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Infections and Emotional Responses

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Abstract

Infections can be the cause of emotional disturbances. The psychological aspects related to them have been studied for decades with more emphasis in tuberculosis. On the most recent time scale COVID has been the virus most profoundly and published studies on psychological disorder manifestations. Indications for psychotherapy have multiplied during the COVID pandemic. Also noteworthy are all other infections, such as mPOX, brucellosis, verminosis, influenza etc. Many individuals in contact with virus carriers, such as flu, do not acquire the virus infection while others, per example tuberculosis patients do not become infected by Koch's bacillus. In some patients the symptoms of the infection may disappear in a matter of days, while others even present longer clinical evolution as a neurotropism allergy to brucellosis. This suggests an interrelationship between infections and immune defenses, mainly due to psychic factors influencing the hypothalamic-adrenal axis and producing the relative insufficiency of the adrenal cortex. The attitude of affection and interest adopted by the physician and auxiliary person is of paramount importance, as a form of labor therapy, in an adequate work and subsequent feeling of usefulness. In conclusion, the proper health education related to the illness and treatment plan should be provided to the patients along with their family members. There is a need to improve access to counseling and mental healthcare among patients living with infections.

Keywords: Covid; Emotions; Infections; Psychology; Tuberculosis

Introduction

As from the last decades the emotional impact of infections have been studied more systematically. The citations of tuberculosis, per example, were and still are of the most impact (1-6). On the most recent

time scale it has been the most profound and widely studied COVID in the manifestations of psychological disorders.

Indications for psychotherapy have multiplied during the pandemic (7-8). Also noteworthy are all other infections, such as mPOX, brucellosis, worms, influenza.

Many individuals in contact with carriers of viruses (influenza, for example) do not acquire the virus, others in contact with tuberculosis patients do not become infected by Koch's bacillus (9-18).

Another infectious state in which the emotional component enters in large part is in chronic brucellosis, whose diagnosis by the positivity of blood agglutination is easy, but the persistence of its infection, with symptoms very similar to asthenic neurosis, exacerbated in periods of emotional or physical "stress", shows that the body's defenses are weakened, not by food deficiency, exhaustion, but rather by unconscious psychological factors, as has been described (19).

In some individuals, the symptoms of the infection disappear within 60 days, and others even present a neurotropism allergic to brucella, which suggests an interrelationship between infections and immune defenses, mainly due to psychic factors influencing the hypothalamic-adrenal axis and producing the relative insufficiency of the adrenal cortex. In this gland there is a hormone, etiocholanone, which produces hyperthermia, which can explain certain "incomprehensible fevers" or "hysterical hyperthermias", the first resulting from a need to be sick to receive attention, affection and affection due to a disgust of sensual origin.

Saul (20) in 15 individuals who frequently suffered from pulmonary flu with catarrhal bronchitis, psychoanalytic therapy made susceptibility to colds disappear.

It is a well-known fact that tuberculosis is "preferred" by certain families and that certain people (long-terminian-asthenic biotype) are more prone to this disease. Among the tuberculosis patients themselves, there are frequent comments on erroneous observations made by laymen about the prognosis of this or that phthisis: "So-and-so (strong type, obese individual) will be cured soon"; a few months later he died. Another said: "so-and-so won't take long" (asthenic, long-haired and thin type); he was wrong too. Dunbar (21) tried to describe the "psychological profile of the tuberculosis patient". An individual in good previous health, with few surgical interventions but with a marked tendency to suffer accidents (which shows a desire to self-destruct) being in general, effective, independent, with good adaptation in the sexual sphere (it is a popular saying that so-and-so became tubercular due to masturbatory or sexual excess, which is not true, because any excess is a self-destructive manifestation of neurosis) in the social and economic sphere, but with an intense childish need to passively receive affection.

Psychiatric studies have failed to establish personality uniformity in tuberculosis patients, but have shown that in this disease psychological factors are important, in a multiform etiology. It is observed that behind each constitution there is another factor, difficult to observe: unconscious feelings. This unconscious is what governs the individual's immune state; their conflicts can weaken defenses against infections; it is not yet known by what mechanism. Feelings of guilt from childhood, especially from

the mold period, are the main responsible for self-destruction through tuberculosis.

Nowadays tuberculosis is included in the group of diseases in which psychosomatic factors may play a role in the individual's predisposition to infections, probably through the immune system and the autonomic nervous system. Rich (22) emphasized the role of psyche and endocrine disorders in the production and maintenance of resistance to the clinical manifestation of tuberculosis. Kuntz (23) related the vegetative nervous system to tuberculosis for the following reasons: 1) lesions in the ganglia of the vegetative nervous system are found in autopsies of tuberculosis patients; 2) the autonomic nervous system influences the local character and progress of the infection; 3) the section of the vagus slows down the unilateral tuberculous process in rabbits; 4) greater irritability of the tissues (in which the vegetative system plays a predominant role), greater exudative tendency; 5) alteration in the reactions of blood vessels to toxins and tissue acidity also depend on the vegetative nervous system.

In Selye's alarm reaction, the stimulation of adrenocorticotropic hormone (ACTH) and these on corticosteroids would act on the lymphoid tissue by increasing globulins, vectors of antibodies to the body's immune defense against infections. In the exhaustion of the body, this mechanism would be sacrificed, as in acute adrenal insufficiency syndrome. On the other hand, the formation of antibodies would be related to vegetative tone, being greater when the parasympathetic tone predominates in the production by the body of agglutinins, lysines and precipitins, and, in sympathetic excitation, alexins and opsonins would appear, along with greater capillary permeability and easier penetration of *Mycobacterium tuberculosis*.

Ishigami (24) in 1919 studied the influence of psychic factors on the tuberculosis process; among other signs, he verified the fluctuations of the opsonic index, finding that emotional conflicts decreased the value of the index and delayed the return to normality; these changes predisposed the body to tuberculosis. Eyre (25) stated that the energy consumed by the state of emotional tension is lost and ceases to assist other physiological functions; tuberculosis is especially suitable for causing emotional conflicts because of its long duration of the disorder of social and economic relationships and the isolation it entails. Hartz (26) became tuberculosis and could, as a patient, observe, in the sanatorium, that the tuberculosis patients kept a second history different from that referred to in the entrance, that is, there were strong emotional reactions in the face of certain vital situations that could have prevented a healthy life; he ended up thinking that tuberculosis was another personality disease. Berle (27) in his review says: the clinical evolution runs in parallel with the emotional life of the patient and this is one of the factors that influences the growth of the bacillus in the organism and no progress will be made if stressful emotions are not related to the study of the problem of its virulence, which has been recognized since the third century. Merril (28) also thought that these patients had an intense infantile attachment in the sense of being passive receptors of affection and the reactive formation of an obsessive compulsive character.

Hayes (29) understood that tuberculosis was one of the easiest curable chronic diseases, but its prognosis became uncertain because of many factors, including the psychology of the patient. Muhl (30) had long described the "suicidal attitudes" of cer-

tain tuberculosis patients, believing them to be converted homicidal desires, and the patient unconsciously identified himself with the one he wished to destroy, due to sentimental factors of guilt.

The psychosomatic conception of tuberculosis neither denies nor underestimates the influence of the germ - for without germ there is no tuberculosis - but considers the problem in all its aspects, from the cellular to the social plane.

The mental state has a great influence on the good progress of the treatment. Thomas Mann in the voice of Hans Castorp said: "These pneumatic friends of yours seem to be in a very good mood too" (referring to a group that submitted to pneumothorax, favorably).

The attitude of affection and interest adopted by the physician and auxiliary person is of paramount importance, as is essential to labor therapy, but an adequate work and subsequent feeling of usefulness, that is, that it is not a total incapacitated.

Finally, as Portland, Young and Williams said in the name of the "National Association for The Preventions of Tuberculosis" of England: "the best results in the treatment of tuberculosis are obtained when the patient is considered to have not only diseased organs, but also a diseased personality".

All these facts lead us to advocate individual or group psychoanalysis as the most powerful therapeutic weapon in the prophylaxis of tuberculosis and chronic infections, as it directly combats the primary cause, which is the unconscious conflict of self-destruction. Therefore, if an individual begins to overwork in entertainment, without eating enough (often this hyponutrition is a symptom of self-aggression because he knows that it will have harmful consequences), psychoanalysis should be advised, especially if there are cases in the family, because we know that it is a genetic predisposition to acquire infection by *Mycrobacterium tuberculosis*.

Immunocompetence and psychosomatics (psychoneuroimmunology)

The editorial article in the Lancet (31) says: "psychiatrists and immunologists hardly meet, and when they do, they speak different languages".

Experimental stress in animals produces a decrease in immune defenses, low levels of interferon, T lymphocytes and opsonins, which favors infections (32,33).

Experimental polyarthritis can be produced by injecting "*mycobacterium butyrucon*", but if the colony is overflowing with rats, there will be an increase in the arthritic lesion (34).

Three groups of rats: 1. those that live without disturbances; 2. those exposed to a cat chase for 10 minutes, 4 times a day; 3. and finally, very handled rats.

In the rats without disorders, 40% developed arthritis, 13% in the rats exposed to the cats and 10% in the ones that were handled. It is concluded that chronic stress increases the incidence of arthritis and that acute stress, in a sense, protects you from arthritis. Gastrectomy impairs immune defenses (35).

Monkeys separated from their mother during the first five years of life, once adults, decrease im-

mune responses (36).

This fact is extremely important in psychosomatics, as it confirms that the periods of mold (0 to 7 years of age), periods in which unconscious fantasies develop. Traumas in this period are indeed cofactors in the production of most psychosomatic and mental illnesses, including the etiopathogenesis of certain types of cancer.

Mertz et al. (37), after having used oral acyclovir for one year in 227 patients with herpes simplex, found that the duration of the lesions was shortened in relation to controls. Hoon et al. (38) in 153 university students (67% women) found that a high level of positive thymosin-alpha-1 was related to vulnerability to diseases in general, not only to genital herpes.

Certain drugs can modify immune responses, such as chlorpromazine and benzodiazepinema in the face of the antibody response to the typhoid antigen H (39).

The most sensitive tests to verify immunocompetence are: infection by herpes simplex virus, Coxsackie B2 virus, Epstem-Bart virus, killer cells (NK), plasma IgA (40), decrease in T lymphocytes by phytohemoglutinin and cortisol.

Post-viral fatigue or dysphoric fatigue syndrome or epidemic of neuromyasthenia or chronic fatigue syndrome or neurocirculatory asthenia is measured by immunoglobulin M (IgM) antibody, and is more frequent in children with family conflicts (40,41).

The distinction between postviral fatigue and neurocirculatory asthenia is not only by the dosage of the IgM antibody, but also by the measurements of blood lactic acid, before and after exercise (in asthenia the lacticidemia increases), triiodothyronine (T3), tetraiodothyronine (T4) and the tests of dexamethasone, fenfluramine (prolactin does not rise after the application of fenfluramine), growth hormone (increases after ingestion of imipramine). In asthenia in psychotic depression, there is an elevation of dehydroisoandrosterone and loss of phosphates in the urine (42,43).

Reduced monocytes and macrophages (mature monocytes) predict susceptibility to infections (44).

The unemployed and divorced individual has decreased immune defenses (decreased lymphocyte reactivity to phytohemoglutinin PHA and the tuberculin-derived protein PPD), anxiety, depression, decreased mental concentration, tobacco and alcohol abuse, and suicidal ideation (45), especially in women who had a good attachment with their husbands (46).

Preoperative stress tests that were altered, i.e., with high response to cold pressor and low lymphocyte response to phytoagglutinin and concanavalin, the patients had infectious complications in the postoperative period.

Psychoimmunology has demonstrated the influence of stress on lymphocytes (which have receptors for the neurotransmitters T and K - killer cell) causing depressive states. They found once again that the anxieties in the face of the Acquired Immunodeficiency Syndrome (AIDS) are overwhelming due to the feeling of abandonment, especially in homosexuals with overprotective.

In conclusion, the proper health education related to the illness and treatment plan should be provided

to the patients along with their family members. There is a need to improve access to counseling and mental healthcare among patients living with infections.

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In memoriam: Luiz Miller de Paiva.

Conflict of interest

None.

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