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Open Access Brief Report

Crescent Journal of Medical and Biological Sciences
Vol. 7, No. 2, April 2020, 291–294
eISSN 2148-9696

A New Outlook on Hypertension (Avicenna's Viewpoints)

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Abstract

Objectives: Regarding the increasing prevalence of hypertension and its associated disabilities, it is beneficial for physicians to build on the potential of other medical schools like Persian medicine (PM) as it can provide useful knowledge of the factors leading to hypertension by identifying its pathogenesis in another medical attitude. Thus, the present study aimed at applying a strategy to prevent and treat hypertension.

Materials and Methods: The current qualitative brief report was initiated by reviewing valid databases. Subsequently, the risk factors of hypertension were extracted using keywords such as "hypertension", "high blood pressure", "prevalence", "epidemiology", and "predisposing and risk factors". Then, each of these factors was conceptually matched to the fundamentals (4 qualities or *Mizaj*) of PM by Avicenna in his book named "The Canon of Medicine.

Results: The known risk factors of hypertension were prone to occur in an individual before the onset of clinical hypertension due to his/her increased coldness (six items) and increased dryness (seven items). Given a few reports taking hypertension more associated with the warmth quality, it is probable that the patients with hypertension have a basically warm temperament, but they experience hypertension upon encountering with factors that result in increased coldness and dryness.

Conclusions: Overall, the etiology and pathogenesis of hypertension can be better understood according to four qualities in PM. Therefore, hypertension is preventable in risky people by making modifications in lifestyle, and hence, changes in body qualities and orientation toward a relatively balanced state.

Keywords: Avicenna, Hypertension, *Mizaj*, Persian medicine, Temperament

Introduction

In ancient and medieval times, the main medicine philosophy was based on the Galenic four-element theory of matter or humoral theory (1). In addition, Persian medicine (PM) was mainly practiced in Muslim countries and was very similar to Unani medicine (2). The principle of this medical school is the idea of four qualities (i.e., hot, cold, wet, and dry). In PM, for example, alterations in the four qualities, the temperament, and humors are taken into account in Avicenna's book called *the Canon of Medicine* (3).

According to PM, all living and non-living organisms are made up of four elements of fire, air, water, and soil. *Fire* is warm and dry, the *air* is warm and wet, *water* is cold and wet, and the *soil* is cold and dry (3). Foods and beverages, which consist of a combination of these four elements, are transformed into four humors in the human body according to bodily conditions and individual's temperament (3, 4).

Historically, hypertension has not been fully defined in ancient Unani and Persian medical sources. Ancient physicians have probably diagnosed and managed it only based on its separate symptoms over centuries due to the lack of a standard tool for measuring the blood pressure (5).

Since there is no equivalence for hypertension in the PM textbooks, one can diagnose the basic cause of the disease considering the principles of PM by matching the common qualities as the risk factors of hypertension. Accordingly, it is possible to better explain the disease from the viewpoint of PM and suggest preventive or even therapeutic measures in this regard.

Due to the increasing prevalence of hypertension and its cardiovascular complications, the present study sought to establish a correspondence between the risk factors for hypertension and four qualities in PM.

Materials and Methods

This qualitative study reviewed the valid databases including PubMed, Scopus, Web of Science, and Science Direct. Then, the known risk factors of hypertension were obtained utilizing keywords like "hypertension",

Received 8 December 2018, **Accepted** 23 March 2019, **Available online** 17 April 2019

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"high blood pressure", "prevalence", "epidemiology" and "predisposing and the risk factors". After surveying about 78 articles and some published textbooks (1990-2018), each of these factors was conceptually matched into the principals (i.e., four qualities) of PM based on the available reference books (e.g., *The Canon of Medicine, Zakhireye Khwarzam Shahi, Khulasah al-Hikmah, Kamel al-Sana'a al-Tebbiya, Makhzan Al Adviyeh, Manafe-Al-aghziye va Dafe Mazarha, and Al Moalijat-Al-Buqatiya*) in PM (3, 6-11), Finally, the results were reported.

Results

Although the exact cause of 95% of hypertensive cases remains unknown, some risk factors include age, stress, depression, sex, race, obesity, high salt intake, excessive alcohol consumption, immobility and physical inactivity, a decreased number of nephrons, and personality traits (12).

To better understand these predisposing factors, these underlying causes were translated into the well-known qualities of PM in order to find and extract the main qualities which cause hypertension in the human body.

According to PM, three of the aforementioned risk factors of hypertension (i.e., age, stress, and depression) are associated with a rise in cold and dry qualities in the body (3).

It is reported that the average systolic blood pressure is higher in males as compared to females during early adulthood (13). Based on the notions of PM, young men tend to have a warmer and drier temperament than women of the same age (14).

On the other hand, hypertension is more prevalent among black Americans than in white American people (13). Based on PM principles, the blacks have generally a warmer temperament when compared to the whites because the majority of dark-skinned people have larger bodies and wide chests. In addition, PM physicians maintain that having large chests and protruding blood vessels signify the warm temperament (3).

Moreover, increased blood pressure is directly related to body weight gain. People with a 20% increase in body mass index are more prone to hypertension (13). Further, obesity in the PM is directly attributed to increased wetness in the body (3). Obesity also causes interruptions in blood circulation and leads to cold dys-temperament (*Sui'-e-Mizaj*), namely, a change in the whole body or an organ temperament, thickening the blood in the body (3).

PM principles hold that the consumption of salt or alcohol increases the warm and dry qualities in an individual (3).

Conversely, physical activities such as Yoga can decrease hypertension (15). According to PM, inactivity can increase coldness and wetness in the body (3).

The reduced number of nephrons and kidney failure can lead to high blood pressure as well (13). From the perspective of PM, life and growth arise from intrinsic wetness and warmth, and increased cold and dry qualities are followed by the occurrence of apoptosis and cellular degradation (3).

Similarly, from the viewpoint of PM, the slowness of the senses is generally justified by increased coldness which leads to a reduction in the response of the body or an organ to external stimuli. Therefore, insulin resistance may be a kind of slowness or dullness of senses due to increased coldness (cold dys-temperament) in an organ (like pancreas) or the entire body (3). The qualities of the body and the risk factors of hypertension are summarized in Table 1.

The obtained results proved that dryness (n=7) and coldness (n=6) are among the most prevalent contributors to the development of hypertension in this kind of approach, respectively (Figure 1).

Discussion

Regarding the notions of temperament and humor, especially the four qualities, the current study focused on the associations between the known risk factors for hypertension and the four qualities in PM. By identifying

Table 1. Qualities Corresponding With Known Risk Factors for Hypertension

Predisposing Factors	Qualities			
	Warmth	Coldness	Dryness	Wetness
Aging	-	+	+	-
Stress	-	+	+	-
Depression	-	+	+	-
Male	+	-	+	-
Black race	+	-	-	-
Obesity	-	-	-	+
Excessive salt intake	+	-	+	-
Excessive alcohol consumption	+	-	+	-
Inactivity	-	+	-	+
Insulin resistance	-	+	-	-
Reduced number of nephrons	-	+	+	-
Personality traits	+	-	-	-
Total Plus (+)	5	6	7	2

Note: (-) and (+) stand for "not having" and "having", respectively.

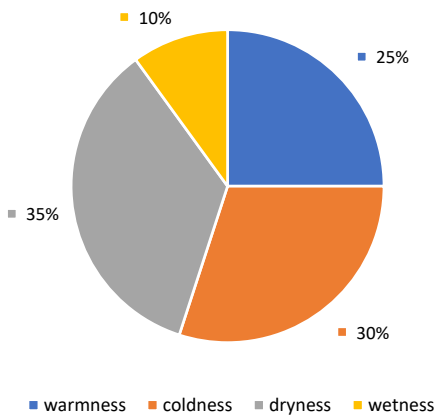

Figure 1. Percentage of Four Qualities (i.e., warmness, coldness, dryness, and wetness) as Risk Factors of Hypertension.

the common qualities that are latent in the underlying causes, it is possible to provide a pattern of the dominated qualities that can predispose a person to hypertension and thus facilitate future treatment procedures or more detailed basic research.

Based on previous research, hypertension seems to be associated with warm temperament (16). Our findings showed that dryness (35%) and coldness (30%) are the most common effective qualities in the development of hypertension, respectively. Further, warmness and wetness had an impact of 25% and 10%, respectively. Given the above-mentioned findings, it is assumed that the basic temperament of patients with hypertension is most likely to be initially warm (16) but it tends to become increasingly cold and dry upon exposure to the risk factors of hypertension.

Mohkam declares that disorders including heart pump dysfunction may occur as a result of the warmth dys-temperament of the heart or dry dys-temperament of vessels (due to *Sauda* sedimentation and atherosclerosis), and the involvement of the other organs such as the kidneys, liver, and the nervous system, leading to hypertension (17). The main idea of Mohkam's study is in line with our assumption. According to Avicenna's beliefs, the abnormal sedimentation of black bile (*Sauda*) or increased cold and dry qualities result in both the hardness of the vessel walls and decreased vessel flexibility due to atherosclerosis (3, 5).

The role of imbalance among the four qualities or dys-temperament was confirmed in the development of many diseases (18-20). For instance, Puttonen et al found that coronary artery diseases are more common in some temperaments (21).

Similar results were also observed in a study by Hintsanen et al (22). It was also demonstrated that cardiac risk factors are more prevalent in certain temperaments. In this study, the temperament of the cases was measured by Cloninger's Temperament, that is, novelty seeking, harm avoidance, reward dependence (RD), and Persistence (P) which later emerged as a distinct fourth temperament (P was a type of RD). Then, P and RD temperament had a high level of cardiac risk factors and coronary heart diseases (23). Furthermore, RD temperament (i.e., sentimentality, attachment, and dependence subscales) is similar to cold and dry temperament in PM (3, 14). In another study by Saman et al. in the Aligarh University of India (24), the polycystic ovarian disease was associated with cold and wet temperament or increased phlegm (*Balgham*). In a similar study conducted by the above-mentioned researcher, cervicitis was attributed to the sanguine *(Dam)* dys-temperament and increased warmth and wetness (25).

In another study, menopausal symptoms were related to black bile humor (*Sauda*) dominancy or increased coldness and dryness (26). In a similar study, primary dysmenorrheal was prevalent in patients with cold as compared to hot temperament (19).

Conclusions

In general, hypertension can be prevented in high-risk people by making modifications in their lifestyle and recommending a limited number of herbs or foods that have the opposite quality (e.g., the warm and wet qualities of the risk factors if the patient is faced the cold and dry type of risk factors). Hence, changes in body qualities and orientation towards a relatively balanced state can help the patient to return to a healthy condition. Consequently, the etiology and pathogenesis of hypertension can be better understood by considering the concept of four qualities in PM.

Conflict of Interests

The authors declare that there is no conflict of interest.

Ethical Issues

This study obtained the Ethical Approval from the Ethical and Research Committee of Iran University of Medical Sciences on 21 November 2017 (under the registration code of IR.IUMS.REC1396.9321309003). However, we received no financial support for conducting the research.

Financial Support

We received no financial support for conducting the research.

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