



MEETING ABSTRACT

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Parental inheritance and perinatal tobacco smoke exposure increase the gender-dependent risk of physician diagnosed asthma at preschool age

Chih-Chiang Wu^{1,2,3}, Te-Yao Hsu^{4*}, Ho-Chang Kuo⁵, Chia-Yu Ou⁴, Jen-Chieh Chang^{6,7}, Chieh-An Liu⁸, Chih-Lu Wang⁸, Hua Chuang⁷, Hsiu-Mei Liang⁴, Kuender D Yang^{2,3,9*}

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Background

Genetic inheritance and perinatal tobacco smoke exposure (TSE) have been proven to be critical for the development of childhood allergic diseases [1, 2]. This study investigated the interactive roles of parental allergic histories and TSE on the development of childhood asthma at 6 years old.

Methods

A birth cohort in southern Taiwan was studied. Information about parental allergic histories, gender, prematurity, TSE, and childhood allergic disease ever diagnosed by a physician were acquired from questionnaire during follow up. Children were asked to follow up at 6 years of age for allergic questionnaire and sensitization examination (CAP system).

Results

In this cohort study, 748 of the children with complete data were analyzed. 217 (29%) of children had positive parental allergic history, 191 (25.5%) of children had TSE history, and 186 (24.9%) of children had been diagnosed as asthma by a physician in the first 6 years of life. In a regression analysis, physician diagnosed asthma ever in the first 6 years of life were significantly associated with

male gender (OR: 1.941, 95% CI: 1.371-2.748, $p < 0.001$), either parent with allergic diseases (OR: 1.548, 95% CI: 1.047-2.288, $p = 0.028$), and TSE (OR: 1.504, 95% CI: 1.038-2.179, $p = 0.031$), but not significantly associated with preterm ($p = 0.801$). TSE with more than 20 cigarettes per day made children significantly higher risky to have physician-diagnosed-asthma than those with smoke exposure less than 20 cigarettes per day or those without smoke exposure (35%, 25% and 22.7% respectively, $p = 0.003$). TSE was not related to physician diagnosed rhinitis, dermatitis or allergic sensitization by 6 years of age ($p > 0.5$). Besides, TSE and parental allergic history had synergistic influence on the physician diagnosed asthma ever in the 6 years of life. This synergistic influence was significant in girls, rather than in boys (Table 1).

Conclusions

In the prospective cohort study, we found that male gender, parental allergic history, and TSE were significantly associated with physician diagnosed asthma by 6 years of age. TSE and parental allergic history had synergistic effect on the physician diagnosed asthma by 6 years of age. This synergistic influence was significant in girls, rather than boys.

* Correspondence: phachang@gmail.com

²Department of Medical Research, Show Chwan Health Care System in Chang Bing, Changhua, Taiwan

⁴Department of Obstetrics and Gynecology, Kaohsiung Chang Gung Memorial Hospital, Taiwan and Chang Gung University College of Medicine, Kaohsiung, Taiwan

Full list of author information is available at the end of the article

Table 1 TSE and parental allergic history had synergistic influence on the physician diagnosed asthma ever in the 6 years of life. This synergistic influence was significant in girls, rather than boys

All	physician diagnosed asthma	OR	95%CI	p (compared with A)	
parent allergic disorder -, TSE- (A)	30/161	18.60%	1		
parent allergic disorder +, TSE-	97/396	24.00%	1.417	0.896-2.240	0.135
parent allergic disorder -, TSE+	13/56	23.20%	1.32	0.632-2.757	0.459
parent allergic disorder +, TSE+	46/135	34.10%	2.257	1.325-3.846	0.002
Girls p (compared with A1)					
parent allergic disorder -, TSE- (A1)	4/72	5.60%	1		
parent allergic disorder +, TSE-	38/196	19.40%	4.089	1.404-11.905	0.006
parent allergic disorder -, TSE+	3/23	13.00%	2.55	0.526-12.353	0.231
parent allergic disorder +, TSE+	20/61	32.80%	8.293	2.649-25.964	<0.001
Boys p (compared with A2)					
parent allergic disorder -, TSE- (A2)	28/89	29.20%	1		
parent allergic disorder +, TSE-	59/200	29.50%	1.014	0.586-1.755	0.961
parent allergic disorder -, TSE+	10/33	30.30%	1.054	0.441-2.519	0.907
parent allergic disorder +, TSE+	26/74	35.10%	1.313	0.678-2.541	0.419

Authors' details

¹Department of Pediatrics, Show Chwan Memorial Hospital, ChangHua, Taiwan. ²Department of Medical Research, Show Chwan Health Care System in Chang Bing, Changhua, Taiwan. ³Institute of Clinical Medicine, National Yang-Ming University, Taiwan. ⁴Department of Obstetrics and Gynecology, Kaohsiung Chang Gung Memorial Hospital, Taiwan and Chang Gung University College of Medicine, Kaohsiung, Taiwan. ⁵Department of Pediatrics, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan. ⁶Division of Dermatology, Department of Medicine, McGill University Health Centre, Canada. ⁷Institute of Biomedical Sciences, National Sun Yat-Sen University, Kaohsiung, Taiwan. ⁸Genomic and Proteomic Core Laboratory, Department of Medical Research, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan. ⁹Department of Pediatrics, Po-Jen Hospital, Kaohsiung, Taiwan.

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