

Quantum Therapy: A New Way in Osteoporosis Primary Prevention and Treatment

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Abstract: The paper highlights the role played by quantum therapy in Osteoporosis Primary Prevention and treatment. We provide an overview of other useful treatments in Osteoporosis prevention such as CoQ10, Melatonin and Mediterranean Diet comparing their efficacy to that offered by the quantum therapy. This is done through 'Quantum Biophysical Semeiotics' bed-side evaluation, monitoring the results and efficiency of ongoing therapies aimed at improving mitochondrial and endothelial function, when it is unpaired in any biological systems.

'Quantum Biophysical Semeiotics' theory is an extension of medical semeiotics. It is grounded on a multidisciplinary approach that involves chemistry and biology, genetics and neuroscience, chaos theory and quantum physics. It is based on the method of 'Auscultatory Percussion', through which by means of the common stethoscope, it is possible to listen to the signs that the body gives us when appropriately stimulated. The stimuli are used to induce consistent behaviour -typical of dissipative systems far from equilibrium, according to Prigogine - in precise and well defined biological systems of the human body, thus giving local qualitative information on the state of health or disease, whether potential, being developed but not yet evident by usual clinical trial, effective or even in chronic phase.

The 'Quantum Biophysical Semeiotics' theory provides very detailed case studies based on the latency time, duration, and intensity of the reflexes, which play a central role in such a diagnostic method.

Keywords: Osteoporosis, primary prevention, semeiotics, quantum therapy.

INTRODUCTION

In a recent paper [1] we have shown the crucial importance of 'Modified Mediterranean Diet' in preventing Osteoporosis and the important role of Coenzyme Q10' in Osteoporosis therapy. CoQ10 has got a central bio-energetic role in mitochondrial REDOX metabolism and phosphorylation of ADP. Furthermore, we highlight the Melatonin Action Mechanisms in Bone Metabolism. This is done through Quantum Biophysical Semeiotics bed-side evaluation, which allows to bedside assess CoQ10 deficiency.

Quantum Biophysical Semeiotics – QBS - theory, extension of the medical semeiotics, is based on the Congenital Acidotic Enzyme-Metabolic Histangiopathy, CAEMH [2], a unique mitochondrial cytopathy, present at birth and subject to medical therapy. According to QBS, physicians can bed-side evaluate, simply using the stethoscope [3], the mitochondrial functionality of their patients in all biological systems. Since birth, it is possible to make a diagnosis in order to detect the presence of Inherited Real Risk of Osteoporosis [4], linked to QBS Osteoporotic Constitution, so that an

intelligent prevention in subjects with Real Risk can be implemented. On the basis of QBS constitutions [5], i.e., Oncological Terrain, Diabetic Constitution, the onset of more serious diseases such as cancer, diabetes, ischemic heart diseases, including myocardial infarction, can be prevented.

The new approach introduced by QBS allows the diagnosis of Osteoporosis, even silent or in the very beginning clinical stages. The existence of pre-metabolic syndrome¹, pre-clinical stage of still potential diseases (evolution to pathology, pre- morbid state or gray area), can also be assessed, so allowing an effective prevention.

According to QBS theory, genoma's information are transmitted simultaneously both to parenchyma and related microvessels, so that mutations in parenchymal cell n-DNA and mit-DNA are the *the conditio sine qua non* of the most common human disorders, like diabetes and cancer. In fact, all these diseases are based on a particular congenital, functional, mitochondrial cytopathy, mostly transmitted through

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¹Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes. It is also known as metabolic syndrome X, syndrome X, insulin resistance syndrome, Reaven's syndrome. The pre-metabolic syndrome, as defined by Stagnaro, is the syndrome that precedes the metabolic one, and is linked with congenital real risks and their associated biophysical semeiotics constitutions.

mother, the CAEMH [6]. In addition, parenchymal gene mutations cause a local microcirculatory remodeling, gathering indirect information on inherited modifications of the relative parenchymal cell, since biological system functional modifications parallel gene mutation, according to Angiobiopathy theory [7]. The presence of intense CAEMH – termed CAEMH- α - in a well-defined biological area, involved by gene mutations in both n-DNA and mit-DNA, is the ground for one or more QBS constitutions² which could bring about, i.e., the congenital Real Risk - RR³ - of Osteoporosis characterized by microcirculatory remodeling, intense under environmental risk factors.

With the aid of QBS, medical doctors are able to do the clinical evaluation of microvascular dynamics [8 – 10]. The microvessels carry on a motor activity, autochthonous and chaotic deterministic, which represents one of the most remarkable manifestations of microcirculatory hemodynamics, characterized by a *flow-motion* and rhythmically fluctuating hematocrit due to the particular nonlinear behaviour [11, 12] of both *vasomotility* and *vasomotion*⁴.

Furthermore, the 'Inherited Real Risk' of Osteoporosis is associated to endothelial dysfunction⁵, which doctor can bed-side assess in an easy and reliable way, at rest as well as under stress tests. As a consequence of the above, briefly referred remarks, according with QBS theory, physicians can observe the presence of typical pathological EBDs⁶ in microvessels

²QBS constitutions, detectable since birth, are the inherited congenital ground or terrain of well defined potential diseases clinically hidden, which can last several years before appearing, in the slow transformation process from potential (pre-metabolic syndrome, pre-clinical stages) to effective pathology (metabolic syndrome).

³Real Risk – RR - means any mutation, limited at level of cells belonging to a well-defined biological system - for example, beta cells of islets of Langerhans, for diabetes - which occurs in one or more cells when ATP decreases strongly for any reason.

⁴In all tissues, a part from their local different architecture, microvessel diameter oscillates rhythmically during time. The term *vasomotility* refers to small arteries and arterioles sphygmicity, according to Hammersen, and *vasomotion* is the subsequent oscillation of capillaries and post-capillaries venules diameter.

⁵There are mitochondria also in endothels, although in small amount. In the lining of the arteries (endothelial cells) and the smooth muscle cells in the walls of the arteries. The endothelial dysfunction is likely to be multi-factorial in these patients and it is conceivable that risk factors such as hypertension, hypercholesterolemia, diabetes mellitus and smoking can contribute to its development.

⁶The Endoarteriolar Blocking Devices (EBDs) are a kind of dam which by opening and closing regulates blood flow in microvessels directed to the parenchyma. If these EBDs are tough, rigid, inelastic, there is a Real Risk of disease. There are EBDs Type I - located in small arteries, according to Hammersen -, and Type II – they can be found in the arterioles that are between small arteries and capillaries -: only type II is ubiquitous, in the sense that it is observed everywhere, in all arteries. Even these physiological types get sick or old. However, the other types, pathological-new-formed, are expressions of the Real Risk of potential disease, they are more occlusive, but through therapy they can be transformed from subtype a) pathological, to subtype b) aspecific, and then to "physiological" type, decreasing gradually their amount. EBDs play a primary role in the regulation of local microcirculatory *flow-motion*: when this is abnormal, there is congenital

[13, 14], which play a central role in Osteoporotic 'Inherited Real Risk'.

QBS method allows physicians to monitor tissue acidosis revealed by the latency time (Lt) of Osteoporotic Gastric Aspecific Reflex (O.G.A.R.) before and during different preventive therapies, comparing them and testing the respective efficacy and utility. Lt stands for the length of time (in seconds) from the beginning of both stomach's percussion and Osteoporotic trigger points digital pressure till the perception (auscultation) of the reflex (the stomach dilates).

1. OSTEOPOROSIS: CLINICAL AND PRE-CLINICAL DIAGNOSIS

The objective QBS examination allows physician to bedside recognize and quantify, in a few minutes, the presence of Osteoporosis or of the 'Inherited Real Risk' of Osteoporosis through the evaluation of several semeiotics signs, i.e., assessing vasomotility, vasomotion and pathological EBDs. In following, we briefly resume the easier way for the diagnosis of this pathology or of the Osteoporotic Inherited Real Risk: the Osteoporotic-Gastric Aspecific Reflex (O.G.A.R.) through the Auscultatory Percussion of the Stomach [15].

In a supine healthy subject, psycho-physically relaxed, with open eyes, aiming to lower significantly melatonin secretion, a digital pressure of "mean" intensity, applied upon the skin projection's area of lumbar vertebrae spine (Osteoporotic trigger points) brings about O.G.A.R., whose latency time (Lt), duration (D), intensity and Microcirculatory Functional Reserve (MFR) inform on tissue oxygenation at rest, as well under stress situations [16]. In Table 1 is resumed the study case about O.G.A.R.

According to clinical and experimental evidences [17], tissue pH is related to the reduction of latency time (Lt) and to the extension of the duration of the O.G.A.R., which expresses the local MFR, calculated as simply as the disappearing time of O.G.A.R. before the appearance of the next one [18].

In addition, Lt of both caecal and aspecific osteoporotic reflexes (i.e., caecal and gastric dilation)

microvascular remodeling and EBDs bring about impairment of the Microcirculatory Functional Reserve (MFR), which contribute to affect the 'Real Risk' of disorders, like Osteoporosis, whose onset shall possibly occur after years or decades.

increases significantly, raising to 16 seconds (negative semeiotic sign, absence of Osteoporosis) when digital pressure becomes "intense", hence inducing local metabolic regulation of Tissue Microvascular Unit (T.M.U.), i.e., activating the MFR.

On the contrary, *Osteoporotic Constitution sign* is positive in case of "intense" digital pressure when the reflex appears simultaneously, (Lt = 0), revealing the Osteoporotic Constitution. In this last case, O.G.A.R. is "simultaneous".

In health – in supine position – digital pressure of mean intensity, applied on Osteoporotic trigger points, brings about O.G.A.R. after a latency time (Lt) of 8 seconds (Table 1, first column). O.G.A.R. lasts less than 4 sec., soon thereafter disappearing for 3-4 seconds. Afterwards, a second reflex occurs. The duration of O.G.A.R. unfolds the MFR activity of related microvessels, thus correlated with the function and anatomy of the microcirculatory bed, the T.M.U. At this point of investigation, the physician quickly interrupts the digital pressure for exactly 5 seconds. Then, Lt of O.G.A.R. is evaluated again: Lt raises to 16 seconds, O.G.A.R. lasts less than 4 seconds, disappearing after roughly 4 seconds: these values evidence a *physiological preconditioning* (Table 1, second column).

In summary, when digital pressure is of small-mean intensity, physiological Lt of O.G.A.R. is 8 seconds at the first evaluation (*basal-line value*), but increases clearly doubling in the second as well as in the third one, due to the physiological activation of MFR.

In individuals at risk of Osteoporosis, *base-line* Lt is physiological during the first evaluation (8 seconds). However, O.G.A.R. lasts 4 seconds or more and disappears for less than 3 seconds. Moreover, preconditioning results "pathological", as Lt is less than 16 seconds: these values give evidence of a *pathological preconditioning*. Interestingly, in patients with Osteoporosis, even clinically silent, the *basal value* of latency time of O.G.A.R. appears to be less than 7 seconds at first evaluation and becomes lower in the second one, in relation to the seriousness of underlying disorder.

In healthy subjects the *preconditioning* brings about, as natural consequence, an optimal tissue supply of material-information-energy, by increasing local *flow-motion as well as flux-motion*.

On the contrary, if the 'Inherited Real Risk' is present, *preconditioning* data are almost the same as

the basal ones, but Lt is a little shorter than physiological one. Finally, in overt disease, *preconditioning* shows an altered and shorter Lt of reflex in relation to the seriousness of the underlying disorders.

At this point, we come back to the former example: in the initial phase of Osteoporosis, which evolves very slowly toward successive phases, QBS "basal" data can "apparently" seem normal. However, under careful observation, the duration of O.G.A.R. is equal or more than 4 seconds (the normal value, NN, is less than 4 seconds), indicating a local microcirculatory disorder.

In these cases, *preconditioning* allows in a simple and reliable manner to recognize the pathological modifications, mentioned above, which indicate the altered physiological adaptability, even initial or slight, of the biological system to changed conditions as well as to increased tissue demands. The various QBS parameters, related to a defined biological system, parallel and are consistent with the data of *preconditioning*.

2. OSTEOPOROSIS: PREVENTION AND THERAPY WITH COQ10, MEDITERRANEAN DIET AND MELATONIN

Mediterranean Diet, CoQ10 and Conjugated-Melatonin were successfully tested in Osteoporosis primary prevention and therapy, in accordance with the QBS method and signs just mentioned, monitoring tissue acidosis revealed by the latency time (Lt) of O.G.A.R. before and during these preventive therapies. The combination of these treatments contributes to diminish as far as normalize tissue acidosis and re-equilibrate acid based balance as proved by a longer Lt (Table 1, fourth column). We explain the properties of these treatments in short as follows.

a. Coenzyme Q10 in Osteoporosis Therapy

The present literature underlines the clinical benefits of Coenzyme Q10 (CoQ10) in different disorders, as in osteoporosis therapy [19-25]. Since all common and serious human disorders are based on CAEMH, as mentioned above, ubidecarenone utilization in treating osteoporosis is justified on the ground of its central action mechanism.

The present understanding of the central bio-energetic role of CoQ10 in mitochondrial REDOX metabolism and phosphorylation of ADP was well demonstrated [19, 22, 29, 30].

Analogously to Conjugated-Melatonin multiple action mechanisms, Coenzyme Q10 ameliorate mitochondrial function, impaired in some biological systems in individuals positive for CAEMH. As a consequence, the use of both drugs has shown to be really efficacious in a lot of disorders [35-42, 43-46], including Osteoporosis, especially when administered in earliest stage, i.e., in individuals apparently healthy, but positive for Osteoporotic 'Inherited Real Risk' [19, 22, 25].

Anti-aging effect of the antioxidant containing foods and various anti-oxidants, such as coenzyme Q10, was studied just in animals [31], but a clinical study aimed at evaluating the therapeutic efficacy of CoQ10 for primary Osteoporosis in humans was done by one of the author. In spite of the small number of subjects treated (only 5) the results obtained are evidence of the efficacy of this agent which had never before been used in the therapy of osteoporosis. The possible mechanisms of action CoQ10 are discussed in the light of an original interpretation of the etiopathogenesis of this very complex bone disease [32].

b. 'Modified Mediterranean Diet Central Role' in preventing Osteoporosis

Many studies suggests that Mediterranean diet may be beneficial to health [48], and variants of this diet have improved the prognosis of patients with coronary heart disease [49]. The Mediterranean diet, in general, was associated with increased survival among older people, especially when modified adding to it unsaturated acids and omega-3, and suggesting physical exercise, walking about 40 min. day [17].

The modified Mediterranean diet, we suggest, is characterised by a high intake of vegetables, legumes, fruits, and cereals; a moderate to high intake of fish; a low intake of saturated lipids but high intake of unsaturated lipids, particularly olive oil; a low to moderate intake of dairy products, mostly cheese and yogurt; a low intake of meat; and a modest intake of ethanol, mostly as red wine [47-50]. Intake of calcium, the major mineral constituent of bones, unavoidable in osteoporosis primary prevention in people involved by osteoporotic constitution, largely reflects the patterns of intake of foods that are good dietary sources. Novel vitamin D analogues are useful for the prevention or treatment of bone disorders such as osteoporosis. The authors intend the term "diet" in etymological sense, including, i.e., daily physical exercise, whose paramount importance is highlighted as follows, since it

works ameliorating endothelial function, as Conjugated-Melatonin does [2-7, 35].

Adherence to a Mediterranean diet proved to be efficacious in preventing most common and serious disorders, particularly if personalized, and modified, after therapeutic monitoring [51-53]. However, we have to care an "unique" individual, a "single patient" with particular 'QBS Constitutions', 'Single Patient Based Medicine' is based on. In fact, we must consider accurately in the "single" patient his (her) whole 'QBS Constitutions' [2-8]. Mediterranean diet may prevent Osteoporosis because it contributes to diminish as far as normalize tissue acidosis and re-equilibrate acid based balance. In fact, as evidenced in the first chapter, according to QBS theory, tissue pH is related to the reduction of latency time and to the extension of the duration of the Osteoporotic Gastric Aspecific Reflex. By mean of the above mentioned diet, the latency time of the O.G.A.R. rises, and the duration of the reflex slows down, both tending to physiological levels.

c. Melatonin Action Mechanisms in Bone Metabolism

In a previous monograph, new action mechanisms of melatonin was described by one of the authors [57, 65-66]. Moreover, in ongoing researches melatonin proved to be really useful in ameliorating bone calcium metabolism in humans. The results obtained by other Authors indicate that melatonin treatment improve bone metabolism and are useful for the treatment of bone disorders including Osteoporosis [55, 58-64].

According to Stagnaro's [67], such as action mechanism of melatonin in ameliorating bone calcium metabolism is more complex than generally admitted, including also both the positive effect on adiponectin synthesis and than its efficaciousness on liver, and parietal wall. As a matter of fact, adiponectin have showed a protective effect on bone metabolism in patients with type 2 diabetes mellitus [68, 69], corroborating the results in individuals with predisposition to osteoporosis and under different conditions [2-8, 65-66, 70].

3. A NEW WAY OF THERAPY: THE QUANTUM BIOPHYSICAL APPROACH

Recent clinical experiments about quantum therapy in EHF (Extremely High Frequency) and BRR (Background Resonance Radiation) regime showed to

be useful for correction of a calcium exchange, osteoporosis preventive maintenance and normalization of metabolic processes in bone tissue [71-73].

QBS tools are not only useful for diagnostic purposes, but also for therapeutic advices, because they are able to measure the microcirculatory activity before and after each preventive therapy's treatment, in order to understand the effectiveness of remedies. QBS allows an accurate and direct study of condition and functioning of microvessels and only indirectly of the related parenchyma⁷. If the way of being and functioning of the microcirculation improves, it means that also the way of being and functioning of its parenchyma has improved. Treatment and prevention, according to QBS, must be geared to improve and normalize metabolism, tissue oxygenation and mitochondria's respiration, expression of the normal operation of mitochondrial oxidative phosphorylation. Indeed, the mitochondrial functional cytopathy (CAEMH) is the *conditio sine qua non* of the more frequent and severe human diseases. QBS has recently tested some treatments not yet experimented for preventive purposes as the quantum treatment mentioned above and the water thermal therapy [74]. We consider, among the several diagnostic parameters provided from QBS, i.e., reflexes' duration, dilatation of the stomach, pause in seconds between two reflexes, the Latency time (Lt) of O.G.A.R, as illustrated in Chapter 1. In this case the physiological Lt is 8 seconds (NN = 8). If the basal value is less than 8 seconds, then there is Osteoporotic Constitution and Inherited Real Risk of Osteoporosis (Table 1, first column).

⁷The micro-circulatory remodeling is directed by the way of living and working on the parenchyma: if the subject is healthy, is healthy the related parenchyma on the microcirculation (see angiobiopathy theory, dealing with diseases of blood and lymph vessels in accordance with QBS). Certainly a loss, rheumatism, immune, infectious, can act both directly and indirectly. See [<http://www.semeioticabiofisica.it/microangiologia/common.htm>]. It may be that in the long run re-organization becomes difficult or impossible because the flow decreases more, and then are built up of feedback mechanisms for which are to activate dormant cancer cells. Aging with free radicals that accumulate contributes to further damage both micro vascular and parenchymal: even endothelium (cell layers lining the inner surface of blood vessels and heart chambers) and smooth muscle cells possess mitochondria. Remodeling micro circulatory type cancer is an expression of mutations of genes within cells in that forum: any change in gene expression - cell finds its expression in the parallel alteration of its microcirculation (tissue microvascular units): the tissue here is around the vessels, interstitial, not the parenchyma! If these processes are blocked, stops the entire organization. Very important is that if there are congenital abnormalities, genetically transmitted through the mother (see CAEMH, mitochondrial cytopathy or mitochondrial functional pathology in the site www.semeioticabiofisica.it) amending the unfolding vital physiological processes occur the most serious human diseases, and not, now real epidemics. Autopoietic networks must therefore regenerate themselves continuously in normal and physiological way, to maintain its organization.

Under a continuative preventive therapy based on the combination of CoQ10, Conjugated-Melatonin and Modified Mediterranean Diet the Lt rises to 12 seconds, so that the Real Risk of Osteoporosis becomes residual (Table 1, fourth column). By this way tissue oxygenation and mitochondrial activity are improved, mitochondria are running well, but the genetic alteration of mit-DNA still remains (CAEMH and Osteoporotic Constitution are still positive). The quantum therapy refers to the capturing the Osteoporotic trigger points' radiations for one minute by means of a quantum device working in BRR mode. Then applied the device's crystals with the customized frequencies, on the same trigger points for 10 minutes. At this point the experimental and clinical evidences provided by QBS diagnosis and monitoring on more than 30 subjects at Risk of Osteoporosis confirm that the Osteoporotic Constitution disappeared. From this moment, a very high Microcirculatory Activities observed which has not been seen before, and is denoted by a Lt of 16 seconds, which lasts for 7 days.

After a re-structuring period of time (7 days) the Lt slows down to 12 seconds, more than physiological one (Table 1, fifth column). All QBS parameters from the beginning of the single unique application, till the time-out of genetic re-structuring time, and all QBS monthly diagnosis monitoring confirm the negativity of Osteoporotic Constitution. After 9 months from the day of the unique device's application, the Microcirculatory Activation stops: this is the time-out of the normalization period. From this moment in time there are not anymore biological evidences of quantum treatment in progress, and the Osteoporotic Constitution continue to be negative.

Furthermore, we discover that hot springs have great therapeutic properties: by the same way of the quantum treatment above mentioned, the Osteoporotic Constitution disappears drinking sulfuric thermal water, and the QBS parametrical values are even better than those induced by the quantum treatment: Lt during the genetic re-structuring length of time rises to 20 seconds, before normalizing to 12 seconds for 9 months (Table 1, sixth column).

Recent experiments [75, 76] have shown that quantum therapy in BRR mode and sulfuric thermal water are able to act and feed back to higher levels, directly on the causes of the diseases, such as healing the alteration of maternal mit-DNA and 'QBS Constitutions', in accordance with the Principle of

Table 1: Comparison of Different Preventive Therapies

Latency time (Lt) in seconds	Latency time after preconditioning (pause of 5 sec.)	Diagnosis	Latency time during a combined treatment of Mediterranean Diet, CoQ10 and Melatonin	Latency time during (and after) quantum therapy	Latency time during (and after) sulphurous thermal water therapy
Lt = 8	Lt = 16	Health	=====	=====	=====
Lt = 8	Lt < 16	Osteoporotic Inherited Real Risk	Lt = 12	Lt = 16 (12)	Lt = 20 (12)
7<Lt <8	Lt < 16	Osteoporotic Inherited Real Risk in evolution	Lt = 12	Lt = 16 (12)	Lt = 20 (12)
Lt≤7	Lt < 14	Osteoporosis	Lt = ↑	Lt = ↑	Lt = ↑

Recursive Genome Function-PRGF by Pellionisz [77, 78] who argues the chance of a direct bi-directional communication's feedback between DNA and proteins. QBS clinical and experimental evidences have been analyzed and related to PRGF, in order to understand if the genetic alterations of mit-DNA could be reversed, due to the recursive energy, information and communication feedback between DNA, RNA and downstream structures such as tissues, cells, mitochondria and proteins. These evidences [79] are consistent with and fully confirm the above mentioned Principle.

4. CURRENT & FUTURE DEVELOPMENTS

Mediterranean Diet, CoQ10 and Conjugated-Melatonin were successfully tested in Osteoporosis primary prevention and therapy, in accordance with QBS theory. They are able to reduce tissue acidosis improving tissue oxygenation and mitochondrial activity, but the genetic alteration of mit-DNA still remains (CAEMH and 'Osteoporotic Constitution' continue to be positive). Recent positive clinical and experimental evidences provided by a quantum therapy able to capture and re-transmit customized frequencies from Osteoporotic trigger points suggested us to test the preventive effectiveness of this treatment through the assessment of QBS parameters. This quantum therapy allows to improve mitochondrial and endothelial function, and furthermore is able to heal 'Osteoporotic Constitution'. The water therapy by means of sulfuric thermal water provides similar results as well as those offered by the quantum treatment.

According with QBS remarks, a new efficient Primary Prevention of Osteoporosis can be performed, on very large scale in individuals, involved by 'Osteoporotic QBS Constitution' "and" Inherited Real Risk of Osteoporosis, which have to undergo the above-mentioned treatment, rationally prescribed, and bed-side monitored.

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