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Reply to Lung Cancer Risk from Rn in Chinese Study

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Dear Editors:

We are writing in response to comments by V. A. Archer (Archer 1987) on our study of lung cancer incidence in two Chinese areas, designated as the high background and the control area (Hofmann et al. 1986). In his comments, he asserts that the epidemiological data suffer from two serious defects.

Firstly, Archer criticizes that no comparative smoking information for males was given in our paper, thus inferring that even a small difference in cigarette smoking would lead to observable differences in lung cancer risk. Tao Zufan et al. (Tao Zufan et al. 1985) have recently reported the results of a case-control study on mutational factors, such as cigarette smoking, in both Chinese areas. Table 1 lists the number of persons investigated and the number of smokers among this group. While 71.5% of males in the high background area were smokers, the corresponding percentage in the control area was 70.2%. Thus the difference in cigarette smoking between the inhabitants of the two areas is not statistically significant.

Secondly, Archer seeks to attribute our epidemiological finding to a very unstable population in the control area, basing his criticism on the difference in the male-female ratio in both areas. This comment obviously results from his misinterpretation of the meaning of this ratio. It is clearly stated in our paper that the male-female ratios of 1.2. and 2.8, respectively, refer to lung cancer deaths and not to the entire population in the two areas. The age distribution of all people living in the two areas, as reported by He Weihu (He Weihu 1982), is presented in Table 2. Thus the male-female ratio for all inhabitants is 1.1 in the high background area and 1.05 in the control area. Because of the small number of observed lung cancer deaths, no conclusions about the difference in the male-female ratios of the two areas should be drawn for simple statistical reasons. Furthermore, Zha Yongru (Zha Yongru 1982) found that 90.6% of the families investigated in this epidemiological study have been living in the high background area for more than six generations, while those in the control area total 67.4%. In all instances, however, these families have been residing in the two areas for more than two generations. These findings clearly illustrate that stable populations were surveyed in the high background and the control area.

Table 1. Number of smokers among persons investigated in a case-control study on mutational factors in Chinese high background and control area.

	Persons investigated			Number of smokers		
	Male	Female	Total	Male	Female	Total
High background	239	220	459	171	3	174
Control area	238	217	455	267	4	171

Table 2. Age distribution in Chinese high background and control area.

	High background		Control area	
Age group	Male	Female	Male	Female
0-	1.54	1.33	1.16	1.07
1-	5.15	4.74	3.67	3.60
5-	7.41	6.71	5.75	5.36
10-	7.24	6.43	6.48	5.77
15-	5.97	5.38	6.25	5.74
20-	4.13	3.69	5.17	4.73
25-	4.07	3.14	4.81	3.79
30-	2.92	2.09	3.43	2.66
35-	2.57	1.79	2.32	1.76
40-	2.45	2.05	2.30	1.92
45-	2.28	2.14	2.26	2.46
50-	2.03	2.13	2.24	2.52
55-	1.36	1.53	1.75	2.11
60-	1.30	1.38	1.39	1.65
65-	1.00	1.06	1.04	1.43
70-	0.61	0.93	0.67	1.14
75-	0.36	0.57	0.34	0.66
80-	0.13	0.27	0.13	0.31
85-	0.02	0.10	0.04	0.12
Total	52.54	47.46	51.20	48.80

Archer also suspects that the average intake of Se, fresh fruits and vegetables may have been different between the two populations. To the best of our knowledge, there is no difference in eating habits and food between the two populations. Investigations of the amount of trace elements in human hair showed that the concentrations of Pb, Cd, Co, Ni, Cu, Cr, Fe, As, Zn, and Ag are not statistically different (Zha Yongru and Lin Zuanxuan 1985). Only the amount of Mn in the hair of inhabitants of the high background area was significantly higher than compared to those living in the control area. A systematic study of various factors which might affect the mutation rate has been carried out by Wei Lüxin (Wei Lüxin et al. 1986). The results of this investigation showed that no factor other than ionizing radiation has been found which could explain the reported epidemiological lung cancer data.

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