



Comparative Medicine - Foundation for One Health Concept

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The present manuscript is a philosophical-explanatory scientific work in which the authors carry out an extensive analysis of the relationship between comparative medicine and One Health concept. Strictly speaking, comparative medicine is made up of those pathological events that we can identify, simultaneously, both in human medicine, as well as in veterinary medicine, and in the conditions offered by the surrounding environment. The element of causation of human and animal pathology is to be found, in most situations, in the surrounding living environment.

The term comparative medicine is very comprehensive and encompasses the sum total of human and veterinary pathology – the one and only medicine, in a certain local living environment, relying in particular on the specific pathology of zoonoses (transmissible diseases from animals to humans and vice versa) and on the human and animal oncological pathology, namely, comparative.

If all of the above mentioned factors are apt to lay the foundation of One Health concept, it is necessary on the one hand, to define it and, on the other hand, to analyze the entire structure underlying the foundation of the concept in order to highlight and assess the qualities of the so-called "bedrock" that lies at the core of the concept and to identify new ways and means for continuous improvement and further development. Throughout this paper, we will start each subchapter by asking a question: What is the basic essence of One Health concept?

One Health concept is eminently social, addressing all members of human society, regardless of sex, skin color, religion and social condition, together with the whole biodiversity as well as all the constituent elements of the living environment (water, soil, air, and plants, including forests). All these elements, which require a good and thorough cognoscibility, have to be viewed synthetically by inter-conditioning them within the large scope of multi-disciplinarity. All these are to be achieved under the slogan "primary prophylaxis of life and post-therapeutic life" in order to bring about:

- The reduction of destabilizing factors in the living environment, including those that generate global climate change;
- Decreasing the number of human patients who call on specialist doctors;
- Reducing the number of pets that require veterinary care;
- Creating and maintaining the livestock within physiological parameters.
- These components affect the human society, leading to a certain improvement in the quality of life, with reduced costs.

As far as the analysis of the constituent elements regarding the foundation of the concept, embodied into a new science, that is comparative medicine, the following aspects can be stated:

- Comparative medicine is sequentially made up of several sub-sequences, each having in its turn a precise, morpho-functional identity;
- Zoonoses represent the main component that bears the mark of the infectious pathology that develops in humans in contact with a sick animal or bacteria, viruses or parasites carrier. The most important zoonoses are:
 1. Leptospirosis
 2. Tuberculosis
 3. Anthrax
 4. Brucellosis
 5. Lyme disease
 6. Listeriosis
 7. Campylobacteriosis
 8. Q fever
 9. Pasteurella
 10. Tularemia
 11. Salmonellosis
 12. Ebola
 13. Influenza
 14. Yellow fever
 15. SARS (Severe acute respiratory syndrome)
 16. Hepatitis E
 17. Trichinellosis
 18. Echinococcosis
 19. Malaria
 20. Toxoplasmosis
 21. Giardiasis
 22. Trichinellosis, etc.

The global epidemiology of zoonoses will also be dependent on the climate changes, among which the South into North offensive is crucial.

Practically speaking, comparative oncology deals with the comparative study of cancer, with different locations, in humans and pets that display the same forms of cancer in terms of evolution, clinical staging, cyto-histo-pathological aspects and results. The most important element is the rate of progression of canine cancer, taking into account that one year of life of the respective species is

equal to about 6 - 7 human years and that the incidence of cancer in canines has a logarithmically higher value than the corresponding human one.

Under these circumstances, we are able to carry out, both anatomical-clinical and therapeutic surveys, in a much shorter span of time. Another important element is represented by the quality of the canine species of functioning as a "bio-sentinel" of the cancerous disease in a family. From my own observations, in over 60 years of activity, I have identified two situations that I consider important, respectively:

1. in many families where cancer patients had been diagnosed, especially with mammary neoplasms, in time, the pet from the canine species, also developed a similar breast cancer;
2. in counterpart, when in a family, the canine pet started developing a form of cancer; within a variable period, one or more cancer diseases appeared in the respective family members.

At first glance, it may be possible to talk about the possible interspecies transmission of cancer, but in reality, it is a matter of identifying, in the same areal, onco-inducing etiological factors, which affect both humans and animals.

Malignant neoplastic disorders are also identified in large numbers in birds and cattle. These aspects, however, have a specific etiology (oncoviruses), different from canines whose etiology is not completely elucidated, as, likewise, in the case of humans [1-9].

Moreover, comparative medicine deals with a series of techniques and technologies that, before being applied on humans, their capacity is tested on different species of animals, under perfectly legal conditions.

And, last but not least, a particularly important aspect is the nosologically identity of some non-infectious medical conditions, among which we mention: diabetes, dermatopathies, otorhinolaryngology disorders, ophthalmological afflictions, etc., common to humans and pets (canine and feline).

Finally, we can state that the new One Health global medical concept is based on the new science - comparative medicine and vice versa, it functions as a fundamental element, with a large scope of activity, absolutely indispensable to the very concept.

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