

Supplementary Table S1 Demographics characteristics and clinical manifestations of children according to *emm* types

Characteristics	<i>emm1</i> (n = 75)	<i>emm12</i> (n = 78)	p-Value
Gender, n (%)			0.146
Boy	50 (66.7)	42 (53.8)	
Girl	25 (33.3)	36 (46.2)	
Age, years, n (%)			0.065
1–3	11 (14.7)	7 (8.97)	
4–6	36 (48.0)	52 (66.7)	
7–14	28 (37.3)	19 (24.4)	
Clinical manifestations, n (%)			
Pharyngitis	35 (46.7)	26 (33.3)	0.129
Tonsillitis	55 (73.3)	65 (83.3)	0.191
Oral mucosal congestion	37 (49.3)	40 (51.3)	0.937
White-strawberry tongue	14 (18.7)	17 (21.8)	0.779
Red-strawberry tongue	10 (13.3)	11 (14.1)	1.000
Rash	49 (65.3)	42 (53.8)	0.200
Circumoral pallor	2 (2.67)	9 (11.5)	0.057
Pastia's lines	3 (4.00)	4 (5.13)	1.000
Fingertip indentation	11 (14.7)	14 (17.9)	0.741
Desquamation	0 (0)	1 (1.28)	1.000
Clinical diagnosis, n (%)			0.932
Scarlet fever	39 (52.0)	39 (50.0)	–
Pharyngeal infection	36 (48.0)	39 (50.0)	–

Supplementary Table S2 The superantigen genes of profile1 to profile4

Superantigen genes	Profile1 (n = 37)	Profile2 (n = 27)	Profile3 (n = 11)	Profile4 (n = 7)
<i>speA</i>	+	–	–	–
<i>speB</i>	+	+	+	+
<i>speC</i>	+	+	+	+
<i>speF</i>	+	+	+	+
<i>speG</i>	+	+	+	+
<i>speH</i>	–	+	+	–
<i>speI</i>	–	+	+	–
<i>speJ</i>	+	–	–	–
<i>speK</i>	–	–	–	–
<i>speL</i>	–	–	–	–
<i>speM</i>	–	–	–	–
<i>smeZ</i>	+	+	–	+
<i>ssa</i>	+	+	–	+

Supplementary Table S3 Distribution of profiles according to *emm* types

Profiles	Total (n = 112)	<i>emm1</i> (n = 52)	<i>emm12</i> (n = 60)	p-Value
Profile1	37 (29.2)	33 (63.5)	4 (6.67)	<0.001
Profile2	27 (25.5)	3 (5.77)	24 (40.0)	
Profile3	11 (11.3)	2 (3.85)	9 (15.0)	
Profile4	7 (5.7)	1 (1.92)	6 (10.0)	
Else profiles	30 (28.3)	13 (25.0)	17 (28.3)	

Supplementary Table S4 Demographic characteristics and clinical manifestations of children by superantigen profiles

Characteristics	Profile1 (n = 37)	Profile2 (n = 27)	Profile3 (n = 11)	Profile4 (n = 7)	Else profiles (n = 30)	p-Value
Gender, n (%)						0.560
Boy	18 (48.6)	14 (51.9)	6 (54.5)	5 (71.4)	20 (66.7)	
Girl	19 (51.4)	13 (48.1)	5 (45.5)	2 (28.6)	10 (33.3)	
Age, years, n (%)						0.456
1–3	3 (8.11)	2 (7.41)	2 (18.2)	1 (14.3)	3 (10.0)	
4–6	22 (59.5)	20 (74.1)	5 (45.5)	6 (85.7)	17 (56.7)	
7–14	12 (32.4)	5 (18.5)	4 (36.4)	0 (0)	10 (33.3)	
Clinical manifestations, n (%)						
Pharyngitis	17 (45.9)	7 (25.9)	2 (18.2)	0 (0)	13 (43.3)	0.061
Tonsillitis	28 (75.7)	22 (81.5)	9 (81.8)	6 (85.7)	21 (70.0)	0.874
Oral mucosal congestion	17 (45.9)	19 (70.4)	1 (9.09)	2 (28.6)	15 (50.0)	0.008
White-strawberry tongue	7 (18.9)	3 (11.1)	1 (9.09)	2 (28.6)	8 (26.7)	0.497
Red-strawberry tongue	4 (10.8)	3 (11.1)	1 (9.09)	0 (0)	5 (16.7)	0.916
Rash	28 (75.7)	16 (59.3)	2 (18.2)	4 (57.1)	20 (66.7)	0.014
Circumoral pallor	1 (2.70)	3 (11.1)	0 (0)	1 (14.3)	3 (10.0)	0.401
Pastia's lines	0 (0)	1 (3.70)	0 (0)	0 (0)	2 (6.67)	0.521
Fingertip indentation	9 (24.3)	8 (29.6)	0 (0)	0 (0)	1 (3.33)	0.012
Desquamation	1 (2.70)	0 (0)	0 (0)	0 (0)	0 (0)	1.000
Clinical diagnosis, n (%)						0.005
Scarlet fever	21 (56.8)	16 (59.3)	1 (9.09)	2 (28.6)	21 (70.0)	
Pharyngeal infection	16 (43.2)	11 (40.7)	10 (90.9)	5 (71.4)	9 (30.0)	

Table S5 Comparison of Group A *Streptococcus* infection between the early and late periods of urbanization

Characteristics	Urbanization		p-Value
	Early period	Late period	
GAS positive rate	116 (12.6)	56 (19.3)	0.004
Scarlet fever	53 (46.1)	31 (50.0)	0.619
Pharyngeal infection	63 (7.8)	25 (11.0)	0.128
emm types			0.276
<i>emm12</i>	50 (46.3)	27 (48.2)	
<i>emm1</i>	53 (49.1)	23 (41.1)	
Other	5 (4.6)	6 (10.7)	
Superantigen rank			
First	<i>speF</i>	<i>speF</i>	
Second	<i>speG</i>	<i>speG</i>	
Third	<i>speB</i>	<i>speB</i>	

Abbreviation: GAS, Group A *Streptococcus*.

The period from 2011 to 2017 is referred to as the early period of urbanization and the period from 2018 to 2019 is referred to as the later period of urbanization.