

***A First-attack Urticaria Increased Risk of Following Depression in Adolescence –
National Study***

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Objective:

Urticaria is a common ailment in adolescents. Its symptoms (e.g., unusual looking rash, limited daily activities, and recurrent itching) might contribute to the development of depression in adolescents, but this potential link has not been well studied. This study aimed to firstly investigate the risk of depression after urticaria using a nationwide population-based study.

Methods:

This study used the Taiwan Longitudinal Health Insurance Database. A total of 5,755 adolescents (aged 13 to 18 years) hospitalized for a first-attack urticaria episode from 2005 to 2009 were recruited as a study group, together with 17,265 matched non-urticaria enrollees as a control group. Patients who had histories of urticaria or depression before the study period were not included. Each patient was prospectively traced for one year to identify the occurrence of depression. Cox proportional hazards models were generated to compute the risk of depression between the study and control groups, making adjustments for the subjects' place of residence and sociodemographic characteristics. Depression-free survival curves were also analyzed. Finally, the risks of depression were analyzed between different age groups.

Results:

Thirty-four (0.6%) adolescents with urticaria and 59 (0.3%) non-urticarial control subjects suffered a new-onset episode of depression during this period. The stratified Cox proportional analysis showed that the crude hazard ratio of depression among adolescents with urticaria was 1.73 times (95% CI, 1.13-2.64) that of the control subjects without urticaria. Patients who aged 16 to 18 years, with history of asthma were more likely to suffer from depression (both $p < 0.05$). Finally, urticaria was determined to be a risk factor for depression only in adolescence and not in patients aged < 13 years ($n = 6,745$) or those aged between 19 and 24 years ($n = 7,185$).

Conclusion: Individuals who have a first-attack of urticaria during adolescence are at high risk of developing depression.

Table 1 Characteristics and personal histories of the adolescents with urticaria and the control patients.

	Adolescents with urticaria (n=5,755)		Control patients (n=17,265)		<i>p</i> -value
	No.	%	No.	%	
Gender					1.000
Male	2,657	46.2	7,971	46.2	
Female	3,098	53.8	9,294	53.8	
Mean age(y/o) (Mean±SD)	16.2±1.7		16.2±1.7		1.000
Age group (y/o)					1.000
13-15	2,645	46	7,935	46	
16-18	3,110	54	9,330	54	
Economic level of family (monthly income) (USD\$)					0.246
<600	1,622	28.2	4,737	27.4	
601~1,000	3,125	54.3	9,349	54.2	
>1,000	1,008	17.5	3,179	18.4	
Urbanization					0.622
1 (most)	1,313	22.8	4,068	23.6	
2	703	12.2	2,102	12.2	
3	1,783	31	5,225	30.3	
4	1,956	34	5,870	34	
Geographic regions of Taiwan*					0.036
Northern	2,659	46.2	8,105	46.9	
Central	1,371	23.8	4,306	24.9	
Southern	1,553	27	4,401	25.5	
Eastern	172	3	453	2.6	
Asthma history*					0.004
Yes	2,144	37.3	6,093	35.3	
No	3,611	62.7	11,172	64.7	
Atopic dermatitis history*					<0.001
Yes	394	6.8	771	4.5	
No	5,361	93.2	16,494	95.5	
Allergic rhinitis*					<0.001
Yes	2,886	50.1	8,068	46.7	
No	2,869	49.9	9,197	53.3	

*Significant differences

Table 2 Crude HR for the presence of new-onset depression among adolescents with urticaria and the control patients.

Presence of depression	Total sample (n=23,020)		Adolescents with urticaria (n=5,755)		Control patients (n=17,265)	
One-year follow-up	No.	%	No.	%	No.	%
Yes	93	0.4	34	0.6	59	0.3
No	22,927	99.6	5,721	99.4	17,206	99.7
Crude hazard ratio ^a (95% CI)	-		1.73* (1.13-2.64)		-	

**p*- value <0.05

^a Crude hazard ratio was calculated by stratified Cox's proportional hazards model (stratified by age, gender, and the year of index hospitalization);

Table 3 Covariate HR adjusted for depression during the 1-year follow-up period for the total patient sample (n=23,020).

Variables	Occurrence of new-onset depression		
	HR	95% CI	<i>p</i> -value
Groups			
Adolescents with urticaria	1.70	1.11-2.59	0.015
Control*	1.00	1.00	1.000
Allergic rhinitis history	0.91	0.59-1.40	0.666
Asthma history	1.55	1.01-3.10	0.044
Atopic dermatitis history	1.43	0.66-2.28	0.369
Geographic regions of Taiwan			
Northern*	1.00	1.00	1.000
Central	1.17	0.67-2.05	0.577
Southern	1.15	0.68-1.93	0.599
Eastern	1.56	0.55-4.43	0.406
Economic level of family (monthly income) (USD\$)			
>1000*	1.00	1.00	1.000
601~1000	0.693	0.39-1.23	0.208
<600	1.28	0.72-2.27	0.409
Urbanization			
1 (most) *	1.00	1.00	1.000
2	0.94	0.42-2.10	0.875
3	1.52	0.86-2.70	0.151
4	0.91	0.48-1.73	0.772

*Reference group

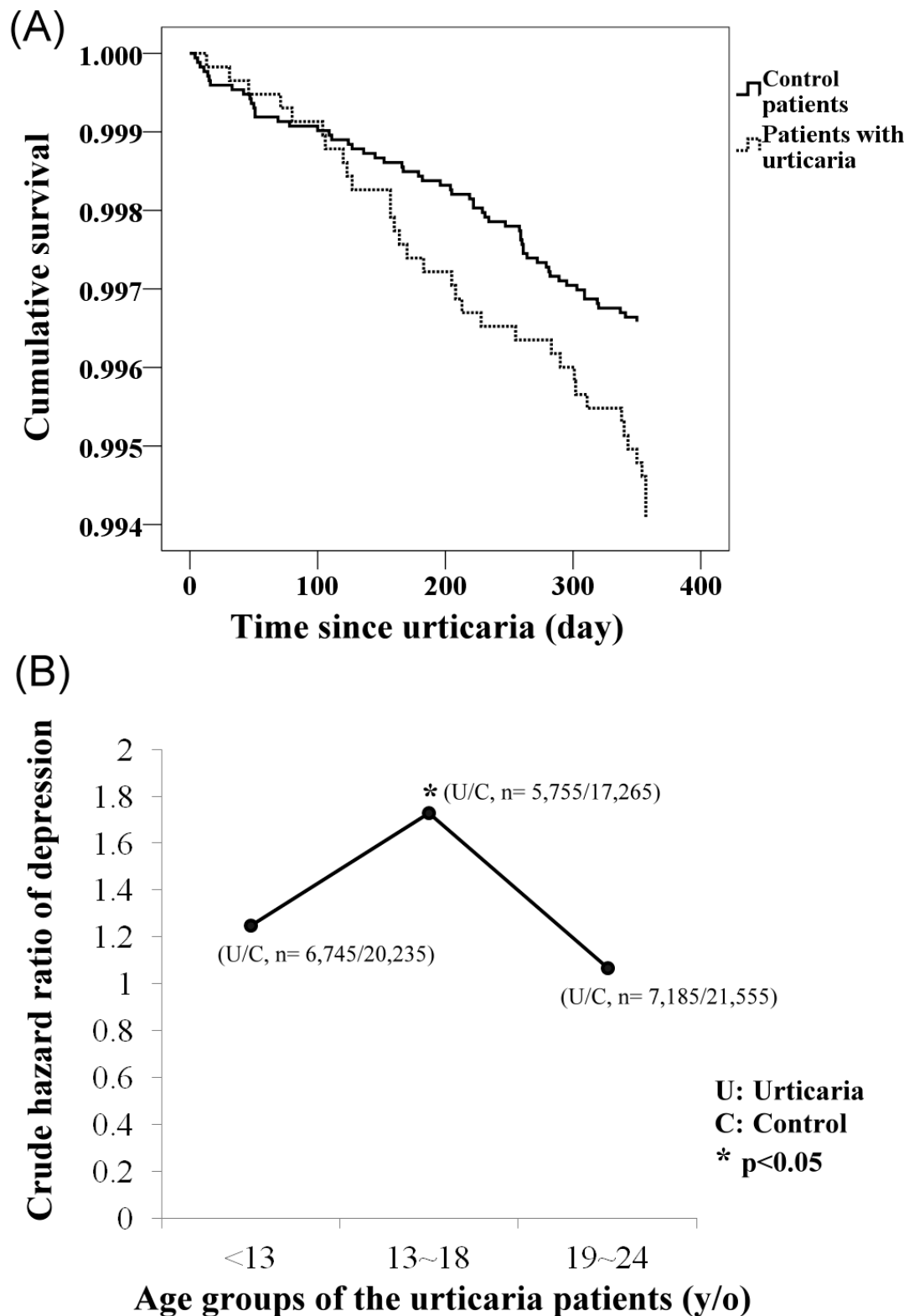


Figure 1 Depression-free survival curves and HRs in different age groups (A) Depression-free survival curves for the urticaria and control patients during the 1-year follow-up period ($p < 0.05$) (B) Urticaria significantly increased the risk of depression

only in the adolescent age group (HR 1.73, 95% CI, 1.13-2.64). The patients were divided into three age groups according to the age at which they experienced their first-attack of urticaria. Each patient was followed for one year. In each age group, crude hazard ratios were calculated using stratified Cox's proportional hazards models (stratified by age, gender, and the year of index hospitalization), which were performed to analyze the risk of a new onset of depression between the urticaria and control patients. In the age groups of <13 years, 13 to 18 years, and 19 to 24 years, the numbers of patients who suffered an episode of depression during the follow-up period after experiencing urticaria were 5/12, 34/59 and 55/150 (urticaria group/control group), respectively.