

Environment and cardiovascular disease

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Editorial

Recent studies describe a clear role of the environment to determining development and the impairment of cardiovascular disease, primarily hypertension and ischemic heart disease.¹⁻³ My previous papers^{4,5} emphasized the evidence that the environment according to its specific characteristics is a factor that could influence either positively or adversely cardiovascular system of all individuals, primarily the older population because of some altered physiological responses to harmful stimuli.

An environment may be commonly defined as a complex structure where individuals with similar and, otherwise, different lifestyle play their activity, particularly modifying and organizing various events strongly related to their living habit. This factor often changes the natural course of the environment itself.⁴ Therefore, the natural environment, which should be not influenced by human activity, really does not exist, and a correct lifestyle is fundamental to prevent a large number of diseases by reducing morbidity and mortality of living subjects through the control of several pollutants, primarily industrial and smoking toxics.⁵⁻⁷ There is no doubt that the characteristics of an environment have been and are continuously changed by the human progress, which usually walks in an opposite way to that the natural environment should need.

A large number of factors, primarily derived from chemical industries pollute the atmosphere and, so doing, adversely influence individuals' health including heart and blood vessel welfare. Fine particulate air pollution is a risk factor for cause-specific cardiovascular disease mortality via mechanisms that likely include pulmonary and systemic inflammation, accelerated atherosclerosis, and altered cardiac autonomic function.⁸ Cigarette smoking, one of the powerful air pollutant, exerts harmful effects on the cardiovascular system by those chemical compounds given out to the atmosphere.⁹

It is worth noting that an environment is structurally formed by outdoor and indoor spaces and, therefore, the pollution depends on its characteristics. When the spaces are widely ventilated, evidence indicates a lower pollutant concentration. Geographically, unhealthy climates have been demonstrated to determine a higher rate of infectious heart disease.¹⁰ Tropical and subtropical regions around a circled area involving American, Asian, Australian and African continents as well as the Pacific and Indian oceans show cardiovascular alterations primarily due to Protozoa and Metazoa, with a significant major rate compared to what observed in other geographical areas, where ischemic heart disease, hypertension and heart disorders due to metabolic factors are prevailing.¹¹ Thus, this is an evident proof associated with the role of the environment.

When individuals' habit is associated with some specific characteristics of the environment, the health status undoubtedly meets outcomes able to further impair cardiovascular system. The effects of always increasing cardiovascular risk factors may be clearly explained in this way. Cardiovascular disease may be considered as a condition able to change the lifestyle of the individuals and environment characteristics being, in its turn, strongly influenced by these factors. A topic to be taken into account is the relationship

between environment and some genetic factors for the cardiovascular disease.

A large number of cardiovascular disease has been documented to have a complex multifactorial etiology. Neither genetic nor environmental agents acting independently may cause disease. An individual's genetic makeup or, conversely, exposures to adverse environments cannot predict with certainty the onset, progression, or severity of disease. Cardiovascular disease may develop as the result of interactions between the "initial" conditions, which characterize the genotype, and exposures to environmental agents acting for a long time in a polluted atmosphere.¹² Therefore, a correct lifestyle should be fundamental to prevent those cardiovascular disorders mainly influenced by ambient pollutants with possible and significant reduction in mortality, morbidity and disability of living subjects.¹³ Thus, changes in lifestyle could be carried out with the purpose to reduce the incidence of cardiovascular fatal and non-fatal events.

Conclusion

In conclusion, from these short observations a basic question arises: Is the natural environment able to influence adversely the cardiovascular system or, on the contrary, are the current progresses due to industrial and manufactured products responsible of the environmental changes and, then, cardiovascular alterations? Epidemiological reports clearly support the second hypothesis unless for some geographical areas, as aforesaid, where the environment may directly harm cardiovascular system, primarily by infectious agents living in these regions.

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Conflicts of interest

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