

## MIDDLE EAR ABNORMALITIES IN YUCHENG CHILDREN

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In 1978 through 1979, a mass poisoning due to the contamination of rice bran cooking oil by PCBs and their thermally degraded compounds happened in central Taiwan. The event was similar to a Japanese Yusho outbreak in 1968. It was named Yu-Cheng, "oil disease," in Taiwan<sup>1</sup>. All the living children born to women in the PCB registry of the Health Departments were collected in the early 1985. A total of 118 Yu-Cheng children born between June 1978 and March 1985 during or after their mothers' consumption of contaminated rice oil entered a clinical examination and follow-up. Another 118 children matched for age, sex, neighborhood, maternal age, and parental education and occupational class, were studied as control group<sup>2,3</sup>.

In the spring 1993, the children were examined for their middle ear condition by otoscopy and tympanometry. It was performed in 110 Yucheng children (220 ears) and 96 matched control children (192 ears). In Yucheng group, there were 57 boys and 53 girls; in the matched control group, there were 49 boys and 47 girls (Table 1). Their age were from 8 years 1 month to 15 years 8 months. Appearance of the tympanic membrane was observed as normal, retracted, perforated, or adhesive conditions with otoscope. Middle ear pressure was further measured with Impedance Audiometry (Rion RS20).

By otoscopy, abnormal appearance of tympanic membrane was noted in 49 Yucheng children (76 ears); it is statistically significant from those (34 ears) of the control group as shown in the Table 2 ( $X^2 = 14.8510$ , d.f. = 1,  $p = 0.00012$ ). By tympanometry, it was further revealed that middle ear negative pressure (tympanogram B type and C type) was rather significantly prevalent in Yucheng children (66/220) in comparison with those (28/192) of the control group as shown in the Table 3.

This study revealed that Yucheng children had higher incidence of middle ear diseases. It was in accordance with the previous observations that Yucheng children had more frequent upper respiratory tract infection<sup>3,6</sup>. Immunologic abnormalities were noted in Yucheng children and may return to normal as time elapsed<sup>7,8</sup>. There is accumulating evidence that one of the possible factors in the development of otitis

proneness is the genetic inability of these children to produce humoral antibodies<sup>9</sup>. In Yucheng children, further investigation is needed for understanding their susceptibility in middle ear diseases.

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Table 1. Sex distribution of Yucheng children and the matched control groups

	male	female	Total
Yucheng group	57	53	110
Control group	49	47	96
Total ears	106	110	206

Table 2. Comparison of middle ear condition between Yucheng children and the matched control groups

	Normal ears	Diseased ears	Total ears
Yucheng group	144	76	220
Control group	158	34	192
Total ears	302	110	412

$\chi^2=14.8510$  , d.f.=1,  $p=0.00012$

Table 3. Comparison of middle ear condition between Yucheng children and the matched control groups

	Normal	Tympanogram B type	Tympanogram C type	COM	Cholesteatoma	Adhesive ear drum	Total ears
Yucheng group	144	25	41	3	2	5	220
Control group	158	3	25	0	0	6	192

$\chi^2=25.1175$  , d.f.=5,  $p=0.00013$