Emotional factors in medicine

Raúl León-Barúa[1]

Lecture given on June 26th, 2013, at the monthly meeting of Group for the Study of Human Beings GRESH *(Grupo para el Estudio del Ser Humano), Casa Honorio Delgado, Universidad Peruana Cayetano Heredia. Miraflores, Peru.*

The human being is an indivisible whole, but depending on the method used to study it, you can find in it: anatomical structures, physiological, biophysical, biochemical and psychological processes. The human being lives in his natural environment and in his artificial environment; the natural one is a set of things we can not modify, such as cold, heat, dryness, humidity, influence of altitude; and the artificial one is what the human being creates to have a better connection with the factors of his environment.

On the other hand, we have concluded that diseases do not have a single cause, but several causes or determining factors, which acting together and relating with each other, cause the disease. Studying the General Theory of Systems, by von Bertalanffy[1], helped me a lot in this case: multiple factors of things.

It is generally talked about etiopathogenesis, i.e. which are the factors and etiopathogenic changes, but it is better to separate etiology from pathogenesis.

THE DISEASE AND ITS CAUSES: MULTIPLE FACTORS

Etiology is a whole set of factors which are present before the condition is diagnosed, and pathogenic factors are those ones which are present when the disease begins to appear. Etiological factors: i) the external ones are physical: cold, heat, dryness, humidity, low atmospheric pressure; chemicals: toxic or poisonous, hypovitaminosis; biological: virus, bacteria, and pathogenic parasites; social: overcrowding, that many times benefits disease transmission, and has very important psychological effects; ii) external and internal etiological factor: the psychological one, this is because when you receive the impact of an external change, this impact will also have a psychological meaning; and this depends on how the person interprets what is living; for example, if the husband dies and this was a wonderful married couple, of course this will be a cause of intense suffering for the woman; but if her husband was a scoundrel who physically abused of her, their children, and did not give them enough money for living, then if he dies, she may simulate a sorrow, but all her life changes completely, thus she will have more opportunities for living better; iii) internal etiological factors: they are part of pathology constitution, and as a part of the constitution there is a genetic, congenital and acquired predisposition. Opposite to these factors there is resistance capacity against aggressive factors.

1. Professor Emeritus, Research Professor, Academic Tenure of the History and Philosophy of Medicine, Professor of the Postgraduate School *«Víctor Alzamora Castro», Universidad Peruana Cayetano Heredia. Lima, Peru.*

How to cite the article: León-Barúa R. Emotional Factors in medicine. Interciencia. 2013;4(3):150-155

PATHOGENESIS

When all of this is at stake, the disease occurs: at the beginning there are physiological changes that might lead to anatomical changes, and anatomical changes could produce physiological changes, and here a combination occurs –physiological factors are quite important, too– and when the disease begins, symptoms appear, i.e., what people feel, and the signs, which the physician finds when examining carefully the patient.

SICKNESS AND DISEASE

A very important aspect is the concept "sickness—disease". I learned this when I talked to Dr. Carlos Alberto Seguín, and in the book *"Enjuiciamiento de la medicina psicosomática"* (Trial of psychosomatic medicine)[2], by Professor Honorio Delgado. This concept that Americans have called as diseases and illness later is a very important aspect for doing good medicine; for example, to illustrate this, I will tell you my experience with a young patient, whom I greeted in a summer day with very hot weather, and when I shook his hand I realized his hand was cold and sweaty. When I talked to him, he told me he had flatulence, colon pain, constipation alternated with diarrhea… if I had been concerned only about this, I wouldn't have realized what this young man was suffering. I explained him the most likely thing was he had parasites, lactose malabsorption, or irritable bowel syndrome. He stared at me and said: "…my father was in his late 60s, and he had similar symptoms than me, and he was diagnosed colon cancer. This cancer ended his life…." i.e., for him that was the meaning of what he was feeling, the suffering he had. I tried to calm down him and I told him the least likely thing was he had the same problem, "…you are a young person," I said. I examined him and it was solved, of course, in a simple way; i.e., the concept "sickness-disease" is very important.

STRESS OR GENERAL ADAPTATION SYNDROME

Low intense etiological factors produce a local and specific reaction, for example, when a thorn enters the skin of the hand and there is a local reaction. But, intense etiological factors produce a general, no-specific reaction, named, by Hans Selye, "stress" or "General Adaptation Syndrome"[3,4]. When stress is produced in the hypothalamus—where all this is generated—, it leaves impulses and also the CRH (corticotrophin-releasing hormone) stimulating the hypophysis; it produces the ACTH (adrenocorticotropic hormone) stimulating the adrenal cortex, where a large amount of cortisone or cortisol is produced, also the stimulation of locus coeruleus—situated in the basis of the brain—, and impulses go to the sympathetic and parasympathetic nervous system; and this stimulates the adrenal medulla which releases adrenaline and noradrenaline, i.e., there is a series of modifications on the different organs of the body, and a whole change is produced in relation with all that is called stress by Selye. Possible effects of stress due to the increased production of cortisol could be osteopenia or osteoporosis—we have already studied it—and this is not only for the lack of hormones or exercise, but also psychological factors have an important role: dwarfism in children, organ steatosis, dyslipidemia, peptic ulcer disease, functional digestive disorders, high blood pressure —particularly when there is anger and irritability—, coronary problems, infertility… for example, I have had the opportunity to study young married couples, who had been married for several years but they had no children, then they adopted a child and received him/her with great love; their lives changed completely, but then they begun to have their own children in a natural way; thus, when they recovered their emotional condition, they had high fertility.

NERVOUS EXHAUSTION

Pavlov[5,6] did very interesting works. In one of his experiments with dogs, when the animal was exposed to an uncertain situation—in relation to reward or punishment—Pavlov set the dogs in confinement situation, and a red circle appeared in a screen and immediately after food came; this association was repeated until producing a conditioned reflex, where salivary glands of the dog, just when it saw the red circle, began to

secrete, i.e., it was ready to eat. In this moment, one Pavlov's student and collaborator had a very interesting idea: the same dog already conditioned was presented a red oval. At the beginning the dog showed enthusiasm, but food did not come after the oval. Food appeared when the circle was presented but not with the oval. Shortly after, when the oval appeared the dog ignored it. Here is the brilliant idea of this doctor: she began to reduce the larger diameter of the oval, until the circle was approaching, and when there was a ratio from 5 to 4 in diameters, then the dog completely enters an insecurity state, and they described that, being in this condition, at the beginning the dog was anxious and irritable, but then it completely fall down with its legs fully stretched, and it was not interested in food any more, as if it were exhausted; and something interesting was it began to beat with its paws in a compulsive- reflexive way.

PSICOLOGICAL STRESS IN THE MAN

The loss of a beloved person or object, an external conflict with other people, or an internal one when you have doubts about what you can do… when you move to another country, house or work, or there is social adjustment…

Other types of stress: isolation or solitude, frustration or sense of incompetence. Emotional stress tends to produce anxiety and depression; we have observed it when studying meteorism[7,8,9], tuberculosis[10] …another interesting point we have observed is when anxiety and depression occurs, high levels of somatization, obsession-compulsion, anger, hostility are present …that is, several emotional disorders, or emotional disorder with several demonstrations[11]; in this—in reference to DSM IV (Diagnostic and Statistical Manual of Mental Disorders)—a complete separation of anxiety, somatization, depression, anger, hostility is made, as totally separated entities and we have found them together[12], similar to what Pavlov found in dogs. This was published in several magazines, and over the time, the authors of DSM IV have said that in fact, when there is depression there is somatization, obsession—compulsion or anxiety, then they talk about comorbidity, that is, as if they were different morbid entities which are together by chance. Dr. Javier Mariátegui helped us to do a work with Dr. Accinelli[13], also published, at the *Instituto Honorio Delgado—Hideyo Noguchi* (Lima, Peru), where we studied people who had been diagnosed as depressives. When applying the Symptom Checklist—90, all of its components were high; they were treated with antidepressants, and then, when applying the same test, everything was standardized. So, are they different entities with a different etiopathogenesis? Or, are they the same thing and are completely connected? Even, antidepressant medicine, should they be called "antidepressant"? Or, are they "emotional anti-disorders"? …We will have to find another name for them.

SYMPTOMS OF DEPRESSION

Symptoms of depression we always study in our patients are: anxiety, irritability, sadness, feeling like life is not worth living—when it is very intense you should be very careful, since this may lead to suicide weariness or exhaustion; to wake up feeling tired or exhausted, but fatigue decreases doing physical activity, or tiredness occurs doing less daily activity than before; lost or, otherwise, exaggerated appetite—for example, if appetite increases in people who want to be fit, it is a negative factor from psychological point of view. Difficulty to concentrate or think clearly, forgetfulness, loss of interest in things that have always been interesting, loss of libido or sexual desire, sleeping disorders, to wake up very early, difficulty to fall asleep, to awake repeatedly at night, nightmares, feeling of insufficient sleep, daytime sleepiness.

WHICH ARE THE POSSIBLE EFFECTS OF DEPRESSION?

In addition to diseases or disorders above mentioned in relation to emotional stress, there are also vegetative changes, decrease of pain threshold... the latter helps us a lot in clinic. It has been shown that when depression or exhaustion exists, a low concentration of endorphins occurs. In studies where cerebrospinal fluid samples have

been taken, it has been shown than when a person is treated, pain threshold raises, i.e., the person can better resist diseases causing pain. Another effect of depression is to endanger immune status: it has been shown that when depression occurs, there is a low amount of cytotoxic lymphocytes and natural killer cells, then the person is much more predisposed to infectious or tumor diseases. I have had the opportunity to meet patients with HIV, and sometimes when someone very special for them die, they automatically change from AIDS carriers to patients. In other opportunities I met men whose wives were seriously ill, and they came down and died along with their wives.

BIOCHEMISTRY OF DEPRESSION

From pharmacological point of view, some conclusions about depression have been reached: serotonin or other substances is produced in the presynaptic neuron, it is accumulated in its deposit sites and, when impulse is transmitted to the postsynaptic neuron, it is released. In the case of serotonin, the substance is reuptaken as a way of saving. There also are receptors in the postsynaptic neuron, which regulate the entry of neurotransmitters, in order they not to be excessive and the impulse be transmitted, as well as metabolical changes can occur.

In depression, the amount of neurotransmitters has been measured, and they decrease a lot; receptors on the postsynaptic neuron increase a lot their sensitivity; there is hypersensitivity, then, there is hypersensitivity of the postsynaptic neuron and underactivity of the presynaptic one. And, when someone is given antidepressants, these ones will take two or three weeks to make effect, so patients should be warned about this; but studies on animals have shown neurotransmitters increase immediately when the medicine is given, however, the effect occurs two or three weeks later. Then it seems this hypersensitivity has to decrease over the time in the postsynaptic neuron, so transmission is good and the person feels good.

WHICH ARE THE POSSIBLE WAYS OF DEPRESSION TREATMENT?

Psychotherapy, Dr. Jerome D. Frank, Johns Hopkins University, a great friend, who studied hard Psychotherapy. He thought one of the most important factors was to increase hope of curing in patients, and make them to retrieve the sense of control over the problem. I use a lot this in my clinical practice. When I see a patient, firstly I do not leave him in the nebula; I briefly explain the possibilities, what we have to investigate... while I examine him I tell him all the positive things I am finding, for example, "your hemoglobin level is fine... your palms and conjunctiva of the eye look great... you don't have any thyroid nodules... there are no lymph nodes... your lungs are completely clean, and your heart as well...", i.e. a few words that help the person to get up. This was published in the journal "*Diagnóstico*"[14], psychotherapy I use in patients.

Cognitive therapy is very important, psychoanalysis made by experts is also well known and helps people to leave their state of nervous exhaustion. Physical exercise, music therapy, relaxation techniques, and meditation to reduce stress as well as emotional disorders, resilience, positive psychology by Martin Seligman, the contribution of logotherapy by Viktor Frankl... he was in a concentration camp, escaped and created a new form of psychotherapy which is the search of life meaning; and finally, the use—of course—of antidepressant medication.

APPROACH OF THE PATIENT

Another very important thing when making the diagnosis of a patient is: Should I rank it as depression, or nervous exhaustion?[15], I also explain patients about antidepressant medication. George Miller Beard, a great neurologist, studied people who were under great emotional stress and concluded that these patients were in a state of nervous exhaustion, which he named "neurasthenia". The name of neurasthenia has become pejorative, and nobody likes to be called neurasthenic, but I explain my patients: " ...you,

due to tensions you have had, have entered a state of nervous exhaustion. The brain is like a battery, if you start and start your car and do not recharge it, then a depletion of all the electrical system of the battery occurs…" Medication: when I am prescribing an antidepressant, many people refuse it saying this will produce habit or dependency, and then I explain the following: "...you are in a state of nervous exhaustion. I have found that these drugs administrated in mild and moderate doses have good results two or three weeks later...". A very important thing, I have never had with amitriptyline, sertraline, paroxetine... dependency cases; there is no addiction, on which patients are concerned, and this influences on them positively, so they automatically take their medication.

Finally... I could study the research by Dr. J Jay M Weiss[16]. He had made experiments in rats: i) a rat hold, nothing more, ii) another rat hold to which small electrical impulses were launched, but if it touched a disc with its mouth, electrical impulses stopped- even if it estimated the time and touched the disc before the electric impulse- iii) another rat that even though it made efforts to touch the disc with its mouth, it always received electrical impulses. After the experiment, the amount of stomach ulcers was tremendously increased in rats that made great efforts to control the impulses and failed at all. So we did a test, which is already used in practice, called "Test of Problems, confrontations and achievements"[17]. In this test the person is explained to answer as follows:

I have no problems or difficulties at all	— — — — —	I have very big problems and difficulties
I do not make any efforts to solve my problems and difficulties at all	— — — — —	I make great efforts to solve my problems and difficulties
With my efforts I can not solve my problems and difficulties at all	— — — — —	With my efforts I totally solve my problems and difficulties

So an X is placed in the reply, receiving a score from 1 to 5, and multiplying the numbers obtained from confrontations (second line) and achievements (third line) we get a number that is compared with levels of depression using the Beck Depression Inventory , when there is a score of 8 or more. Then I give this to my patients and in two minutes they fill the test, and according to the level obtained, it is possible to know how their emotional state is. With this, I have tried different methods in order patients not to see their problems in such a negative way, and think a little better. I begin to deal with those issues that may cause stress to them, and I try to get better results. Inadvertently we enter psychotherapy when trying to help people.

GRANTS OR FUNDING RESOURCES

None.

CONFLICTS OF INTEREST

The author report no conflict of interest regarding this manuscript.

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Correspondence:
Raúl León-Barúa
Escuela de Postgrado "Víctor Alzamora Castro",
Universidad Peruana Cayetano Heredia
Avenida Honorio Delgado 430. Urb. Ingeniería,
Lima 31, Lima, Perú.
Phone: (51 1) 3190000
E-mail: rlbmd@ndt-innovations.com