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Research Article

Key Elements of the Knowledge-Based Ideology as a Basis for Defining the Objectives Bound up with Prevention and Treatment of Oncogenic Diseases

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Abstract

Discussed is the author's Knowledge-Based (KB) ideology, which orients medical specialists and scientists involved in treatment of oncogenic diseases to finding an efficient systems approach, which would allow them to (i) Rely upon a relatively complete system of possible viewpoints (i.e. approaches to treatment); (ii) Formulate a set of the multi aspect global problems to be solved; (iii) Find and apply an approach, which would presume consideration of not simply a disease but the "problem incurred by the disease"; (iv) and on this basis achieve (a) Deep understanding of the problem bound up with the oncogenic disease to be treated; (b) Deep understanding of Negative Global Tendencies (NGTs); (c) Deep understanding of possible consequences of NGTs; (d) Deep understanding of the priority tasks, which are considered to be urgent.

Keywords: Knowledge-based ideology, Deep understanding of the problem, Oncogenic diseases, Virus-induced oncogenic diseases, Knowledge-based treatment approach, Knowledge-based renovations in medicine

Abbreviations: ANN: Artificial Neural Network, HPV: Human Papillomavirus, KB: Knowledge-Based, KBTA: Knowledge-Based Treatment Approach, NGTs: Negative Global Tendencies, NSHLTs: Negative Social Health Level Tendencies, TDSs: Types of Disease Sources, VD: Viral Disease, VID: Virus Induced Disease

Introduction

The issues usually considered in medical articles of numerous authors writing on health care problems and on problems of treatment of oncological diseases are usually reduced to the following traditional aspects of the corresponding treatment processes: disease outbreaks and measures in response; patterns of diseases; improved and new forms of analyses; practice of application of new medication appearing to date; advanced and unusual treatment techniques, etc. During the recent 10 years, in the available literature, one could rarely find any mentions of the factors, which would be additional (in some sense) to the process of treatment itself. Meanwhile, additional factors complement treatment of a disease. The account of such factors is extremely important because these substantially influence the process of treatment, and not only treatment. These factors may determine the system of undertakings bound up with prophylaxis, prevention, treatment, achievement of the remission. For example, when such factors are bound up with

virus epidemics, there may appear the need of, e.g., school closures, extended workplace closures, and, probably, restrictions imposed on movement of citizens about the city (see, e.g., [1]).

It describes an attempt of an extended and multi-aspect analysis of well-known problems of treatment of oncogenic diseases, which has been undertaken by the author on the basis of development of a relatively obvious scientific idea of Knowledge-Based (KB) renovations in medicine. On this basis, the author developed and postulated a KB-Ideology (see, e.g., [2,3]). The KB-ideology has laid the basis for really efficient approaches to prophylaxis, prevention and treatment of hazardous diseases. It is natural that the KB-ideology has been applied by the author to such diseases as oncogenic Virus Induced Diseases (VIDs) (including hazardous HPV-induced ones, a sphere of the author's special interest). The KB-ideology has received its clinical implementation on this basis. Furthermore, this ideology has added explanations of possible approaches to solving complex problems of health care, health surveillance.

The Basis of Problem Consideration: A Practical KB-Approach to Understanding and Treatment of Virus Induced Oncogenic Diseases

Implementation of the KB-ideology has been considered via examples with prophylaxis, treatment and prevention of oncogenic VIDs. The concepts of "deep knowledge" and "deep understanding" of the issues are interpreted by the author as knowledge and understanding of the problems in a principally enriched (i.e., scientifically extended and multi aspect) format. The material of the present publication is based on the author's clinical experience and his scientific (physiological and psychological) findings. The conclusions have been supported by numerous results of clinical treatment processes and investigations. This material has allowed the author to formulate a KB-ideology, which could form the basis of a principally new attitude to problems of medicine and public health.

The Historical Aspect of The Problem

Traditional KB-medicine existed always. A review of its history (and the principles) may be found in [4]. It is natural that earlier KB-approaches were sooner declarative. These always were one-aspect approaches, i.e., each medical doctor worked with (and attracted attention of the colleagues to) only one small problem or even only one aspect of the treatment cases he encountered.

In 2022, a team of talented researchers represented by Cheng Zhang and his co-authors initiated a discussion of a specific KB-approach, which would allow them to apply Artificial Neural Networks (ANNs) and elements of engineering to clarify their understanding of the immune-related processes underlying clinical specificities of breast cancer progression [5]. These researchers discussed the possibility to obtain knowledge mined by ANNs from omics-data available in www to explain clinical problems bound up with definite breast cancer cases. These authors attracted biological knowledge and stated that this systematized knowledge (obtained by them in the form of gene-to-gene associations) allowed them to go in depth and consider (i) Immune related components bound up with breast cancer (chemokines, carbonic anhydrase) and (ii) Iron metabolism capable of modulating the immune-related processes and taking account of the tumour microenvironment. Already the KB-approach of this level allowed the specialists in breast cancer reconsider some clinical issues of this disease.

In 2023-24, other teams of talented researchers dared to propose specific KB-approaches to diagnostics and treatment of definite cancer diseases. These approaches were also biomedical, i.e. based on the attempts of biological understanding of oncogenic diseases. In June of 2023, Mohammed N. Jamala and Samy S. Abu Naser joined the discussion bound up with the necessity of a KB-approach for lung cancer diagnostics and treatment [6]. Later, A. Faheem and his co-authors also tried to deepen into cancer biology. Their KB-approach implied a systemic review of computational approaches in order to deepen into cancer biology, while implying informed drug repurposing [7]. The idea of necessity of a KB-approach was also uttered in V. Gureghian and his co-authors [8]. The initiative of Andrew T. Shane and his co-authors implied transformation of global approaches to prevention of chronic diseases and even health management across the lifespan, all at the expense of the account of genomics and regulation of the patient's behaviour [9].

The author of the present article is very glad that at least four above teams of authors have recently emphasized the necessity of KB-approaches. These approaches are one aspect ones, nevertheless, the fact of their appearance proves that there exists a necessity of orientation to KB-analysis, KB-vision and KB-understanding of medical realities. The necessity of KB-diagnostics and KB-treatment of oncogenic diseases has been understood and developed by several teams of talented researchers. The issue of plausible knowledge is gradually becoming all the more principal issue in finding a really efficient approach to prevention and treatment of any disease. It is very important that there is a desire of the researchers to study cancer problems deeper, and deeper understand the biology of oncogenic diseases.

Analysis of the ideas of talented predecessors (who practically implemented their approaches) has stimulated the author of this article to undertake an attempt of a systemic and multi-aspect approach, which would be applicable to prevention and treatment of various diseases, and, therefore, to problems of health care in principle. The author's KB-approach presumes operating with multi-aspect knowledge, which would not be reduced to the knowledge about the disease cases only.

Problem statement: As far as the aim of the present investigation is concerned, the author intends to make valuable systemic contributions into the development of really deep scientifically based understanding and, hence, prevention and treatment of oncogenic diseases.

Methods and Materials

Plausible knowledge and reliable biomedical grounds may already form a basis of any treatment method. And what is ever more important, plausible knowledge may become the ground for a multi-aspect strategy of prevention and treatment, which can lead to the remission. In the present paper, the problem lying in the essence of oncogenic Virus Induced Diseases (VIDs), the problem of oncogenic impact of HPVs upon people are discussed from the viewpoint of the author's KB-ideology, which presumes both a systemic aspect plus deep understanding of the approach to treatment of oncogenic diseases and, on this basis, efficient prevention and treatment of these diseases.

Noteworthy, the KB-ideology formulated by the author presumes not only application of treatment methods in each definite case, but application of a systemic multi-aspect and methodologically organized approach, which implies systemic organization and systemic application of an integrated methodological system, which – in case of a concrete treatment task – is constructed of a sequential set of definite treatment methods organized into a sequence of treatment stages (i.e. a treatment strategy). This systemic KB-ideology is recommended in the capacity of the key principle of proper organization of any cancer disease (and also Viral Disease (VD)) prevention and treatment processes. This KB-ideology implies not only application of biomedical methodological grounds in solving medical treatment problems, but also application of the systems science approach.

During the recent 20 years, the methodological platform of the KB-Treatment Approach (KBTA) was gradually formed not only in treatment processes, but also in the biomedical investigations oriented to deeper understanding of the nature of oncogenic diseases. The author was involved in treatment of oncogenic diseases, and the KBTA employed both the knowledge and the methods of genetic engineering, deep knowledge of cellular level, organelle-level and molecular-level organism systems and processes, microbiological, genetics and genomics approaches. Furthermore, in order to construct an informatics-based explanations of, say, the immune-related processes underpinning well-known clinical traits of heavy diseases, other authors employing KBTA sometimes combined biomedical methods and contemporary tools represented, for example, by artificial neural networks [5].

In some high-level articles (even not indicating to KBTA), the necessity of (i) Obligatory regular and detailed tracking of patients' states; (ii) Obligatory complete character of analyses and results of treatment [8]; (iii) Complete and efficient diagnostics (especially on early stages of cancer treatment (2022) [10,11], meta-analysis being obligatory); (iv) Early detection and personalized treatment strategies (2024) [12,13]; (v) Employment of Artificial Intelligence (AI) aids (2021-2024) to provide for accuracy of detection [14], accuracy of diagnostics [10,11,13,15,16], etc., were emphasized.

All the well-known researchers, who were involved in finding approaches and methods of treatment of risk and heavy oncogenic VIDs, indicated to the necessity of biomedical methods (later, acquiring forms of clinical methods) (see, e.g., a discussion in [3]) bound up with treatment on account of:

i. abnormalities bound up with the immune system (2022-2024) [5,17]

ii. possible cellular (cytological) organism's abnormalities (2018-2023) [18-20,2]

iii. abnormalities bound up with molecular pathogenesis (2004-2023) [21,2]

iv. diseases (cases) conditioned by the viral genome variations (2013-2023) [22,23,2]

v. possible genetic abnormalities (i.e. mutations) in patients' organisms (2018-2023) [24,2], for example, genetic abnormalities revealed in course of screening of women in clinic [25].

vi. Furthermore, specialists in medicine sometimes encounter ultra-rare diseases. In such cases, clinical trial selection platforms for the patients are developed (2024) (see, e.g., [26]).

So, no wonder that the corresponding biomedical publications during 2022-2024 have given evidence that there is an obvious need to widely apply the KBTA and methods partially represented in several publications, which are oriented to deeper understanding and hence more efficient prevention and treatment of oncogenic diseases.

Meanwhile, the basic principle of KBTA (recommended in [2]) was obvious and simple: firstly, deeper understanding of the pathogenesis caused, say, by viral infecting; secondly, treatment of the disease on the basis of a flexible system of contemporary methods (not one traditional method). The reliable ground of KBTA implied (a) Deep scientific understanding of biological causes, sources, mechanisms of progression and relapse of heavy diseases, and, in this connection, employment of the strategies presuming treatment of such diseases on cellular, organelle and molecular levels; (b) Broader and deeper analysis and understanding of disease cases on the basis of extended information and really plausible scientific ideas.

Results

It is possible to state that, unlike the ideas expressed in one-aspect KB-Approaches (KBA) [4-6], the author's KB-ideology [2,3] is characterized by its (i) Systemic organization and (ii) Truly multi-aspect character. When proceeding from the aspects of problem analysis earlier discussed by the author in [2], it was possible to move on in understanding of treatment issues. And it so happened that the author's KB-ideology has become oriented not only to a practicing medical doctor involved in treatment of a definite disease, but to numerous doctors and numerous biomedical researchers involved in solving diverse treatment problems and, moreover, global health-care problems.

The KB-ideology proposed orients medical specialists (involved in treatment of oncogenic diseases) to finding a really useful

(extended, practically applicable and efficient) systems approach, which would allow them to

i. Rely upon the following relatively complete system of possible viewpoints onto the "problem bound up with the concrete disease" (dictated by the KB-ideology):

a) medical viewpoint

b) scientific (biological and not only biological) viewpoints

c) methodological (technological) viewpoints

d) social viewpoint

e) practical viewpoint

(These viewpoints are defined by (i) The KB-ideology ideas and (ii) The world experience in the measures of health care under the contemporary conditions of growth of virus-induced oncogenic diseases in the world; these viewpoints imply the corresponding system of possible approaches to solving the problem)

ii. Formulate a set of the multi-aspect global problems to be solved and, in this connection,

iii. Find and apply an approach, which would presume consideration of not simply a disease but the "problem incurred by the disease", which is right the problem to be solved by experienced medical specialists.

iv. So, the disease problem may be represented and solved on an extended scientific knowledge basis, i.e. within the frames of the system of above viewpoints onto the problem bound up with the concrete disease.

v. In this connection, a definite set of objectives (for medical specialists and scientists involved in solving concrete disease problems) has been formulated.

Objectives

Objective 1

Achievement of deep understanding of the problem bound up with the oncogenic disease to be treated, what would imply, first of all, ascertainment of the Types of Disease Sources (TDSs). These are the following TDSs: TDSs depending on the organism's states (i.e., defined by the organism's internal protective potential realized on the intracellular level), which may become the ground for the sources of cytological organism's abnormalities or violations (i.e., abnormalities of the cellular and subcellular levels) (*Bruni, et al.* (2010), *Venceslau, et al.* (2014), *van de Wijgert, et al.* (2017), *Brusselaers, et al.* (2019), *Norenhag, et al.* (2020), [18,19,20]. TDSs depending on the functions of capsid protein L1 and bound up with the organism's viral molecular pathogenesis caused, for example, by some oncogenic disease (*Longworth & Laimins,* (2004), *Senapati, et al.* (2016), *Malhone, et al.* (2018), [21]. TDSs external with respect to the human organism (TDSs dependent on genetic variations of definite HPVs); these relate to oncogenic diseases conditioned by genotype variants of HPVs (*Cornet, et al.* (2013), *Chen, et al.* (2014a), *Chen, et al.* (2014b), *Chen, et al.* (2015), Graham, 2017, World Health Organization, (2020). [22,24,23,25]. In turn, knowledge of TDSs allows the medical specialists to define (this is logical) practical tasks in connection with the growth of the number and the diversity of types of disease sources (while including the sources of VIDs (say, HPV-induced) oncogenic diseases). It is obvious that TDSs influence the organism depending on its immune protective potential, its abnormalities (in the author's investigations also depending on the functions of the capsid protein L1 carrying hazardous HPVs).

Objective 2

Achievement of deep understanding of Negative Global Tendencies (NGTs) bound up with (i) growth of the diversity of virus-induced oncogenic diseases (*Arbyn, et al.* (2011), *Forman, et al.* (2012), *Oeffinger, et al.* (2015), [21]; (ii) growth of the number of various oncogenic diseases conditioned by various HPV genotypes (*Muñoz, et al.* (2003), *Kreimer, et al.* (2005), *Forman, et al.* (2012), *de Martel,* (2012), *Siegel, et al.* (2014), *deSantis, et al.* (2015), *Teras, et al.* (2016), *de Martel,* (2017), *Torre, et al.* (2018), *deSantis & Jemal*, (2018), *deSantis, et al.* (2019).

Objective 3

Achievement of deep understanding of possible consequences of above NGTs, understood as Negative Social Health Level Tendencies (NSHLTs) bound up with the growth of the diversity of oncogenic diseases and virus-induced oncogenic diseases (while including HPV-induced oncogenic diseases conditioned by various HPV genotypes), expressed in the form of such negative NGTs as growth of the figures of morbidity cases (in connection with various forms of cancer induced by HPVs (*Buchman, et al.* (2016), *Bruni, et al.* (2019)) and mortality cases (in connection with various forms of cancer induced by HPVs (*Buchanan, et al.* (2016), *deSantis, et al.* (2017), *Bray, et al.* (2018), *Sung, et al.* (2021), *Juul, et al.* (2022)).

Objective 4

Achievement (by medical specialists and researchers working in the field) of deep understanding of the priority tasks, which are considered to be urgent in connection with the disease conditioned problem. These are various tasks bound up with possible undertakings of the specialists (e.g., prophylaxis, treatment undertakings, refinement of the health care system, etc.), i.e.

i. important practical tasks considered to be urgent in connection with clinical treatment of a definite virus induced oncogenic disease (these are the tasks bound up with possible undertakings related to prophylaxis and therapeutic treatment of the disease)

ii. important tasks considered to be urgent in connection with aggravated situations (e.g., observed growth of the number of various HPV-induced oncogenic diseases and cancer epidemics in the world)

iii. priority tasks defined by (a) the author's KB-ideology and (b) the world experience bound up with the measures of health care provision under the conditions of growth of virus-induced oncogenic diseases.

Resume of the Results Obtained

So, as a result of the present investigation conducted with the aid of KB-ideology, the following results have been obtained.

1. An approach to formulation of a set of the multi-aspect global problems to be solved in connection with a definite disease has been defined.

2. In this connection, a definite set of objectives (for medical specialists and scientists involved in solving concrete disease problems) has been outlined.

3. Defined (and described) was a system of possible viewpoints onto the treatment problem (which are defined by (i) the KBA ideas and (ii) the world experience in the measures of health care under the conditions of growth of virus-induced oncogenic diseases and cancer epidemics in the world).

4. Medical specialists and scientists involved in solving the problems of oncogenic diseases have received the grounds for deeper understanding of:

a) problems bound up with the oncogenic diseases to be treated, what implies, first of all,

i. ascertainment of the Types of Disease Sources (TDSs)

ii. knowledge of TDSs allows the specialists to redefine their practical treatment tasks; disease sources influence the organism depending on its protective immune potential, organism abnormalities (within the frames of the sphere of the author's interest, this is especially important on account of functions of the capsid protein L1 carrying a hazardous HPV), etc.

b) Negative Global Tendencies (NGTs) bound up with the growth of the diversity of various oncogenic diseases (including HPV-induced oncogenic diseases conditioned by various HPV genotypes); and also, variations of figures of morbidity and mortality cases in connection with various forms of cancer induced by HPVs

c) possible consequences of above NGTs, which are bound up with the growth of the diversity of human viral diseases and virus-induced oncogenic diseases, expressed in the form of the negative tendencies, i.e. high level of the figures of morbidity and mortality

d) priority tasks, which are considered to be urgent in connection with the disease conditioned problem. These are various tasks bound up with possible undertakings of the specialists (e.g., prophylaxis, treatment undertakings, refinement of the health care system, etc.).

Discussion

As noted above, the issues usually considered in medical articles of numerous authors writing about the problem of treatment of oncogenic diseases (especially such heavy forms of oncogenic diseases as virus-induced ones) and about health care problems in principle are usually reduced to consideration of the following traditional and very practically important treatment process aspects: improved forms of analyses; practice of application of some new medication, which have appeared to date; unusual treatment techniques, etc. In course of investigations conducted during many years, the author has come to the conclusion that not simply a disease case must be cured. Formulation of the KB-ideology by the author has allowed him to understand that it is necessary to search for a global approach (presuming global understanding of health care problems), which would be slightly different from previous approaches. The KB-approach desired should be at least global (say, likewise in [9]) and multi-aspect.

In addition to the KB-approaches developed in [4-7], the author's KB-ideology (i) represents a multi-aspect approach; (ii) is characterized by systemic character. And these are not the only advantages of the KB-ideology. The KB-ideology (iii) presumes consideration and solving of not simply a disease but the global problem bound up with the disease (or with the epidemic); (iv) this problem may be represented and solved only on an extended basis of knowledge, i.e., within the frames of a multi-aspect system of possible viewpoints (in other words, a system of possible approaches to solving the problem). To explain above statements more clearly, let us first comprehend the results of this investigation represented above.

In the process of investigation of the global problem implied by the author, defined should be the most important issues, which influence the treatment processes: patterns of the disease, which are normally conditioned by its biological underground, first of all, by the types of disease sources, which determine practical tasks of the specialists in connection with the disease problem. So, chosen should be the most perfect forms of analyses, application of appearing contemporary medication, advanced treatment methods, etc. The KB-ideology proposed is oriented to bringing the medical doctor closer to understanding of (i) Negative Global Tendencies (NGTs) bound up with the growth of the diversity of oncogenic VIDs; (ii) global consequences of above NGTs expressed in the form of negative social health level tendencies bound up with the growth of the number and the diversity of various VDs and oncogenic VIDs (including those conditioned by various HPV genotypes). An approach within the frames of the KB-ideology allows one to move on and (iii) define priority tasks considered to be urgent in connection with the disease problem (these are the tasks bound up with possible undertakings of the specialists, e.g., prophylaxis, prevention, treatment undertakings, etc.); (iv) formulate a system of global priority tasks (for the specialists) bound up with possible undertakings considered as urgent.

Obviously, the KB-ideology proposed is oriented not only to a practicing medical doctor but to the researchers involved in solving global health-care and health-surveillance problems. The global problem, which really lies in the basis of any definite disease, may be efficiently solved only on basis of the KB-ideology plus on an extended scientific basis, i.e. within the frames of a system of the viewpoints (approaches) described above. These principal grounds of the KB-ideology, which are obvious and, so, have been taken into account by the author (to be applied in the process of work on the disease problem), are necessary for the work on the disease problem (via analysis of the sub-problems). These grounds only seem to be separate or even independent of each other.

Now let us first formulate the results bound up with some additional factors and measures understood by the author as important. In the available literature, one can rarely find any mentions of numerous issues, which either are additional to the process of treatment itself or represent systems science approaches. Meanwhile, such additional issues and especially systems science approaches are extremely important because this influence not only the process of treatment itself. It would be insufficient to state that these aspects and approaches determine the system of processes, which include prophylaxis, prevention and treatment of patients. Furthermore, these aspects and approaches presume additional factors and measures bound up with treatment, which are very important. Moreover, these aspects and approaches lead to explanations of a number of additional hidden problems, which are unobvious at first sight.

The author has to emphasize that there are numerous additional factors, which may substantially influence the processes of prevention and treatment of diseases. Unfortunately, many of such factors have not been earlier revealed in medical practice and taken into account. Such factors are to be understood and taken onto account to provide for the measures needed for the desired remission of the patient. And this is especially important to take such factors into account, when the medical specialist has to do with high-risk (e.g., virus-induced) oncogenic diseases. There are, first of all, the factors, which determine the patient's state in course of treatment. These factors imply (and this is important) the attitude to the patient at the hospital (the care given to him), the level of medical service granted to him, etc. In this connection, his doctor has to study and later monitor: (i) negative impact of the pathogenesis upon the patient's organism (which is provoked by the sources of cancer), and the character (specific traits) of such pathogenesis; (ii) negative impact of a definite social surrounding of the patient at the hospital; etc.

When studying the opportunities, suppose, not of treatment, but of complete elimination of the source of cancer (say, some virus provoked cancer), it is necessary to start not with immediate treatment of the patients (young medical specialists usually start right with primitive attempts of treatment, and are surprised when the remission does not come), but take into account the "mapping" of this patient and his disease into biomedical and methodological knowledge-determined spheres. It would not be a vain attempt to take account of the influence of the natural-ecological and social spheres, in which this patient lives. Only after that, having understood the essence of the problem and having assessed the opportunities of application of definite methods, the medical doctor acquires the right to go down to solving the problem of combating the disease encountered, while applying the aids of contemporary medicine.

Let us assume that treatment of a patient in clinic was correct. But very soon he turns back to the same hospital. The point is that, having turned back home, this patient continues the form of existence traditional for him: (i) he fails to observe the regime (active or passive) prescribed for him; (ii) he consumes the food traditional for him, which may contain viruses in very small quantities (such food is prohibited in his case, but it is traditional for him); (iii) at home he contacts the pets, which may transfer viruses; (iv) when leaving home, he may experience some negative impact of the contaminated (infected) objects (sites) of the natural environment, which may add to negative influences upon the patient's organism, or, (v) negative impacts of the broader social environment upon him; etc.

Conclusions

No doubt, plausible knowledge is the only reliable ground of any efficient treatment approach, any strategy of disease prophylaxis and prevention. Meanwhile, not simply knowledge itself may form the ground for moving on in treatment methodology. A real progress in prophylaxis, prevention and treatment of hazardous diseases may be achieved only on the basis of the knowledge brought into a system and represented in the form of definite conclusions made on a deeply analyzed scientific basis. Only such multi-aspect and systematized knowledge may serve in the capacity of the basis for substantial steps forward in the approaches and methods of combatting diseases and epidemics.

Numerous author's attempts of bringing multi-aspect knowledge into a system has given the author an opportunity to understand that (i) considered, analysed and studied must be the problem bound up with the disease (or the epidemic); (ii) principal issues are to be studied; (iii) numerous additional aspects bound up with the disease may not be ignored. On the basis of such understanding of the situation, the author reconsidered the approaches to problems bounded with such heavy diseases as oncogenic diseases (including hazardous HPV-induced ones). On the basis of principles of this ideology, knowledge-based ideology, known approaches were principally complemented by the author in several aspects. Now an approach presuming better defense of the people from oncogenic diseases may be formulated.

The knowledge-based ideology was constructed by the author on this multi-aspect and systemic basis. All the issues were consid-

ered within the frames of a system of possible viewpoints: medical, scientific (biological and not only), methodological, ecological, social and practical viewpoints. Being grounded on the basis of these viewpoints (multi-aspect knowledge), the knowledge-based ideology has laid the basis for really efficient analysis and understanding of possible approaches to the problems bound up with prophylaxis, prevention and treatment of oncogenic diseases. The author's knowledge-based ideology was applied to find efficient approaches to fighting cancer diseases. Known approaches were principally complemented in several aspects on the basis of fundamental principles of the knowledge-based ideology. The systems science approach and, within its frames, methods of genetics, genomics, organelle-level and microbiological analysis were applied; sources of viral diseases, which can cause cancer, were ascertained.

The knowledge-based ideology may be considered as a tool, which can help specialists to systematize the knowledge bound up with prophylaxis and treatment at the expense of explanations now obtained. From this viewpoint, the knowledge-based ideology has contributed to really efficient prophylaxis, prevention and treatment of several diseases. The knowledge-based ideology has received its implementation on a concrete basis of long-term clinical treatment practice.

Conflict of Interest Statement

The author has not any relevant financial or non-financial interests to disclose. The author has no competing interests or conflicts of interest.

Data Sharing Statement

The data bound up with the article (previous publications, protocols, etc.) will be made available to other researchers via the author's e-mail addresses in cases of grounded requests.

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