



Review Article

Milestones in Understanding and Management of Hypertension through Ages: Historical Perspective

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A B S T R A C T

The history of hypertension goes back a long way. Ancient Chinese and Indian Physicians felt the quality of an individual's pulse by palpation and considered it as an indicator for the conditions of the cardiovascular system. What was called "hard pulse" possibly would qualify for the modern term of hypertension.

Frederick Akbar Mahomed, an Irish-Indian physician, first described condition that known as "essential hypertension" separating it from vascular changes that founds in chronic glomerulonephritis such as Bright's disease, in nineteenth century. He also described that high Blood pressure may be found in apparently healthy persons, that high blood pressure was more exist in old persons and that kidney; heart and brain may be affected by high arterial tension.^{21,22}

In the early twentieth century, mercury sphygmomanometer was invented and systolic and diastolic blood pressure were defined by appearance/ disappearance of Korotkoff sounds as heard *via* the stethoscope, and then present quantitative idea of hypertension means systolic and diastolic categories existed. The monitoring of BP by sphygmomanometer becomes a part of routine physical examination since middle of twentieth century.²

Keywords:

Introduction

Hypertension is corresponds to "Imtila" (Plethora, Repletion) as described by O. Cameron Gruner in "A treatise on the Canon of medicine of Avicenna" that the modern term "hypertension" is covered by the old term of plethora or repletion. The resemblance is verified by some of its symptoms like Redness of colour of body, Inflation of the veins, Distension of slain, Fullness of pulse, etc.

Further, he explained that Plethora: "Passive congestion" is

over-repletion with blood; it is associated with stasis, while "Active congestion" is equivalent to "waram, "apostema". Oedema is over-repletion with lymph (serous humour); it is associated with stasis in the lymphatic channels or serous cavities. The practical result is that the channels cannot drain or empty within the available time. Hypertension is a form of plethora.¹

The history of hypertension goes back a long way. In ancient Chinese and Indian Ayurvedic medicine, the quality of



an individual's pulse, as felt by gentle palpation by the trained physician, was a window into the condition of the cardiovascular system. What was called "hard pulse" possibly would qualify for the modern term of hypertension.²

The George Ebers Papyrus, also known as Papyrus Ebers, is an Egyptian Compilation of Medical Texts dated about 1550 BC. This papyrus contains a "treatise on the heart". It notes that the heart is the center of the blood supply, with vessels attached for every member of the body. The Egyptians seem to have known little about the kidneys and made the heart the meeting point of a number of vessels which carried all the fluids of the body—blood, tears, urine and semen.³

The Ancient Egyptians were known about anatomy and physiology. They give importance to the heart and brain, Heart was considered vital organ and heart beat was detected by the pulse,⁴ they believed that the pulse was the speech of the heart.⁵

Pulse diagnosis is a diagnostic technique used in Ayurveda, traditional Chinese medicine, Siddha medicine, and Unani. In Ayurveda, advocates claim that by taking a pulse examination, humoral imbalances such as the three Doshas (Vata, Pitta, and Kapha) can be diagnosed.⁶ The ayurvedic pulse also claims to determine the balance of three forces (*Prana*, *Tejas*, and *Ojas*).^{7,8,9}

Nei-Ching an ancient Chinese medical text that is the fundamental doctrinal source for Chinese medicine contains a complete chapter on the pulse. This manuscript is reported to be written by the *Yellow Emperor; Huang Ti* (698-598 BC). The principal means of diagnosis employed in the *Nei-Ching* is the physical examination of the arterial pulse.¹² sites are described for examination of the pulse in one hand; the main site for the pulse assessment prefers the radial artery.^{4,10}

Greek Medicine

The word "artery" originated from the Greek word "ἀρτηρία" which seems to be derived from the word "ἀρ" which means air.¹¹

Erasistratus a Greek physician, gave the term arteries to blood vessels and distinguish between arteries and veins because he believed that artery full of air and that they carried the animal spirit (pneuma). He also described that the semilunar and tricuspid valves of the heart play a crucial role in unidirectional flow of blood.^{12,13}

Aristotle an ancient Greek philosopher (384-322) said that heart is origin of blood vessels and give the term blood vessels to the channels of blood.⁴ *Herophilus* differentiate artery and vein describing that artery is thicker than vein in structure.⁴

After that Galen in live demonstration has described about

the arteries that these not only contain the pneuma but also contain the blood but due to the importance of pneuma the nomenclature of vessels remains unchanged. The words meaning of arteries is the "vessels which carries the pneuma". The British also continue the same name.¹³

The examination of the pulse was also described and defined in the Hippocratic writings. Despite *Hippocrates* (375 BC) being reported to describe the characteristics of the arterial pulse in several conditions such as fever and lethargy in his book on humors^{14,15} and *Praxagoras* discovered that pulsation only occurs in the arteries, not in the veins.¹⁶

Ibn al-Nafis (1210-1288) an Arab physician is first to describe the pulmonary circulation of the blood. The theory of *Ibn al-Nafis* (1213-1288) on pulmonary circulation pre-dates the much later discovery of William Harvey; (1578-1657) both theories attempt to explain circulation.⁴

The modern history of hypertension starts with the study of the cardiovascular system based on the work of physician William Harvey (1578-1657), who described the circulation of blood in his book "*De motu cordis*".¹⁷

The blood pressure is an estimate of the pressure exerted against the vessel wall by the column of blood. Blood pressure was first measured in horse in 1733, by Reverend Stephen Hales with a long tube of about 9 feet in length.¹⁸

A French doctor René Laennec invented an important instrument for monitoring blood pressure, in 1817.¹⁹

In 1828, French physician Jean Poiseuille reduced the length of tube to one foot and used mercury to balance the column of blood. In 1847, Karl Ludwig placed a float on the top of mercury column and made continuous recording possible.

Blood pressure is measured by two methods viz. direct method & indirect method.¹⁸

Invention of the indirect method for measuring BP is credited to the Austrian-Jewish physician Samuel Siegfried Karl Ritter von Basch (1837-1905); in 1881, which used a water-filled bag connected to a manometer to occlude the arterial pulse.²⁰

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An Italian Clinician Scipione Riva-Rocci launched the first blood pressure monitor (sphygmomanometer) with the pneumatic cuff made-up by Dunlop in 1896. Even now the 2-inch wide cuff is not big enough to provide accurate measures. In 1905, Russian physician Nikolai Korotkov was able to determine the diastolic blood pressure by his better version of the sphygmomanometer.¹⁹ In 1911, the term essential hypertension was invented by *Eberhard Frank* to describe high blood pressure that does not have known cause.²³ In 1928, a physicians from the Mayo Clinic invented the term malignant hypertension to explain a syndrome of very high blood pressure, inadequate kidney function and severe retinopathy which usually cause death within a year from strokes, heart failure or kidney failure.²⁴

Accordingly, hypertension was often classified into two types “malignant” and “benign.” John Hay, Professor of Medicine at University of Liverpool UK noted in 1931 that the greatest danger to a man with a high blood pressure lies in its discovery.^{25,26} An renowned US cardiologist Paul Dudley White was replicates this opinion in 1937 and recommended that “hypertension may be an important compensatory mechanism which should not be tampered with, even if we were certain that we could control it”.²⁷

Charles Friedberg described in his book “Diseases of the Heart” (1949) that “people having ‘mild benign’ hypertension (210/ 100 mm Hg) need not to be treated, and in 1950 also believed that “benign” hypertension was not harmless.²⁸ But for next decade various evidence collected from actuarial reports,²⁹ and many studies, such as the Framingham Heart Study,³⁰ that cardiovascular disease and death increased due to “benign” hypertension, and that these risks increased with increasing blood pressure across the whole spectrum of population blood pressures.¹⁷

Japanese company Panasonic released a compact and automatic wrist cuff to measure your blood pressure in 1993.

In Year 2010, French company Withings released the Smart Blood Pressure Monitor, which could be plugged directly into an iPhone, iPad or iPod Touch.

In Year 2014, following the success of the original BP monitor, Withings launched the Wireless Blood Pressure Monitor. This model offered more compatibility options. You could use it with Android or IOS devices, wirelessly, or with your device’s cable. Later, Nokia offered compact wireless blood-pressure monitors BPM and BPM+.¹⁹

Conflicts of Interest: None

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