BIOMETEOROLOGY AND QUALITY OF LIFE

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In the General Programme for the Next Century - Agenda 21, adopted in Rio de Janeiro, an important aim was formulated for global environmental education. Environmental protection must be strongly linked to a better perception of this education, in which the atmosphere is seen to have a great influence on every form of life. The antropical effects of the climate are increasingly changing. The temperate climate has begun to frequently exhibit the characteristics of an extreme climate: the winters are colder, but very warm periods are sometimes present, and the summers are warmer. Precipitation appears less often but, when it does, it is torrential. On our continent the changes have been felt, in an acute form, for about ten years and represent the antropical effects of human activity. Through the inevitable effects of feed-back, these changes are experienced differently by the inhabitants of these zones.

Biometeorological Considerations

Human beings are an integral part of the environment and of nature, taken in its entirety. Any negligent action, in relation to the facts - simple, but absolute in real terms - can have an unforeseen and especially unexpected impact. Civilisation, as a whole, has experienced two major effects: on the one hand, an improvement of quality of life and, on the other, a gradual but sure reduction in the capacity of the environment to adapt to these conditions. City life, especially, imposes some measure of elementary caution, the non-observance of which, can lead to progressively increasing sensitivity of the organism and, beyond a critical limit to a diminution of its capacity to adapt.

According to the results of statistical studies made by some Biometeorological Institutes, the sensitivity of the human organism to changes in atmospheric pressure, to the temperature of air masses, or changes caused by the activity of frontal meteorological systems (meteosensitivity, meteosensibility) has increased over the last 50 years, from 20% to 50% of the population. Meteosensibility can be considered as a physiological phenomenon which appears to affect sick, and elderly people, but this sensibility can also appear in healthy people. In the condition of meteosensibility, the state of the nervous vegetative system and the central nervous system plays a crucial role, according to whether the organism's biorhythms are rising or falling at the time. As a result, identical reactions to identical external factors do not exist, nor can similar symptoms be shared between two or more persons.

An Important Role for Biometeorology

Biometeorological medical pathological studies have been carried out with regard to relationships between different diseases and variations of meteorological parameters, such as pressure, temperature or humidity. Among the pathological manifestations clearly influenced by meteorological factors can be listed:

- cranial-cerebral trauma (followed by meteosensibility in above 95% of cases)
- glaucoma (followed by meteosensibility in over 75% of cases)
- rheumatic diseases (followed by meteosensibility in over 95% of cases)
- psychical diseases
- diseases of vegetative nervous system
- cardiovascular diseases

It is clear that meteorological factors can act as direct ethical agents only in special cases, such as caloric shock and asthma crises, precipitated by fog or low temperature. In the majority of cases they constitute supplementary factors for the worsening of morbid pre-existent processes.

Meteorological Information for Medical Purposes

It is very important for a doctor to be aware of the biologically active weather, given by the weather forecast, for the next 2-3 days. Biotropical weather is considered a supplementary risk factor for any patient, in whom a specific reaction to meteorological challenges is present, known or not known. Biometeorological warning has, as its main aim, the prevention of meteorological symptoms, by taking special protective measures for patients, in the mean time, before the change of weather. In practise, biometeorological warning supplies the means for the
pharmacological prevention of the worsening of diseases, or the appearance of complications. If a patient is receiving only physiotherapeutic treatment, a situation can arise in which the patient has then to take medicine. In other cases in which the patient is currently receiving drugs, it is necessary to increase the dose. In order to, more efficiently, counteract biometeorological change, it is necessary to administer medication before the change in the weather, as a result of prior warning.

Conclusions

Information about the current day, or possible changes in the weather in the near future, can aid the doctor and also the patient, in the following ways:

- information about the possible influences of the environment on the human organism
- determination of the level of meteosensibility
- identification of the differences between effects generated by variations of meteorological factors and those generated by dysfunction of the organism, in the deterioration of health or in diseases

Clinical applications of these medical techniques include:

- adapting physiotherapy to the coming change in the weather
- estimating any danger of complications arising during anaesthesia
- adjusting treatment doses according to individual differences

It is clear that, in these situations, the level of efficiency in this field will increase substantially, following actual collaboration between meteorologists and doctors, and will certainly be for the benefit of patients, especially meteosensitive people. In Romania, where mass-information for those interested began two years ago, information is being made accessible to the population through newspapers and radio. The benefits are already obvious.

References


Since 1979, Dr. Doina Popescu has been a Senior Researcher in meteorology at the National Institute of Meteorology and Hydrology, Bucharest, Romania. She is a member of the Romanian Society of Meteorology, and since 1970, has published over forty publications in the field of meteorology. Since 1991, she has published in the field of Pathological and Medical Biometeorology. Her most recent contribution in this area was Estimation of the Impact of Pressure Variation on Cardiovascular Patients (1994).