Critical Appraisal of Immunity in Ayurveda

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Abstract

During certain conditions or factors, even unwholesome food does not produce disease immediately. The variety of unwholesome food is not equally harmful in causing disease; all dosas are not equally powerful, and variations in physique and mind play a role in resisting disease. Variances in several genes can influence how well a patient might respond to a particular drug or antigen. Resistance to disease or immunity against disease is of two kinds i.e. one that attenuates the manifested disease and the other prevents the manifestation of disease. The above concept indicates an individualistic approach in disease management. Personalized medicine is the new paradigm of modern medicine, aiming to predict the risk and treatment of disease on the basis of a person's genetic profile, which would render biologic consideration of race obsolete. But it seems unwise to abandon the practice of recording race when we have barely begun to understand the architecture of the human genome, and its implications for new strategies for the identification of gene variants that protect against, or confer susceptibility to common diseases, and modify the effects of drugs. In the international context, the concerns on personalized medicine are more obvious and advanced. It creates a new framework in terms of prompt and individualized diagnosis and treatment of the patient. Homeostasis of Ojas, agni, srotas, doshas, and dushya, along with and associated, is the pleasant state of soul, sensory organs, and mind, essential for good health. Proper use of food, sleep and celibacy is the golden triangle for excellent health. There is a great deal of synergy between Ojas, agni, srotas, doshas, and dushya; defects in either system can lead to immune-pathological disorders, including autoimmune diseases, immune-deficiencies and hypersensitivity reactions.

Keywords: Ojas, Agni, Srotas, Dosha, Dushya, Bala; Immunity; Mucosal surfaces

Introduction

During certain conditions even unwholesome food does not produce disease immediately. All unwholesome food is not equally harmful, all dosas are not equally powerful, and variations in physique and mind play a role in resisting disease. Resistance to disease or immunity against disease is of two kinds i.e. one which attenuate the manifested disease and other prevents the manifestation of disease [1].

Any unwholesome food substance is not equally powerful in causing disease

Unwholesome food substances become more harmful depending upon the nature of the locality, time, combination, potency, and excessive quantity of intake. For example, vrihi type of corn is unwholesome because it aggravates pitta. The same becomes more unwholesome if consumed by marshy land (anupadesha) people and the same is less harmful if consumed by desert land (dhavanadesha) people. Corn is more unwholesome during sharadritu (autumn season) and less harmful in hemantaritu (winter season). If phanita (peniudium or sugarcane juice) consumed with curd, it becomes more unwholesome because it aggravates pitta. The same becomes more unwholesome because it aggravates pitta. The same becomes more unwholesome because it aggravates pitta. The same becomes more unwholesome because it aggravates pitta. The same becomes more unwholesome because it aggravates pitta. The same becomes more unwholesome because it aggravates pitta.2167-1206

Doshas of all types are not equally strong in producing disease

Imbalanced dosas are exceedingly painful, acute and difficult to cure in multiple combinations, if they require mutually contradictory therapies, if they are deep seated i.e. involving deeper dhatu like majja etc in the pathogenesis of disease. If disease is chronic it becomes very difficult to cure because the doshas are deep seated and causes displeasure in the mind. If dashapranayatana (ten seats of prana) are involved in the disease process along with other vital organs like hridaya (heart) etc., then disease become difficult to cure. If vital organs are afflicted, then disease becomes difficult to cure. If disease manifests instantaneously, it indicates that the disease is very difficult to cure [1].

Variations in physique and mind play a role in resisting disease

People vary from one another in many ways, some may be obese or overweight, excessively emaciated, with muscles and blood drastically reduced; debilitated; those living on unwholesome or very little food; inferior mental faculties etc. Individuals having opposite types of physical constitution are shown to be capable of resisting diseases [1].

Food versus immunity

Wholesome food is the only sole cause for the growth of a living being. There are three factors that support life i.e. ahara (food), svapna(sound sleep) and brahmacarya (one who is having control over the senses and full of spiritual bliss). The body will be possessed with
strength, good complexion, growth and longer life, provided the person does not indulge in factors which deteriorate health. Consumption of proper amounts of food certainly helps the individual in bringing strength, good complexion, happiness and longevity [1].

Concept of swasthya in ayurveda

A person is called healthy or swastha, if he possesses an equilibrium state of the doshas (body humors), agni (bio-digestive fire), dhatus (tissues), and mala (waste products of body) associated with a pleasant state of soul, sensory organs and mind. It is the basis for normal immunity. Disequilibrium or derangement of doshas etc. causes diseases.

Doshas versus immunity

Proper elimination of waste products, equilibrium state of dhatus and doshas, normal appetite, proper perception of taste, digestion of food in a stipulated period and proper absorption/assimilation to nourish the body, sound sleep, coordinated sensory perception, and good humor/temperament, all, indicate a healthy person. Vata, pitta and kapha are physical doshas i.e. sharirika doshas, and raja and tama are the mental doshas i.e. manasika doshas. It is very difficult to understand the movements of wind, sun and moon, similarly the activities of vata, pitta and kapha are difficult to ascertain. A physician must ascertain the various states of doshas i.e. diminution, aggravation, equilibrium and occlusion of doshas before prescribing therapeutics. Dosa, dhatu and mala are the main factors for the foundation of the body, that is why knowledge of these is very important. The body is firmly supported by vata, pitta and kapha doshas, which are situated in the lower, middle and upper portions respectively. Doshas support the body just like a house is supported by three pillars. They are called pillars because they support and maintain the firmness of the body. Doshas are also called dhatus because they support the body. Doshas are also called malas due to their vitiation property. One that pollutes the body is called mala, being the waste product of food, and so also equated to doshas due to their tendency to vitiates others [2]. The doshas may be termed as antibodies because these identify and neutralize foreign objects such as bacteria, fungi, parasites and viruses.

Role of normal vata in immune system

Vata supports the body by performing functions like movement, perception, filling, separation and retaining. The normal functions of vata are enthusiasm, inspiration, expiration, movements, normal formation of dhatus, and proper eliminations of excreta. When vata combines with agni, it produces heat but in combination with soma (kapha) produces cold, that is why it is called yogavahi (synergist) [2].

Role of abnormal vata in causing diseases

Abnormal vata generates various afflictions to the body, thereby producing various diseases. It affects the strength, complexion, happiness and longevity. It disturbs the functions of mind, afflicts all sense faculties, deforms and destroys the embryo for long periods of time. As a result it gives rise to fear, grief, confusion, anxiety, excessive delirium, and finally stops the vital breath. Abnormal and vitiated vata causes derangement of the immune system which produces diseases. Hence Ayurveda states that this dosha is the prime because it controls all body systems.

Role of normal pitta in immune system

Pitta supports the body by performing functions such as coloring, digestion, production of agni, vision, intelligence, body temperature, along with other functions of agni that are of five types. The normal functions of pitta are clarity in vision, good digestion, regulation of body temperature, hunger and thirst; softness in body parts, luster, happiness and intelligence [2].

Role of abnormal pitta in causing diseases

Agni is represented by pitta in the body and produces good or bad effects depending on its normal or abnormal state, i.e. digestion or indigestion, vision or loss of vision, normal or abnormal temperature, normal or abnormal complexion, valor or fear, anger or joy, confusion or clarity, and other such dual functions [2]. Abnormal and vitiated pitta greatly disturbs the digestion and metabolism leading to development of diseases.

Role of normal kapha in immune system

An equilibrium state of kapha promotes strength that is why normal kapha is called ojas. Hence it is the master of the human immune system. Functions of normal kapha are like that of ojas. Kapha supports the body by performing functions like binding of joints, unctum, healing, saturation, giving strength and stability to the body and such other functions of water, and it is of five types. The normal functions of kapha are unctuousness, cohesion, firmness, heaviness, potency, strength, forbearance, patience and absence of greed [2].

Role of abnormal kapha in causing diseases

Soma, which is represented by kapha, gives rise to good or bad effects depending on its normal or abnormal state i.e. firmness or laxity, plumpness or emaciation, enthusiasm or laziness, potency or impotency, knowledge or ignorance, understanding or confusion, and such other dual functions [2]. Abnormal and vitiation of kapha greatly alters the immune system resulting in disease.

Importance of doshas in the development of diseases

Doshas, if aggravated, manifest signs and symptoms in accordance with the degree of aggravation i.e. excessive, moderate and slight aggravation of the doshas reflect itself in the form of excessiveness, moderateness and slightness (weakness) in the signs and symptoms. Doshas, if diminished manifest signs and symptoms in a feeble manner or cease to manifest even their normal signs and symptoms. Diminished state of doshas is not capable of vitiating other dhatus, as a result disease will not manifest. But once doshas cease their normal functions, it will disturb the entire physiological functions and as a result, may cause disease or may not be capable to counteract the pathogenic causative agents thus also resulting in disease. An equilibrium state of doshas where there is normal function, represents a healthy state of body and mind. Sixty-two varieties of permutation and combination of doshas definitely manifest symptomatology [2]. Doshas recognize a unique part of the foreign target and tag a microbe or an infected cell for attack by other parts of the immune system, or can neutralize its target directly and attach them to prevent the manifestation of diseases. Three different doshas are known in mammals, which perform different roles, and help direct the appropriate immune response for each different type of foreign object
they encounter. There is a great deal of synergy between the three doshas and defects in either doshas can provoke illness or disease, such as autoimmune diseases, immunodeficiency disorders and hypersensitivity reactions.

**Dhatu versus immunity**

Total of seven dhatu (tissues) are mentioned in the Ayurvedic texts i.e. rasadhatu, raktadhatu, mamsadhatu, medodhatu, asthidhatu, majjadhatu, and shukradhatu. All the above seven dhatu support and nourish the body [3].

Functions of each dhatu are as follows [3]:-

Rasadhatu Provides sense of satisfaction and nourishment; supplies nutrition to raktadhatu.

Raktadhatu Bestows color, sustains life activities and supplies nourishment to mamsadhatu. Normal blood promotes strength.

Mamsadhatu Covers and nourishes the body, produces waste products and supplies nourishment for medadhatu.

Medadhatu Bestows moistness in the eyes and other body parts, lubrication, stability and supplies nourishment to asthidhatu.

Asthidhatu Supports the body with structure, helps with posture and supplies nourishment to majjadhatu.

Majjadhatu Provides lubrication and strength, fills the cavities of bone, and gives nourishment to shukradhatu.

Shukradhatu Bestows courage, ejaculation, lust, strength, pleasure, love, happiness, and production of foetus.

Nourishment is intrinsic to life and an important tool in the fight for survival against pathogenic microorganisms. Whenever the expression or function of one of these tissues is impaired (provided the function is non-redundant), immune disturbance occurs and develops diseases i.e., dhatupradoshajavikara.

**Mala versus immunity**

_Purisha_ (stools) provides strength and supports _vata_, _agni_ and _pitta_. _Mutra_ (urine) fills the urinary bladder and eliminates excess moisture in food. _Sweda_ (sweat) provides moistness and softness to skin and supports hair [4]. Hence proper elimination of the _mala_ indicates good health, and any abnormality is the cause of disease development i.e., dhatupradoshajavikara.

**Agni versus immunity**

Power of _agni_ or normal condition of _agni_ is responsible for strength, health, longevity and vital breath. For this reason it should be protected by proper intake of food and drinks because these act as a fuel. When deprived of food and drink, _agni_ becomes disturbed. _Jatharagni_ is the main principle substance responsible for disease and health. During its normalcy it is responsible for longevity, complexion, strength, health, enthusiasm, build, lust, immunity (ojas), temperature, additional _agni’s_ (bhuagni and dhavagni) and other vital functions. Any abnormality in _agni_ will evolve in the rasavahasrotas and as a result, disease manifests like clouds in the sky that bring rain. In the same way abnormality in _doshas_ also manifest diseases. _Jatharagni_ is the chief among all the agnis because the functions of bhuagni and dhavagni are dependent upon _jatharagni_.

Aggravation or diminution of _jatharagni_ results in aggravation or diminution of _bhuagni_ and _dhavagni_. Therefore by all means, if one wishes for longevity and strength, one has to protect _jatharagni_ by consuming a suitable wholesome diet with a healthy lifestyle. On the contrary one, who consumes an unwholesome diet due to greed, succumbs to disease with the vitiation of _grahani_ (disturbances in gastrointestinal tract). Irregular digestion and metabolism causes imbalance in the _dhatu_. An intense digestion and metabolism with less consumption of food leads to depletion of _dhatu_. It is a question of debate to say _pitta_ and _agni_ are one and the same. Is there any separate _agni_ other than _pitta_? Or is _pitta_ itself _agni_? _Sushruta_ stated no separate _agni_ is found other than _pitta_. It is due to the properties of hotness in _pitta_ that lead to burning, cooking and such similar functions considered as _agni_ itself, called _antaragni_. During a diminished state, the use of drugs having similar properties to _agni_ is advised, and during an increased state resorting to cold treatments have been advocated; no mention of _agni_ on this matter is found in the texts [5]. Most of the diseases develop due to deranged state of _agni_.

**Ojas versus immunity**

Ojas is the essence of rasadhidhatus and is called bala (strength or power). Strength gives stability and maintains compactness of muscles, energy to perform all kinds of activities without any hindrances, clarity in voice and complexion, and both karmendriya (five motor faculties) and jnandriya (knowledge perceived through the five senses) perform their normal functions. Protection of wellbeing for a healthy individual is very important. Equilibrium states of dosa, agni, dhatu, mala and their functions, along with proper co-ordination between soul, sense organs and mind is called svastha. The qualities and functions of ojas are similar to shlesma (kapha).

Ojas is of two type’s viz, para and aparasa. Para ojas is located in the heart and measures 8 drops while aparaojas is spread all over the body and measures half an Anjali (one handful). Ojas corresponds to the immune function of the body. Ojas is the final essence of all dhatus, similar to kapha and provides sharirika (physical) and manasika (mind) bala that help in fighting against disease. Avoiding all factors that cause unhappiness or mental worries and meticulously taking proper diet and drugs that are conducive to the heart ojas and srotasas (micro channels) maintains ojas. Superior quality ojas is situated in hridaya and its quantity is eight drops. The other type of ojas is ordinary, dwelling in vessels attached to the heart and its quantity is half an anjali. Ojas witness the saptadhatu and it is the seat for strength. Dhatugrahana refers to dhatuvahasrotas (tissue channels). It is also called ojovahasrotas as stated by Cakrapani. Ojas the essence of saptadhatu and it is the mala of shukra (reproductive essence). Ojas is the upadhatu (secondary tissue) of shukra. Ojas is the waste product of shukradhatu. The seat of ojovahasrotas is hridaya along with the blood vessels attached to it; ten vessels attached to the heart which carry ojas and pulsate throughout the body. During the process of paka (transformation of nutrients) two things are observed i.e., mala and sara (prominent tissue). Mala is the malarupiojas and sara is the garbha (embryo). If the astabindu (eight drops) quantity of ojas (para ojas) decreases then a person will die. On the contrary if the quantity of ardhjadri (aparaojas) decreases or is vitiated, there manifests 3 kinds of abnormalities i.e. ojokshaya (decrease in its normal quantity), ojovyapat (ojas gets vitiated with a vitiated dosha and dushya), and ojovirajasa (displacement from its normal place) and as a result many diseases manifest. However, a person may die due to...
ardhanjali jojokshaya (immune-deficiencies) also, not instantaneously but over a period of time [6].

Bala (strength) versus immunity

Strength is of three types i.e. sahaja (constitutional), kalaja (temporal) and yuktikrita (acquired). A. Sahajabala is an inherent characteristic property in an individual present from birth. It occurs with an equilibrium state of doshas. B. Kalajabala is dependent upon season and age. loss of strength observed in adaranyakula (hot and dry), gaining of strength observed in visaranyakula (cold and wet), and middle age considered as being full of strength. C. Yuktitkritabala or acquired strength is attained by healthy practices related to diet, activities, and performing exercises with proper methods by having rest in between different exercises etc. Some consider yoga as a rasayan therapy. Vajikaranayogas help to acquire strength by fulfilling necessary deficiencies in insufficient dhatus [1].

Immunity is intrinsic to life and an important tool in the fight for survival against pathogenic microorganisms. The human immune system can be divided into two major components: the innate immune system and the adaptive immune system. Sahajabala may be correlated to innate immunity. The innate immune system provides the rapid triggering of inflammatory responses based on the recognition (at the cell surface or within cells) of either molecules expressed by microorganisms or molecules that serve as ‘danger signals’ released by cells under attack. These receptor/ligand interactions trigger signaling events that ultimately lead to inflammation. Virtually all cell lineages (not just immune cells) are involved in innate immune responses; however, myeloid cells (i.e., neutrophils and macrophages) play a major role because of their phagocytic capacity [7]. Yuktikritabala may be correlated to adaptive immune system. The adaptive immune system operates by clonal recognition of antigens followed by a dramatic expansion of antigen-reactive cells and execution of an effector program. Most of the effector cells die off rapidly, whereas memory cells persist. Although both T and B lymphocytes recognize distinct chemical moieties and execute distinct adaptive immune responses, the latter is largely dependent on the former in generating long-lived humoral immunity. Adaptive responses utilize components of the innate immune system; for example, the antigen-presenting capabilities of dendritic cells help to determine the type of effector response. Not surprisingly, immune responses are controlled by a series of regulatory mechanisms [7].

When the entire body tissues, starting from Rasadhatau to Shukradhatu, are in a fully nourished state and energy is derived from them to perform all types of physical and mental activities, that state is known as bala i.e. bodily energy including immunity. Bala is reduced due to injuries, fear complex, anger, anxiety, tiredness, reduction of tissues, and grief. In case of reduction of bala, heaviness and weakness of the body, wrinkling of the face, change in lustre, drowsiness, excess sleep and oedema due to imbalanced Vatadosha, are experienced. Bala is enhanced with drugs that balance doshas and agni and which encourage the enhancement of tissues. Some individuals, though they appear thin or lean have good stamina and others, though they are robust, show no active energy and that is why experts determine the grade of bala by the performance of activity [8].

Mucosal surfaces versus kapha

Mucosa covering the respiratory, digestive, and urogenital tracts; the eye conjunctiva; the inner ear; and the ducts of all exocrine glands contain cells of the innate and adaptive mucosal immune system that protect these surfaces against pathogens. In the healthy adult, mucosa-associated lymphoid tissue (MALT) contains 80% of all immune cells within the body and constitutes the largest mammalian lymphoid organ system. MALT has three main functions: (1) to protect the mucous membranes from invasive pathogens; (2) to prevent uptake of foreign antigens from food, commensal organisms, airborne pathogens and particulate matter; and (3) to prevent pathologic immune responses from foreign antigens if they cross the mucosal barriers of the body [7]. These events may be correlated to functions of the five types of kapha.

Immune-complex formation versus dosha dushya sammurchana

Clearance of antigen by immune-complex formation between antigen, complement, and antibody is a highly effective mechanism of host defence. However, depending on the level of immune complexes formed and their physicochemical properties, immune complexes may or may not result in host and foreign cell damage. After antigen exposure, certain types of soluble antigen-antibody complexes freely circulate and, if not cleared by the reticuloendothelial system, can be deposited in blood vessel walls and in other tissues such as renal glomeruli and cause vasculitis or glomerulonephritis syndromes. Deficiencies of early complement components are associated with inefficient clearance of immune complexes and immune complex mediated tissue damage in autoimmune syndromes, while deficiencies of the later complement components are associated with susceptibility to recurrent neisseria infections [7]. All these events may be correlated to doshadushyasammurchana (disturbed doshas invade tissues and affect whole body in gradations) in abnormal srotas, and if ojas, kapha etc. perform normally then it leads to efficient clearance of immune complexes and immune complex mediated diseases.

Conclusion

Concept of vyadhikshamatwa (immunity) has been widely described in detail in Ayurvedic texts because the main goal of Ayurveda is to optimize the health an individual and cure disease. To preserve health, one has to have a strong vyadhikshamatwa to combat deadly etiological agents. It can be achieved by two means i.e. innate immunity resulting from a general process rather than a process directed at specific disease organisms. Factors like sahajabala (natural strength), swabhavasamsiddhi (natural factors), bijakshetragunasampaccha (inherent qualities) etc. decide the nature of innate immunity. Acquired immunity means the human body has the ability to develop extremely powerful specific immunity against individual invading agents such as bacteria, viruses, toxins, or even impure foreign tissues from other animals. Immunity can be enhanced by gatraaabhyaanga (body oiling), aharasampaccha (diet), kaladabha (seasonal and time considerations), yuktikritabala(acquired immunity), sharirasampaccha (body regimen), satmyasampaccha (adaptability), pravarasatwa (moral strength), youvana (youth), karma (past deeds), samharsha (pleasant state of mind) etc. Nowadays it is becoming very difficult to manage immunosuppressive, immunodeficient, drug resistance disease, which is why it is necessary to enhance the vyadhikshamatwa of an individual to become resistant to any etiological agents. Equilibrium of ojas, agni, srotas, dushya along with the associated pleasant state of soul, sensory organs and mind is essential for good health. Regulated food, sleep and celibacy are the golden triangle for excellent health. This paper
expresses the need of an individualistic approach in patient management.

References