were significantly older than the non-respondents (45 (range 31-59) years *v* 34 (23-45) years; $P < 0.001$). Twenty patients smoked daily, 11 smoked less than daily, 29 were former smokers, and 35 had never smoked. Respiratory symptoms indicating asthma and/or chronic bronchitis were commonly reported (table).

Six per cent (5/85) patients had a forced expiratory volume in one second of below 80% of that predicted. On methacholine challenge tests a reduction of 20% or more in forced expiratory volume in one second was observed among 8% (6/74) of patients after inhalation of the saline solution and among a further 22% (16/74) after inhalation of 2 mg or less of methacholine.

Seven patients reported wheezing during the preceding 12 months and showed bronchial hyperresponsiveness. Another 11 patients had been diagnosed by doctors as having asthma. Thus three years after seeing a doctor for an uncomplicated episode of acute bronchitis, at least 18 patients (19%) fulfilled criteria for asthma. Twenty patients reported having brought up phlegm on most days for at least three months every year, a criteria often used to define chronic bronchitis in epidemiological studies. Six of these 20 also fulfilled criteria for asthma. Therefore 32 (18 + 20 - 6) patients

Characteristics of study population and main findings

Characteristic	No of patients
Original study population	138
Moved away three years later	19
Available for study	119
Returned questionnaires	95
Available for spirometry and skin prick testing	85
Able to undergo methacholine challenge with no contraindication	74
Main results from questionnaire	
Wheezing or whistling in chest at any time in past 12 months:	38/95
Breathless when wheezing or whistling noise was present	19/38
Wheezing or whistling present in absence of a cold	17/38
Phlegm brought up from chest during day, at night, or in winter:	22/95
Similar phlegm most days for up to 3 months each year	20/22
Diagnosis of asthma by doctor	11/95
Wheezing and positive methacholine test	7/74

(34%) fulfilled criteria for asthma or chronic bronchitis, or both. According to medical records, bronchial asthma had been diagnosed in 13% (3/24) of the non-respondents. Only 12 (13%) respondents had at least one positive skin prick test.

Comment

Using a simple questionnaire about pulmonary symptoms, together with spirometry and methacholine challenge testing, we found that 34% of the original study group fulfilled criteria for asthma or chronic bronchitis, or both.

We suggest therefore that when doctors see a patient with acute bronchitis, they should always consider possible bronchial hyperresponsiveness, asthma, or chronic bronchitis and use simple investigation methods—that is, inquire about symptoms and carry out spirometry (and in some cases methacholine challenge testing). In addition, they should inform the patient of the risk of developing chronic lung disease. This may help doctors to choose the best treatment and motivate the patient to eliminate possible risk factors, such as smoking.

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