

Epidemiology Bulletin

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Prevalence Surveys of Gluteus Maximus Contracture Among School Children - Taipei City and Szu-hu Township

Since 1978, cases of gluteus maximus contracture have been found on the coastal areas of Yunlin and Chiayi counties. Screening examinations for gluteus maximus contracture were conducted in December 1984 and October 1987 for 5,736 junior high and primary school children in Szu-hu Township of Yunlin County and 9,616 randomly selected primary school children in Taipei City to understand whether there is any difference in the prevalence of gluteus maximus contracture in the urban and the rural areas, and whether the frequency of injection is related to the prevalence.

Gluteus maximus contracture is the atrophy and fibrosis of the gluteus maximus muscle resulting in the bending of the innominate joints. The inward movements are restricted in different degrees. The patient cannot squat when the knees join together. He can do so only when the lower limbs are extended and turned outward. He is not able to raise his legs unless they are extended outward. The criteria for screening thus are decided based on the external characteristics of the disease: (1) for initial screening: unless obese or deformed, under relaxed condition with both arms hanging by the sides, heels on the ground, and knees joining together, if one cannot squat; (2) confirmation: when standing, if one cannot raise the leg vertically, and the leg is extended and turned outward. If a school child is positive on both screenings, he is considered a patient.

To understand the prevalence of gluteus maximus contracture in Szu-hu Township, all students in the 14 public and private junior high and primary schools (11 primary schools, 2 public and 1 private junior high), except the third-graders of the Szu-hu Junior High who were away at the time of screening, had been screened, a total of 5,736 students. In Taipei City, the total number of primary school children was used as the population for stratified sampling. The 16 districts in the City were grouped into 12 areas (Tatung, Yenping, and Chienchen districts as one area, Lungshan and Shuangyuan another area, and Mucha and Chingmei in one area). One school was randomly selected from each area. For each grade, 1/4 of the classes were selected at interval, a total of 9,616 students in 208 classes. Each student was asked to fill out a questionnaire concerning his family economic status, residence, and other background information. In addition to the estimate of prevalence, 20 cases in Taipei City were matched with 1,012 normal children selected from each area in proportion to its age and sex composition of the population for further analysis on the relation between injection and contracture.

The findings are:

Of the 5,736 students examined in Szu-hu, 120 were patients. Of them, there were 91 males (prevalence: 30.0%), and 29 females (prevalence: 11.0%). Of the 9,616 students examined in Taipei City, 20 were patients: 16 males (3.29%), and 4 females (0.84%). Prevalences by grade are shown in Table 1. Of all grades, both in Taipei and in Szu-hu, the prevalences are higher in males than in females. In Taipei, the prevalence increases with the grade; whereas in Szu-hu, the lower graders seem to have higher prevalence.

Table 1. Prevalence of Contracture by Grade and Sex, Taipei City and Szu-hu Township (per 1,000)

Grade	Szu-hu Township		Taipei City	
	Male	Female	Male	Female
Lower Primary	54.0	19.89	1.82	0.0
Intermediate Primary	30.0	7.91	2.40	0.65
Higher Primary	24.0	11.47	5.38	1.93
Junior High	17.3	4.03	*	*
Total	30.0	11.0	3.29	0.84

* No junior high students examined in Taipei City

Relation between the exposure to injection and contracture is shown in Table 2. "Injection experience before three years of age" is significantly related to contracture, and the relative risk ratio increases with the number of injections (X^2 for trend 6.06). No difference is found in the "injection experience between 3 to 6 years of age", and "injection experience after 6 years of age" groups.

Table 2. Relative Risk Ratio Between Injection Experience and Gluteus Maximus Contracture Among School Children in Taipei City

Frequency of Injector	Injection Experience Before 3 Years Old			Injection Experience Between 3 and 6 Years			Injection Experience After 6 Yrs		
	Case	Control	RR	Case	Control	RR	Case	Control	RR
Almost none or Rarely	7	578	1	12	672	1	13	774	1
Fair	9	324	2.29	7	271	1.45	6	175	2.04
Frequent	4	79	4.18	1	32	1.75	1	15	3.97
	Chi-square=6.137 P<0.05 X ² for trend=6.06 P<0.05			Chi-square=0.766 P>0.05 X ² for trend=0.76 P>0.05			Chi-square=3.497 P>0.05 X ² for trend=3.4 P>0.05		

In summary, the field screenings have found that: (1) the prevalence of Gluteus maximus contracture is higher in Szu-hu Township than in Taipei City; (2) either in rural or urban areas, the prevalence is always higher in male students than female students; (3) the prevalence among school children in Taipei City seems to increase with age, this is not so in Szu-hu Township; and (4) there seems to be a "dosage effect" between the "injection experience before 3 years of age" and contracture among school children in Taipei City.

Reported by Gluteus Maximus Contracture Study Group, Institute of Public Health, National Taiwan University Medical College, YC Huang, et al., Prof. CJ Chen

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