



# Cough variant asthma patients are more depressed and anxious than classic asthma patients



Norihiro Saito <sup>a,b,\*</sup>, Masamichi Itoga <sup>a</sup>, Mami Tamaki <sup>b</sup>, Ayako Yamamoto <sup>a</sup>, Hiroyuki Kayaba <sup>a</sup>

<sup>a</sup> Department of Clinical Laboratory Medicine, Hirosaki University Graduate School of Medicine, Aomori, Japan

<sup>b</sup> Department of Allergy and Respiratory Medicine, Yokote Municipal Hospital, Akita, Japan

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## ABSTRACT

**Objective:** Many recent studies have indicated that depression and anxiety are more common in asthmatic patients than in the general population and psychological stress can lead to asthma exacerbations, but no study specifically targets cough variant asthma (CVA) patients. The purpose of this study was to evaluate depression and anxiety levels in CVA patients compared with classic asthma patients and to identify the psychological features of CVA patients.

**Methods:** Fifty-nine outpatients with CVA and 128 outpatients with classic asthma were interviewed about psychosomatic and psychiatric symptoms, and they underwent three psychological tests: Self-rating Depression Scale (SDS), State-Trait Anxiety Inventory (STAI), and Comprehensive Asthma Inventory (CAI). They were ultimately screened for major and minor depression, dysthymia, panic disorder, generalized anxiety disorder, social anxiety disorder, and other anxiety disorders.

**Results:** CVA patients showed higher SDS and STAI scores than classic asthma patients, and mood disorders and anxiety disorders were more common than in classic asthma outpatients. The psychological factors 'frustration', 'fright into illness', and 'distorted lifestyle' were more prominent in CVA patients than in classic asthma patients. **Conclusion:** CVA patients are on average more depressed and anxious than classic asthma outpatients. Though CVA appears pathologically to be just an early stage of typical asthma, the psychological stress may often be more serious than in asthma controlled by medication, which may explain why CVA cannot be controlled by a bronchodilator alone and patients often require no less intense therapy than for severe asthma.

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## Introduction

Chronic cough has been reported to be the fifth most common complaint seen by primary care physicians [1]. For instance, in the USA, persistently troublesome chronic cough accounts for up to 38% of a pulmonologist's outpatient practice [2]. In Japan, cough is the most frequent reason (11.7% of all) for clinic visits [3].

Cough variant asthma (CVA) is the most common cause of prolonged/chronic cough (42.2%), followed by cough-predominant asthma (28.4%), in Japan [4]. In classic asthma, variable airflow obstruction typically leads to symptoms such as wheeze, dyspnea, and cough. In CVA, cough can be the sole presenting symptom. CVA remains one of the most common causes of chronic cough worldwide [5,6]. More importantly, in classic asthma, cough may be associated with a worse prognosis [7–9].

CVA is thought to be a precursor of classic asthma, because 30–40% of CVA patients have been found to develop classic asthma [1,10,11], and

pathologically, eosinophilic inflammation is involved in CVA as well as in classic asthma [10]. CVA is also characterized by airway hyper-responsiveness, and it usually responds to bronchodilators such as beta-agonists and theophyllines [12–14]. However, many pulmonologists often experience CVA patients who couldn't be controlled by a bronchodilator alone and therefore tend to administer inhaled corticosteroids (ICS) or a combination of inhaled corticosteroids and long acting beta-agonists (ICS/LABA). There are no data currently available regarding the choice of ICS, its dose or duration that should be used for the treatment of CVA. In very severe cases whose symptoms are refractory to ICS, even oral corticosteroids may be required. [15,16]. However, if CVA were just a precursor or a very mild phenotype of classic asthma, ICS, ICS/LABA or oral corticosteroids usually indicated for patients with moderate to severe asthma would rarely be necessary.

On the other hand, many recent studies have indicated that depression and anxiety are more common in asthmatic patients than in the general population [17–19].

We hypothesized that CVA patients might be more depressed and anxious than classic asthma patients. The purpose of this research was to evaluate the depression and anxiety levels in a population of 59 CVA patients and 128 classic asthma outpatients, and to identify the psychological features of CVA compared with classic asthma. This

\* Corresponding author at: Department of Clinical Laboratory Medicine, Hirosaki University Graduate School of Medicine, 5 Zaifu-cho, Hirosaki City, Aomori 036-8562, Japan. Tel.: +81 172 33 5111.

E-mail address: ningendamon0324@gmail.com (N. Saito).

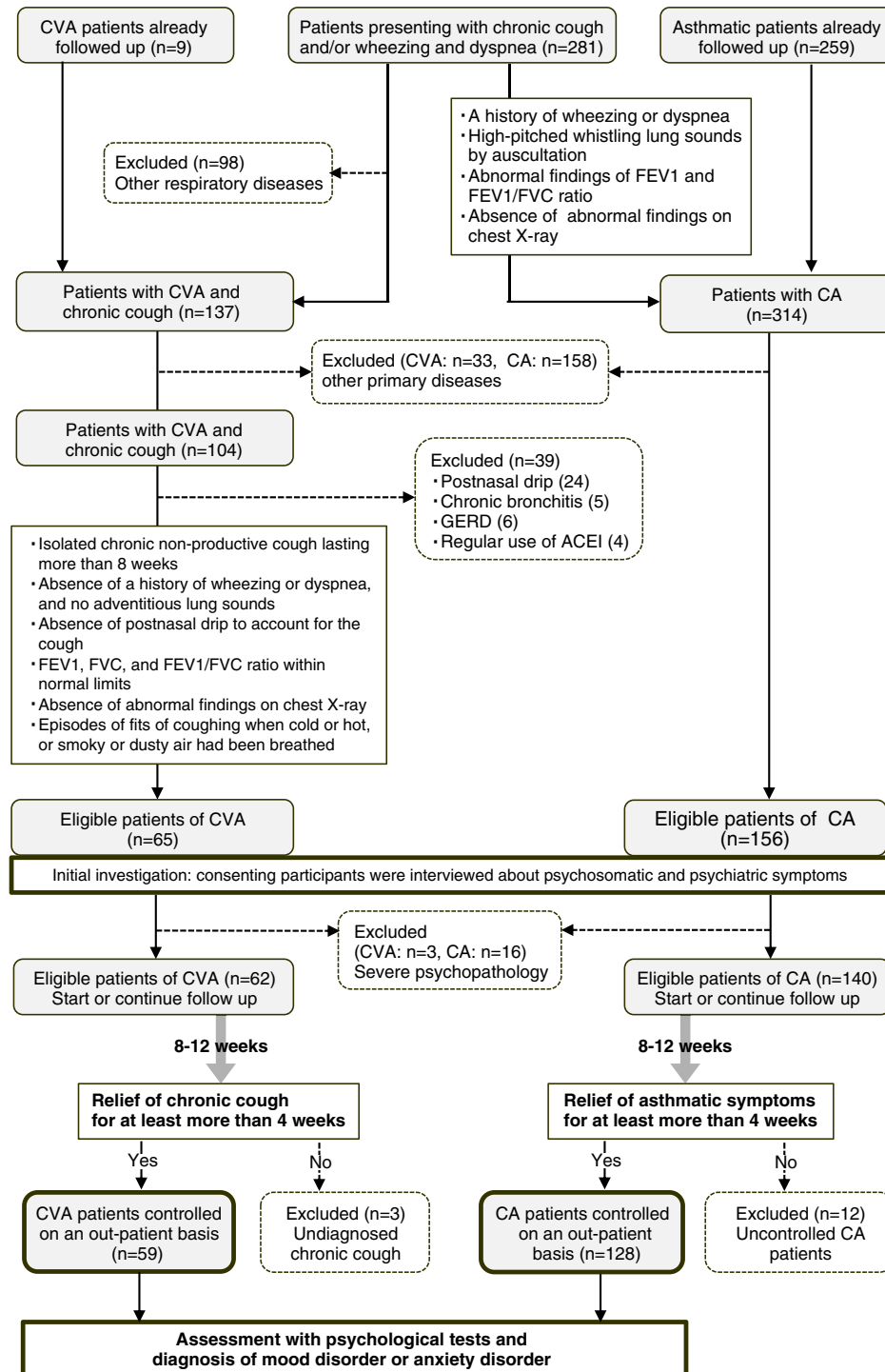
study is the first report to show that the psychological state of CVA patients is different from that of classic asthma patients.

## Methods

### Participants and procedure

Participants were recruited from adult patients (aged between 18 and 79 years old) presenting to Allergy and Respiratory Unit of Yokote Municipal Hospital from April 2009 to March 2013. Flowchart of patient

participation and procedure is shown in Fig. 1. They consulted or were referred to the unit with undiagnosed chronic cough, or for follow up treatment of asthma that had already been diagnosed in the past. Undiagnosed patients had a detailed examination such as basic blood tests, spirometry, X-ray and computed tomography of the chest, sputum examination including acid-fast stain, and serologic assays for *Mycoplasma pneumoniae*, *Bordetella pertussis* and other organisms, that ruled out other respiratory disease with chronic cough. Patients were excluded if they had any comorbid diagnosis of greater severity than asthma (e.g. chronic obstructive pulmonary disease, coronary artery



**Fig. 1.** Flowchart of patient participation and procedure. CVA = Cough variant asthma, CA = Classic asthma, GERD = Gastroesophageal reflux disease, ACEI = Angiotensin converting enzyme inhibitor.

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