

CORRELATION BETWEEN FINE PARTICLES IN THE ENVIRONMENTAL AIR AND CAUSE OF DEATHS AMONG INHABITANTS

K. Iwai¹, S. Mizuno², Y. Miyasaka³, T. Mori¹

¹*Research Institute of Tuberculosis, JATA, Tokyo, Japan*

²*Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan*

³*Respiratory Department, Tokyo University Medical School, Tokyo, Japan*

It has been reported that fine particular matters suspended in the environmental air may provoke cardiovascular diseases including lung cancer, and may increase the death rate among the inhabitants of the area. To clarify what kinds of disease, not a group of diseases, can correlate to fine particle concentration in the air, annual cause-of-death statistics and the air pollution estimates of 1881 spots in Japan were used for the present study. As limited data of PM_{2.5} (particulate matter less than 2.5 micrometer in diameter) were available and nationwide estimation is carried out for PM₁₀ at present, the converted PM_{2.5} values (0.7*SPM) in accordance with the results of 26 investigations in this country were used. Among various cause-of-deaths, a significant correlation was observed between the presumed PM_{2.5} levels in the districts and the age-adjusted death rates from ischemic heart diseases ($p < 0.01$) and from hypertensive heart diseases ($p < 0.05$) in both genders. Correlation were noted only in females, however, in lung cancer ($p < 0.05$), breast cancer ($p < 0.01$), endometrial cancer ($p < 0.05$), ovarian cancer ($p < 0.01$), pneumonia ($p < 0.001$), chronic obstructive lung disease ($p < 0.05$) and asthma ($p < 0.01$). For evaluation of these data, factors such as tobacco smoking, estrogen secretion and urban-life could be confounding factors. Communicable diseases such as tuberculosis with a high incidence in urban than rural areas could show a false positive correlation.