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An incentive for a shift from the modern scientific medicine to the integrative medicine.

Tetsuzo Agishi, MD, PhD.

Affiliation and Corresponding Address :

Blood Purification Center, Itabashi Chuo Medical Center, 2-12-7  
Azusawa, Itabashi-ku, Tokyo 174-0051, Japan

Tel & Fax : 03-5915-2775 E-mail : na6t-ags@asahi-net-or.jp

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Preferred Referees : Kazuhiko Atsumi, MD, PhD, Ryozo Omoto, MD, PhD &  
Akio Kawamura, MD, PhD

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Abstract : Medicine has become evaluated in recent years both quantitatively and qualitatively. Contemporary medicine has been assumed to be conceptually based on the modern science. However, here is a problem that quantity and quality are, if possible, hard to be evaluated only by the scientific parameter in contemporary medicine. It is, therefore, an aim of this paper to emphasize that quantity and quality of medicine need to be evaluated not only in a stand-point of the modern scientific medicine but of the integrative medicine. Integrative medicine is postulated to be comprehensive in its fundamental doctrine showing a holistic aspect including such as technical, artistic, social, religious, philosophical, ethical element, and so on. However, to watch carefully and seriously the actual performances, it is noticed that the contemporary medicine, in fact, has been acting in a field of integrative medicine where a great concern has been paid on patients' personal preference as

indicated by quality of life. An incentive for a shift from the exclusively scientific to the integrative medicine, which started in as early as 1970 ' s decade, is revival emotion toward a prime modality of medicine.

Text :

#### Quantitative and Qualitative Evaluation of Medicine

Medicine has become evaluated in recent years both quantitatively and qualitatively. For example, WHO (World Health Organization) has been suggesting that health be evaluated in a view-point of DALE (disability - adjusted life expectancy) which is expressed both by quantity as a living period and quality as QOL (quality of life). Contemporary medicine has been assumed to be conceptually based on the modern science. However, here is a problem that quantity and quality are, if possible, hard to be evaluated only by the scientific parameters in contemporary medicine. It is, therefore, an aim of this paper to emphasize that quantity and quality of medicine need to be evaluated not only in a stand-point of the modern scientific medicine but of the integrative medicine.

In the beginning, the author points out that what quantity and quality of medicine are and how they are evaluated have not yet been clearly defined.

Let us discuss quantity and quality of medicine in maintenance hemodialysis therapy which is a major working area for the author. For example, Ohira et al explain that although quantity of dialysis is defined as a patient ' s blood volume treated by dialysis, quality of dialysis resultantly obtained can differ in each patient even with equal dialysis regimen, equal quantity of dialysis<sup>1</sup> ) , and stresses that something not shown in laboratory data or image examinations, but recognized by five human senses, are obtained through sufficiently frequent communication between patients and medical staffs, and quantity of dialysis, even though very important factor, is not a detrimental factor for a whole of dialysis care. It is assumed to be suggested by the comment that medicine should not be explained only by the science, and quantity and quality of medicine are not assessed as independently separate parameters although being understood as an independent and individual concept in general societies. Surprisingly, they are, in fact, very often

conceptually mixed and confused when discussed in a medical field.

### Quantity and Quality of Dialysis Therapy

Confusion in quantity and quality of dialysis therapy, as a matter of fact, started when such concept was proposed by Babb et al in as early as 1970 ' s decade 2 ) . It is famous with a name of “ Square-meter Hour Hypothesis ” ,

shown as :

$$\text{Patient ' s well-being} \quad (M^2 \cdot H) \quad \text{-----(1)}$$

$M^2$  : dialyzer membrane surface area, H : dialysis time

It indicates that better well-being of the patients is obtained by usage of a dialyzer with a larger membrane surface area and longer dialysis time. Beware that a membrane surface area and dialysis time are expressed by very strictly scientific quantity expressed in a cm/gram/second unit while well-being, currently adopted as a parameter of QOL, belongs to a concept of quality, which can not be expressed by scientific numbers in its nature. Quantity and quality were already confusedly used there.

Quantity of hemodialysis is preferably expressed in recent years as :  $Kt/V_{\text{for urea}}$  (3) and its modifications (4) which are assumed to be based on an old “ Square meter-Hour Hypothesis ” .

$$\text{Quantity of hemodialysis} \quad Kt/V_{\text{for urea}} \quad \text{----- (2)}$$

K : dialyzer clearance for urea, t : dialysis time, V: body space for urea distribution

$Kt/V_{\text{for urea}}$  , assumed to be only a standardization of  $f(M^2 \cdot H)$  by patient ' s body fluid volume, is already not verified to be applicable in contemporary dialysis therapy. Because one report evidenced that better clinical result is obtained by short daily hemodialysis regimen with 2 hours/6 days/week than standard hemodialysis regimen with 4 hours/3 days/week even with equal quantity of dialysis as in equations(1) and (2), (5), and another report evidenced that relation between a patients ' life sustainability risk and  $Kt/V_{\text{for urea}}$  shows that effect of  $Kt/V_{\text{for urea}}$  on patient condition is maximal at 1.8.(6)

## Clinical Effects by Quality of Dialysis

Taking the above-mentioned proofs into consideration, contemporary correction is shown as :

( clinical effects by quality of dialysis = life sustainability • well-being etc. )

$$\left\{ \int_{m=\text{small molecule}}^{m=\text{largest molecule}} \left[ \int_{t=0}^{t=\text{end of dialysis}} \text{CL} \cdot d(\text{dialysis time}) \right] / T \cdot d(\text{molecular size}) \right\} / M \quad \text{--- (3)}$$

CL : clearance of a dialyzer from small molecule to large molecule to be dialyzed T : dialysis time M: largest molecular weight of substances to be dialyzed

In the formula (3), the below-mentioned issues are contained :

a. clearances of not only urea, but larger molecules up to small protein molecules, which are assumed to be removed by dialysis, are counted in, and b. time-deterioration in clearances, especially for larger molecules, is counted in. 7)8)

As developing the formula (3) to a concept of quantity and quality of a whole dialysis therapy :

Adequate dialysis therapy = Clinical effects of whole dialysis therapy

( = life sustainability • QOL etc )

$$\langle \text{CAM} \left\{ \int_{m=\text{small molecule}}^{m=\text{largest molecule}} \left[ \int_{t=0}^{t=\text{end of dialysis}} \text{CL} \cdot d(\text{dialysis time}) \right] / T \cdot d(\text{molecular weight}) / M \right\} \rangle \quad \text{----- (4)}$$

CAM : complementary & alternative medicine

## Complementary & Alternative Medicine for Maintenance Hemodialysis Patients

Complementary & alternative medicine applying such as external qigong, massage, acupuncture and CO<sub>2</sub> balneotherapy for maintenance hemodialysis patients has been reported by the authors. 9 ) 10)

Clinical improvements in symptoms such as pains and restricted movement in the extremities and the joints due to arteriosclerosis obliterans and generalized amyloidosis are obtained(Figure 1).However, the entire mechanisms of these therapeutic modalities have not up-to-date been elucidated by the modern science. These are therefore

called “non-scientific medicine” while there are so many effective therapeutic modalities which are included in the contemporary scientific medicine as so-called based upon the modern science, but have not been known for the mechanisms of the effectiveness. It should be emphasized that expression of “scientific” or “scientifically understandable” implies existence of something “non-scientific behind something scientific” and its existence itself should not be ignored and refused in the nature world. For good example, no one knows how to create a life, very important in any kind of medicine, in a scientifically understandable manner, but no one denies its existence. In fact, this thought is based on a sight of integrative medicine, which will be discussed later in this paper.

#### Evaluation of QOL is Non-scientific

Under the present circumstances that medical practices are evaluated paying concerns to QOL of the patients, understanding of what QOL is and how it is evaluated is a very difficult matter. A very fundamental and common idea for definition of high QOL is high freedom in thinking and behavior, and, in another word, serious attention to personal subjective feeling is involved and, as a result, leads to ignore scientificity which is referred to objectivity, universality, reproducibility and logical consistency in its property. Evaluation of medical practices in terms of QOL is non-scientific in this respect because these characteristics are not kept intact. One announcement stresses that the fact that so many various evaluation parameters of QOL have been proposed eventually suggests none of them reliable<sup>11</sup>). Seeking after a freedom in personal thinking and behavior, which is supposed to be brought by personal desires, is multidirectional, that is, no body can anticipate which direction desires go toward, and unlimited in an amount in the usual recognition. It is a very common sense that QOL can not be evaluated only in a scientific view-field unless a logical way of assessment of personal feeling only by science is established.

Items indicated in a SF-36 (Short Form - 36) questionnaire, currently known as one of the most popular standard for QOL evaluation, are such as running, lifting heavy objects and participating in strenuous sports in physical functioning and a 1 to 3 score is delivered to each item

depending upon severity of health limitation. It should be strongly emphasized that severity of the listed items is an expression of quality, is analogic in nature, and can not be digitally divided. Numerical numbers delivered after scoring are thereafter treated in a looking-scientific manner through mathematical and statistical analysis. Maneuver such as this should be criticized to be ignorance or deception. Not all numerical expressions are always scientific. QOL can not and should not be evaluated only in a view-field of the modern science<sup>12</sup>).

### Quantity and Quality of Medicine is an Undividable Unity

Concomitantly with the treating manner in the common societies, quantity and quality are usually dealt as absolutely independent property in the medicine-oriented issues. However, medical quantity and quality are in reality mixed and fused each other both in actual treatment behavior and in imaginary concept. Confusion is resulted in. Medical quantity and quality is an undividable unity. It sounds strange, but it is not so strange. There are so many examples of an undividable unity, which sounds strange, but is in fact.

Uchu宇宙, cosmos, is an undividable unity of time and space. Such idea was not originated from the specific relativity theory of Einstein proposed in 1905, but has been succeeded since 4,000 years ago in the ancient China. Ma間 is used both for space and time in the Japanese culture. Before or after is used both for space and time in English expression. So, it is global over time.

### What is “Scientific” ?

What should “scientific” or “scientificity” be understood , recognized and defined first of all ? Bergson is told to state “The modern science is a daughter of mathematics...Mathematics is going to be a tool with which all matters in the world can be numerically calculated. Success in the modern science has been achieved by mathematics while ignoring and expelling human experiences which can not be numerically expressed...”<sup>13</sup>).

Iseda addressed that methodology specific to the science is as follows :

a. doing experiments and observations, b. making abstract theories,

c. applying mathematics<sup>14</sup>).

Thereby, scientificity or scientific considerations are guaranteed by a certain amount of accumulation of the preceding experiences, and can not exist without it. Experiment is an accumulation of the experiences specially conditioned for a purpose of making their similarity and difference distinguishable. Scientist's personal intuition or feeling functions in a natural course in creation of a new scientific theory where absolute objectivity is at least partly invaded, and, to say a truth, his or her subjective consideration is expected to easily intervene between the obtained experimental results and the theory explaining the results. Great attention should be kept paying whenever it is said "scientific because mathematics is applied" as not all the cases, in which mathematics is applied, are scientific in severe and realistic consideration.

#### Scientificity Has Lost An Absolute Value At The Present Time

Most people who are living at present think that scientificity still has the absolutely important value and authority while some hostile announcements have been presented.

Alex Comfort expressed that science-faith is stepping on a similar way of old Christianity ...Reevaluation of their faith is almost equal to being non-scientific for them...<sup>15</sup>).

Barnie Siegel stated , "Think that a miracle in one generation may become a scientific fact in the next generation. Keep watching actions and facts which can not yet been measured by an already existing scale" Science is contemporarily very much limited. Scientific recognition and understanding may develop and change with time<sup>16</sup>).

Furthermore , it is pointed out with a great surprise that Creation Science which is known to scientifically verify a story of creation of the heaven and the earth described in the Old Testament has been positively accepted in a certain degree in USA. Serious question springs out. What is true scientificity ? Careful attention must be paid to elucidate real meaning whenever it is called "scientific."

#### Double-layer Structure of Medicine in the Advanced-Medicine Communities.

It is suggested with reality that there is a double-layer structure in

the medical system in so-called advanced-medicine societies and communities of modern scientific societies and communities. A legitimate medical system in a narrow sense, or medicine in a strict sense, positions in a superficial layer. Its system is usually defined, restricted and permitted by the community government. The medical treatments are likely performed based on a theory and a methodology of the modern science. For example, such system is permitted by the Ministry of Health, Welfare and Labor and medical payments are mostly reimbursable by the social health insurances in Japan. On the other hand, however, so-called complementary, alternative and traditional medicine (CATM) positions in a deep layer and surprisingly very popular among people in Japan. It is non-medicine in a strict sense and may be called medicine-like performances. Theory and doctrine, and therefore treatments incompatible with those of the modern scientific medicine may play an important role. Payments are basically done by own expenses. Strange to notice, a double-layer structure more popularly exists in the societies and communities with a higher degree of culture.

As a matter of fact, medicine-like performances are not all legally prohibited in Japan. Supreme Court presented the judgment in 1960 that the Japanese constitution guarantees a freedom in selection of professions unless the public welfare is not disturbed. Medicine-like performances are prohibited only in such circumstances as people's health is damaged by the performances. A major reason for adoption of complementary, alternative and traditional medicine is dissatisfaction in the modern scientific medicine.

Evidence-based medicine (EBM), supported by scientific evidences, is strongly recommended to apply for clinical practices currently in Japan by Ministry of Health, Welfare and Labor. although currently applicable scientific evaluation methods for evidences are not always applicable to some of CATM performances. Doctrine of CATM, in principle, does not wish to adjust to be scientific. An evaluation standard from a view-point of the modern scientific medicine is generally too strict to accept in evaluation of CATM. It is because the scientific medicine is in the beginning in a position to expel CATM from its system as it is non-scientific. Although a perfectly absolute evaluation standard should be established to be free from prejudice, such idea can not be counted

even in consideration in the modern exclusively scientific society.

### Religious Faith in Medicine

Ikebe pointed, “ There has been no single human society with no religion. Medicine always exists undivably with religion<sup>17</sup>). A divorce of medicine from religion occurred after a birth and later establishment of the modern scientific medicine in the modern European ages. Already in 1998, a special review committee for Constitution of World Health Organization suggested to express in the Constitution that health is a dynamic state in physical, mental and spiritual condition.... The author was very much impressed to see the words of healing, *Iyashi* and prayer, *Inori* in Chinese characters depicted in a advertising poster of Kumano Hongu Taisha in Kumano Kodo which has been recently registered as World Culture Legend. Kumano has been known as a district of revival, *Yomigaeri*, which means resuscitation, that is, “coming back from the death world” since as old as a *Kojiki* era. Healing is a primitive mode of medicine and prayer is a primitive mode of religion .Obviously, medicine and religion are undivably integrated in the ancient Japan.

Formation of a multilayer structure in spirituality or religious faith especially in connection to medicine recognized in Japanese community is considered to closely relate to responses to wave-wise interventions of foreign religions in the past mainly from Asian continent<sup>18</sup>).

An acquired, educational, intellectual or political thought or faith feeling is in a superficial layer. Spirituality or religious faith in a field of medicine or education is expressed, if possible, only with guilty conscience, and is rather prohibited to express in front of the public. Confucian ideas are old and evil practices to be purged. Medical information should be publicized and diagnosis should be correctively informed to the patient.

These are easy second-hand retailing of Americanized religious culture coming in after the Second World War and have not yet been completely adjusted to the Japanese culture. On the contrary, a congenital, genetic, traditional or ethnic thought or faith feeling lies in a deep layer which is in a broad view-field usually hidden under consciousness in ordinary life, but certainly exists. Confucian ideas very

often come in light on such occasion as organ donation to unrelated person for transplantation is reluctant.

### Medicine and Medical Practices Go for Integration

All mixture of medicine and medical practices are expected to prevail in 21<sup>st</sup> century in which theories and technologies of the modern scientific medicine based on the modern science will be consecutively adopted while medical practices acceptable even for CATM will be simultaneously applied from a broader view-field.

Medicine is a complexity of many various learning and studies in its nature. A whole body is reductively analyzed to be small pieces of materials such as organs, tissues and cells, or even more divided depending on therapeutic methodology as called specialization in a scientific aspect, or to be a mental, ethical or holistic existence in a philosophical aspect. Medical miracles still often appear at present in a religious aspect. By the way, Kanzo Uchimura is told to leave a message, "A physician should have a mind of a clergyman". Albert Einstein said "Medicine is an art supported by science" and Jumei Hinohara stated "Medicine is an art made up by intercommunication of the individualities".

In a later half of 20<sup>th</sup> century, medicine had been stimulated by development in the surrounding related sciences and aiming to analytically elucidate a human body for purposes of avoiding disease states and maintaining healthy condition. A human body was divided in a step-wise manner into organs, tissues, cells and molecules according to usual way of science. At reaching at genes, what was noticed was absence of the life which is a very essential property to human being. . It is impossible to understand eventually at an end of exclusively scientific analyzation what human being is.

At a very end of 20<sup>th</sup> century, it was realized that understanding of human being could be done not only by exclusively scientific, but also integratively by philosophical, religious, artistic appreciation, and so on. This is a fundamental doctrine of integrative medicine. Integration does mean also "doing integral calculation" or "making it perfect" , and points out that it is not a mere addition-wise collection.

### An Incentive for Integration in Medicine

Those who think that integration is inevitably a natural course in medicine currently belong to a minority member even in medical staffs. Let's discuss about an incentive for integration in medicine. As the living circumstances were so severe in an early beginning of appearance of human being on the earth compared to the present, the practices must be multicomponential including technical, religious, artistic, philosophical element and so on in order to utilize any possible modalities. For example, religious element was much more popular in medical practices in the medieval ages in Europe.

However, the modern scientific thoughts became generalized and the science-oriented medicine was brought out in the modern ages in the European communities which turned out to be the modern scientific medicine by strengthening the basis with the scientific doctrines and theories. The matters which could not be numerically expressed were expelled as they were called "not-scientific". In a very end of 20th century, the modern medicine prevailing in the well-developed communities in the world became noticed to be in a biased view of too much respectful of the scientific technology, and a driving force is considered to have been functioning as a righting moment for the integrative medicine which is looking similar to an original style of medicine<sup>19)20)</sup>.

(Figure 2 )

#### Science has lost an Absolute Value at Present

An issue that medicine and medical practices are not able to be understood or evaluated only in a scientific view-field has been collaborating with a trendy thought at the present time. A typical example is the BSE (bovine sponge encephalopathy) problem lying between Japan and the USA. Kamisato pointed out in a statement entitled "Science and politics transgresses the border each other", "Safety and a reverse-side risk are not such a type of knowledge as straightly deductible only from the scientific data and theories ...,restricted by the systemic, cultural and economic conditions in each society and multiple social agreements stand side by side..."<sup>21)</sup>.

A Prime Minister of Japan, Mr. Koizumi had stated "will be scientifically judged" before a restart of import of the beef while a

President of the USA, Mr. Bush who had stressed “scientifically judged safety” in beef import requested to restart by judging with “ a political decision”. It is clearly pointed herein that two kinds of the “scientific judgments” seem likely to exist and scientific judgments are supposed to resign superiority to political judgments.

#### A Statement that EBM (evidence-based medicine) is Scientific is a Sophistry and/or Misunderstanding

EBM has been explained to exclude empiricism and to perform medicine based on the scientific evidences. Three important aspects referred for EBM are generally described as 1)medical knowledge and clinical skill, 2)(scientific)evidences by clinical investigations and 3)patient’s preference. However, a paradox is in this fundamental concept.

First of all, in order to be scientific, experiences can not be ignored and expelled because science is only established by accumulating the experiences in the natural matters, recognizing similarity and difference among them and creating a theory by induction and deduction from the experienced facts.

Secondly, patient’s preference is multifactorial and multidirectional, and varies depending upon unlimited personal desires which may change time after time and occasion to occasion. Consequently, its scientific definition and evaluation can not be done in a contemporary common sense<sup>22</sup>).

It is pointed out earlier in this article that well-being, presently a representative parameter of QOL, had been documented as an index of clinical efficacy in hemodialysis therapy since as early as 1970’s decade. Respect of QOL is an utmost serious expression paying attention to personal judgment of the value. Therefore, although called “ to be scientific”, EBM should not be considered to rely only on the modern science, but should be considered to be evaluated from a view-field of the integrative medicine in which personal feeling is a very important factor to respect. Unknowingly, we have already been stepping into a field of the integrative medicine<sup>23</sup>). It probably started earlier than 1970’ decade in the Euro-American communities.

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Figures :

(Figure 1)Clinical effect of external qigong:

Left : Before external qigong practice : Using a cane for his walking difficulty due to destructive spondyloarthropathy and arteriosclerosis obliterans after 25 years hemodialysis therapy .

Middle : External qigong practice.

Right : Walking without a cane immediately after external qigong practice.

(Figure 2)An incentive from scientific to integrative medicine.

For explanation, see the text.