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Original Research

Urticaria in adolescence increases the risk of developing new-onset depression: A database study

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Abstract

Objective: Urticaria is a common ailment encountered in pediatric outpatient or emergency departments. Although the symptoms of urticaria may increase stress, this association is not fully understood. Our aim was to analyze the risk of depression following a diagnosis of urticaria using a nationwide population-based study.

Methods: We examined the Taiwan Longitudinal Health Insurance Database. Patients who had a history of urticaria or depression prior to the study period were excluded. A total of 6742 adolescents (aged 13–18 years) who were hospitalized for a first-attack urticaria episode between 2006 and 2009 were recruited as a study group, together with 20,226 matched nonurticaria enrollees as a control group. Each patient was prospectively followed for 1 year to identify episodes of depression. Cox proportional hazards models were used to compare the risk of depression between the study and control groups, making adjustments for the patients' places of residence and sociodemographic characteristics. Depression-free survival curves were also analyzed. Finally, the risks of depression were analyzed between various age groups.

Results: A total of 63 (0.9%) adolescents with urticaria and 61 (0.3%) nonurticarial control individuals suffered a new-onset episode of depression during the follow-up period. The stratified Cox proportional analysis indicated that the crude hazard ratio of depression among adolescents with urticaria was 1.86 times (95% confidence interval, 1.25–2.98) that of the control individuals without urticaria. Patients who were 16–18 years of age and who had a history of asthma were more likely to suffer from depression ($p < 0.05$ for both). Finally, urticaria was determined to be a risk factor for depression only during adolescence and not in patients aged <13 years ($n = 6745$) or those aged between 19 years and 24 years ($n = 7185$).

Conclusion: Individuals who experience an initial attack of urticaria during adolescence are at a higher risk for developing depression.

Keywords: adolescent; depression; hazard ratio; pediatric; urticaria

1. Introduction

Urticaria, which is estimated to affect 15–25% of people at some point in their lives, is a disease commonly seen in pediatric emergency departments.[1–3] When a child experiences a first attack of acute urticaria, many parents decide to seek emergency medical treatment, especially when the child develops severe or recurrent clinical presentations, including intense pruritus, generalized wheals, edema of the lips or eyelids, respiratory distress, and gastrointestinal symptoms.[2,4–6] There are many possible etiologies of urticaria in children, including foods, medications, infections, physical contact, temperature changes, and idiopathic causes.[4,6–10] Symptoms of urticaria (e.g., recurrent itching, generalized wheals, and sleep disturbances)

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can persist for several days to months and are significant stressors for patients.[1–3,9,11–14]

Likewise, in the presence of the unusual-looking rash, the interpersonal relationships of the adolescent with peers can be affected because exercise, skin contact, and even sunlight can increase the severity of urticaria, forcing a reduction in daily activities.[7,11,15] One study reported that 43% of adult patients with dermographism urticaria experienced increased psychosocial stress and a negative impact on their quality of life.[13] Other specific dermatological disorders have also been reported to be risk factors for developing psychiatric problems during adulthood.[12–14,16] Psoriasis and atopic dermatitis can result in personality changes or depressive symptoms because of the consequent sleep disturbances or impairments in health-related quality of life.[12,16] Similarly, urticaria in adults has been associated with increased anxiety and depression.[14] However, the relationship between psychiatric problems and pediatric urticaria remains unclear. In particular, urticaria-related depression in adolescents has not previously been studied. It is well known that adolescence is a unique developmental period marked by certain processes, such as increased cognitive abilities and physical changes. During this period, adolescents can be more vulnerable to mental and physical health conditions.[17] Therefore, we suspect that a first-attack episode of urticaria might increase the subsequent likelihood of new-onset depression in adolescents. In this study, we aimed to provide insights into urticaria-related adolescent depression.

2. Materials and methods

2.1. Database

The Longitudinal Health Insurance Database (LHID) was examined in this study. The LHID is derived from medical claims data available from the Bureau of National Health Insurance and provided to scientists in Taiwan for research purposes. The government of Taiwan launched its National Health Insurance program in 1995 to provide affordable health care for all Taiwanese residents. As of 2007, >98% of Taiwan's population was enrolled in this program. The LHID includes original data from 1 million people. The data in this study were randomly sampled from the period between 2006 and 2009. There were no significant differences in sex breakdown, age distribution, or the average payroll-associated insurance premium rate between the people in the LHID and all NHI enrollees. The LHID also provides a valuable opportunity for researchers to trace medical service use since 1995. Details pertaining to the compilation of the database are published online by the Taiwan National Health Research Institutes. This study was exempt from full review by the Institutional Review Board because the data set consists of deidentified secondary data released without restrictions for research purposes.

2.2. Study setting and population

This study was a prospective case–control study. For the period of January 1, 2006 to December 31, 2009, data from two patient groups—the study group (with urticaria) and the control group (without urticaria)—were retrieved from the LHID. We designated the first hospitalization for urticaria treatment during this period as the index hospitalization. In this study, all patients were followed for 1 year after the index hospitalization. The chance of suffering a new-onset episode of depression during the 1-year follow-up period was analyzed between the two groups.

2.2.1. Definition of patients with urticaria (study group)

A flowchart of the selection methods for the study and control groups is shown in Fig. 1. Patients (adolescents 13–18 years of age) who were diagnosed with a principal diagnosis of urticaria using the *International Classification of Diseases, 9th Revision, Clinical Modification* codes (ICD-9-CM; codes 708.0 to 708.9) were included in the study.

2.2.2. Definition of patients with depression (primary outcome)

The primary outcome during the follow-up period was defined as patients who were diagnosed as the principal

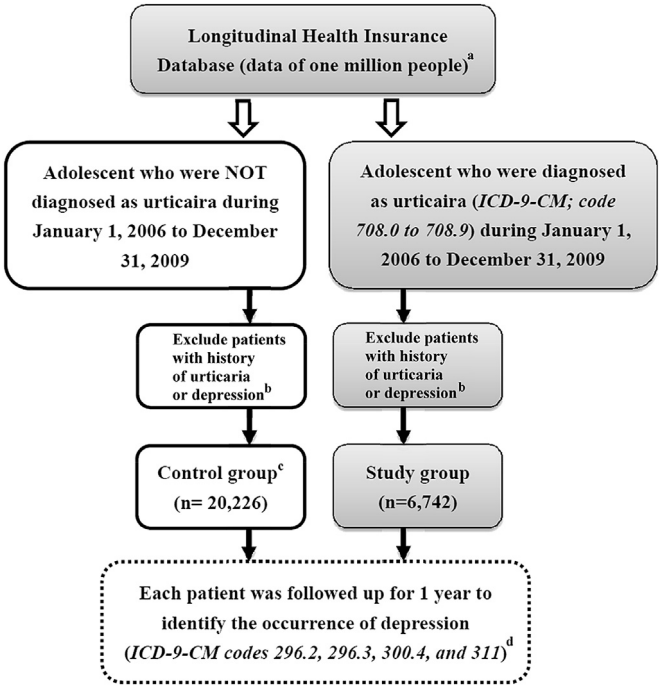

Fig. 1. Flowchart of selection methods. [a]The Longitudinal Health Insurance Database (LHID) contains medical records of 1 million people, whose details were randomly selected from the Taiwan National Health Insurance (NHI) program (supported by the Taiwanese government and >98% of the Taiwanese population was enrolled in this program). [b]All personal medical records (diagnosis, treatments, medications), which had been recorded by different hospitals, were finally input into the National Health Insurance (NHI) for requiring payments. Because almost all hospitals in Taiwan have joined the NHI, we could therefore use it to screen patients' past histories. [c]Matched with the study group according to sex, age, and years of index health care use. [d]Patients who had a new diagnosis of depression were considered the primary outcome. The primary outcome during the follow-up period was defined as patients who were diagnosed as the principal diagnosis using the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) codes 296.2, 296.3, 300.4, and 311.