



Covid-19: A Tibb Interpretation of Risk Factors and Pathophysiology

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Abstract

Tibb is a holistic system of medicine based on the teaching of Hippocrates, Galen and Ibn Sina. Tibb believes, the body possess an inherent ability to heal itself, known as Physis, which can be negatively influenced by the internal humoral balance and qualitative state of an individual. Temperament also plays a vital role in understanding predisposition to disease as well as disease progression. Tibb also emphasizes the role of Lifestyle Factors which influences the qualitative and humoral balance. In Tibb, the signs and symptoms of corona virus are linked to an excess of Cold & Dry qualities, which are also associated with the melancholic humour. Therefore, melancholic/phlegmatic individuals are at an increased risk of being infected with Covid-19. Tibb provides a rationale as to why males and the elderly are at an increased risk of progressive symptoms of the disease, whereas females and children are less at risk. Tibb philosophy advocates that, in order to prevent the progression of Covid-19 disease, and maintain an optimal state of health and immunity, the humoral balance for each temperamental combination should be maintained by adjusting Lifestyle Factors accordingly.

Keywords: Covid-19, Risk Factors, Pathophysiology, Tibb principles

Introduction

To gain insights on understanding risk factors and pathophysiology associated with Covid-19, from the Tibb perspective, a brief overview of Tibb philosophical principles is provided.

Tibb, also known as Unani-Tibb which translates to Greek Medicine, is an assimilation of the philosophies of Hippocrates, Galen and Ibn Sina, that has been practised for more than 2500 years. Tibb philosophy is firmly based on the temperamental and humoral theories^{1,2,3}, and includes important concepts of lifestyle factors, qualities and especially the concept of physis.

Physis

Hippocrates described physis as “*vis medicatrix Natura*” or ‘*the ability of the body to heal itself*’. Physis is the sum total of the body’s natural, instinctive reactions and responses to maintain and where necessary restore homeostasis - it is part of our genetic make-up. Physis is responsible for maintaining homeostasis between the physical, mental, emotional, and spiritual aspects of each person⁴.

At a *Physical level*: Physis controls the millions of biochemical reactions taking place at any instant – for protection, for growth, tissue maintenance, reproduction and repair, *Physiological functions*: Physis ensures that all metabolic functions, between the different organs and systems of the body are efficient and waste/toxins are removed, *Psychological functions*: Ensuring harmony and balance of emotions, and the maintenance of mental health, is regulated by Physis, *Nervous system*: Physis ensures that effective communication to and from the brain - controls all mental, emotional and physical activities - mind, body, interaction, *Defence mechanism*: Ensuring that infections arising from outside do not disturb the body’s internal harmony from an efficient immune system. It is important to note that the immune system is only one of the many systems/functions controlled by physis.

Physis is the intrinsic ability of the body to preserve health, and the mechanism that activates the body’s healing processes. The importance of the role of physis in health promotion and restoration has been recognised and appreciated, as described below:

“...*In fact, no herb, no food or any other substance or procedure can do anything on its own to heal. It can only assist the body in its own self-healing. If your finger is cut, it is not the stitches, the bandage or the iodine that causes it to heal; it is the skin itself that performs this miracle.*”⁵Chishti, 1985

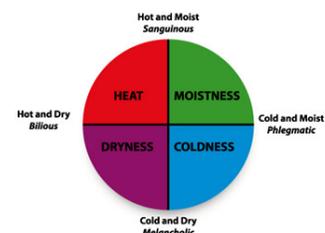
Unfortunately, in keeping with the circle of life, and as death is inevitable, and, just as our metabolism slows down, the efficiency of physis to restore homeostasis becomes weaker with age⁶.

Temperamental Theory

The temperamental theory is derived from Greek philosophers who hypothesized that everything in the universe is created from four primary elements with corresponding qualities: **Fire** (Hot & Dry), **Air** (Hot & Moist), **Water** (Cold & Moist), and **Earth** (Cold & Dry)^{1,2,3,7}. Depending on the ratio of the four primary elements that make up an entity, the opposing qualities in an entity will reach a state of equilibrium, with an overall quality. This overall quality is known as *temperament*. Every part of creation, be it mineral, plant or animal has an overall temperament. In human beings the concept of temperament extends from cells to tissues to organs and finally to each individual having a unique temperament⁸.

Although each person is as unique as his/her fingerprint, Tibb divides people into a combination of four broad categories, Sanguinous, Phlegmatic, Bilious and Melancholic with a dominant and a sub-dominant temperament.

The picture adjacent describes temperament and qualities and shows that a person with a combination of a Sanguinous/Bilious temperament, will have an ideal qualitative state with a dominant quality of heat, less of moist and dryness, and the least amount of coldness. Similarly, the Phlegmatic/Melancholic temperamental combination will have an ideal qualitative state with a dominant quality of coldness, less moistness and dryness, and the least amount of heat.



Tibb philosophy highlights that as long as the ideal qualitative state of an individual's temperament is maintained, health will prevail.

Hippocrates emphasized the importance of identifying an individual's temperament in his famous saying, "It is more important to know what sort of person has a disease, than to know what sort of disease a person has". Knowing a person's temperament provides valuable insights into the predisposition of illness conditions.

Humoral Theory

The Humoral Theory, conceptualised by Hippocrates, is a fundamental pillar of Tibb^{9,10}. That it survived in the medical sphere for millennia, is testament to its robustness and versatility.

Tibb philosophy recognizes that just as each person has a unique temperament, each individual also has a unique humoral composition made up from the four humours with respective qualities: Sanguinous (Hot & Moist); Phlegmatic (Cold & Moist); Melancholic (Cold & Dry); and Bilious (Hot & Dry), also with an ideal overall qualitative state. As long as this overall qualitative state is in harmony with the overall qualitative state of an individual's temperament, health will be maintained.

In his book, "Al-Umur Al-Tabi'yah (Principles of Human Physiology in Tibb)" Hakim Sayed Ahmed describes the role of humours as postulated by Hippocrates:

*"The basis of health is the right proportion and specific equilibrium of humours according to their quality (and quantity) i.e. homeostasis in the internal environment. As long as this homeostasis in the internal environment is maintained, the body remains healthy. **This is the basis of health preservation and preventative medicine.** Second, when the normal proportion and specific equilibrium of humours is altered, the internal environment reaches a state of imbalance, and thus disease develops. **This is the basis of aetiology and pathology of disease.** Third, when this wrong proportion and altered equilibrium of humours is corrected, health can be recovered. **This is the basis of treatment.**"*

A summary of Ahmed's description of the functions of the humours, states that the **sanguinous humour**, with Hot & Moist qualities has the largest concentration and maintains the overall Hot & Moist qualities of the human body ($\pm 37^{\circ}\text{C}$, and $\pm 70\%$ water). Its main function is to provide nourishment to every cell, tissue, and organ in the body. The **phlegmatic humour**, with Cold & Moist qualities, provides overall lubricating properties through mucous and serous fluids as in the nasal/respiratory tract, uro-genital tract etc. The **bilious humour**, with Hot & Dry properties, allows for thinning of vascular fluid, preventing blood clots, and cleansing the intestines of thick/viscous mucus. The **melancholic humour**, with Cold & Dry properties, provides density and consistency to the vascular fluid, and facilitates the blood coagulation process. It is significant to note that the phlegmatic, bilious, and melancholic humours, under the control of physis, maintain homeostasis within opposing functions: i.e., coagulating vascular fluid (melancholic), thinning vascular fluids (bilious), and ensuring effective lubrication (phlegmatic).

The humoral and temperamental theory was the basis of understanding and interpreting aetiology, pathology, diagnosis, and treatment as described in Ibn Sina's, Canon of Medicine.

Whilst the overall qualitative state of an individual's temperament is fixed, the overall qualitative state of the humours is constantly changing from the influence of the lifestyle factors especially food & drink from which the humours are produced.

Tibb Lifestyle Factors

Tibb has identified Six Lifestyle Factors, all of which are associated with qualities of heat, coldness, moistness, and dryness that can either benefit or be harmful. These include: Environmental Air & Breathing; Food & Drink; Movement & Rest; Sleep & Wakefulness; Emotions and Feelings; Elimination.

Lifestyle factors influence humours by the qualities they exert, for example certain foods such as ginger have heating properties and would therefore increase heat within the body; exercise too, would increase heat; sleep has a cooling effect and emotions such as grief are associated with cold and dryness. Whilst physis is responsible to restore balance to the qualities of the humours to be the same as the overall qualities of the temperamental combination, this is not possible if lifestyle factors are not effectively managed to maintain this qualitative harmony between the humours and temperament. Lifestyle factors are ultimately the cause/s of both health and disease.

Qualities

Without the technology of today, Tibb philosophers devised imaginative ways of interpreting information in a rationale, logical and systematic way. In Tibb philosophy, qualities form the basis of interpreting aetiology, pathology, diagnosis, and treatment. In addition to qualities used to describe temperament, humours, and lifestyle factors, qualities are used to describe the following:

Qualities associated with illness conditions

Just as different temperamental types are associated with different qualities, illness conditions are also characterized in terms of qualities, interpreted from the signs and symptoms associated with the particular condition. Most, if not all illness conditions begin with an excess of one of the four qualities of heat, coldness, moistness, and dryness, as well as a second associated quality. An example of this is the common cold which typically develops in the cold season of the year. If this cold imbalance is not corrected, colds and flu like symptoms develop and are often associated with an increase in mucous production such as a runny or congested nose, productive cough etc. Therefore, colds and flu are associated with qualities of coldness with moistness. Similarly, constipation is linked to qualities of dryness with coldness as intestinal motility slows and the level of fluid is low resulting in the formation of dry, hard, dehydrated stools.

Qualities in treatment protocols

Recognition of qualities, especially the dominant quality associated with illness conditions allows for a targeted approach to treatment in keeping with the traditional approach of allo-pathic medicine, where the word “allo” is the Greek term for opposite¹¹. Therefore, treatment in Tibb is opposite to the quality/ies associated with the illness condition.

Treatment based on the concept of opposites is relevant to both pharmacotherapy and the Tibb Lifestyle Factors. For instance, medication formulated to treat a cold and flu will not only include the pharmacological action that will counter/be opposite to the symptoms of a Cold and Flu but also has qualities that is opposite to the signs and symptoms of flu. For example, the pharmacological action of *Zingiber officinale* (ginger) is often included in common cold formulations, as it counteracts the specific symptoms of runny nose, fever/chills; however, it also has Heating qualities which oppose the Cold & Moist symptoms⁸.

Whilst a person's temperament is fixed, (with an ideal qualitative state) the different stages of a person's life from infancy to old age influences disease conditions that a person may be inclined to. For example, during infancy and early childhood most illnesses are associated with moistness/phlegmatic humour (phlegm disorders, vomiting, diarrhoea etc.), teenagers/early adulthood with heat/bilious humour (acne, inflammation) and late adulthood with dryness/melancholic humour (osteoporosis, arthritis). Gender also influences predispositions as females are more moist than males.

Interpreting Covid-19 within the context of Tibb philosophy

Pathophysiology of Covid-19

The signs and symptoms of Covid-19 include fever, chills, fatigue, dry cough, and shortness of breath, which progresses to fibrosing of the lungs, with lower oxygen levels. These signs and symptoms from a Tibb perspective are linked to Cold & Dry qualities, which are associated with the melancholic humour.

A study conducted by Samuel B. Polak, to correlate histopathological findings with various clinical stages of Covid-19, has identified three consecutive stages of increasing severity. The early stage is characterized by infection with SARS-CoV-2. In this phase, flu-like symptoms can develop, mainly due to the viral infection itself. Subsequently, patients can develop viral pneumonia, requiring hospitalization, or even mechanical ventilation. The second stage is also characterized by pulmonary inflammation and coagulopathy. Finally, the third stage of the disease is characterized by fibrosing of pulmonary tissue¹².

According to Florian Götzinger¹³, available reports to date show that Covid-19 seems to be uncommon in children and adolescence. Research also suggests that older male patients >65 years old, is more likely to have a severe type of Covid-19. Men generally develop more serious cases than women, according to the clinical classification of severity. The number of men is 2.4 times that of women amongst deceased infected patients. While men and women has approximately the same susceptibility, men were more prone to dying than woman in a study conducted by¹⁴.

Covid-19 within the context of Tibb Philosophy

Interpreting Covid-19 within the context of the Tibb philosophy with respect to the risk factors highlights that:

- Individuals with a phlegmatic, melancholic combination will therefore be more at risk because of the dominant quality of cold – more particularly those with a dominant melancholic temperament associated with Cold & Dry qualities.
- Children and young adults are predominantly moist with heating qualities; thus, the coagulating action of the melancholic humour is hindered during this phase of life. The moisture and heat combat the effects of the Dry & Cold qualities associated with the melancholic imbalance of Covid-19. Unfortunately, the life cycle progression to Cold & Dry qualities which we mentioned above (melancholic humour) makes the elderly at the greatest risk.
- The melancholic humour having cold and dry qualities is associated with coagulating properties, is ultimately the main cause of fibrosing of pulmonary tissue.
- With respect to gender, men are generally more prone to severe forms of Covid-19. This is due to their high levels of muscular tissue and testosterone, which increases the qualities of dryness in the system, thus stimulating disease progression.

In addition to the above interpretation within the context of the Tibb philosophy, the weakening of physis with age to restore homeostasis, also impacts the outcome of Covid-19 as well as chronic conditions associated with the elderly. The functioning of physis is impaired as the melancholic humour predominates with age, due to reduction in optimal levels of heat and moisture needed for physis to operate efficiently.

Conclusion

The philosophical principles of Tibb based on the temperamental and humoral theory provides a comprehensive understanding of interpreting risk factors and pathophysiology of Covid-19. Hence, Tibb philosophy can provide a preventative approach based on lifestyle, to avoid the accumulation of the melancholic humour linked to Covid -19. Furthermore, the humoral theory provides a basis for the management of Covid -19 to restore internal homeostasis and optimal immune functioning.

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