Unani aspect of cardiac arrhythmia- A review

Muzafar Din Ahmad Bhat, A B Khan & M H Hakim

Department of Moalijat, Ajmal Khan Tibbiya College, Aligarh Muslim University, Aligarh 202 002, Uttar Pradesh
E-mail: drmuzaffar@rediffmail.com

Received 26 August 2008; revised 4 November 2009

Arrhythmias have accounted for significant cardiac morbidities and mortalities over the past few decades. Although some arrhythmias may appear benign or potentially dangerous, the major causes of sudden cardiac arrest are direct results of ventricular tachycardia (VT) and/or ventricular fibrillation (VF). In Tibb-e-Unani, there is no concept of cardiac dysrhythmia as such. But many signs and symptoms of cardiac dysrhythmia are described as diseases, e.g. Khafqan (palpitation), Gashi (syncope), Zoaf-e-qalab (heart weakness) Zigatul qalab, and Qazaful qalab. The basic concept of cardiac dysrhythmia is given as collaborative efforts of both Unani and modern medicine. All authentic books of Tibb-e-Unani such as Al-Qanun Fittib, Kitabul Hawi, and Kamil-u-Sana explain about these basic signs and symptoms in right perspective.

Keywords: Unani drugs, Cardiac arrhythmia

IPC Int. CL.5: A61K36/00, A61P9/00, A61P9/04, A61P9/06

The incessant rhythmic action of the heart is a remarkable phenomenon of nature. Ever since the age of antiquity, people realize the importance of beating heart and its relation to pulse beat and warm blood. A cardiac arrhythmia is a disturbance in the electrical rhythm of the heart; this may be paroxysmal or continuous and may cause sudden death, syncope, heart failure, light-headedness, palpitation or no symptoms at all. In Tibb-e-Unani, cardiac arrhythmia is not as such reported, but it is known in terms of khafqan (palpitation), Gashi (syncope), Zoaf-e-qalab, Zigatul qalab, and Qazaful qalab. It was the Greek philosopher-physician Hippocrate (460-377 BC), who established that disease was a natural process and its symptoms were the reactions of the body to the disease. The basis of health is the right proportion and specific equilibrium of Akhlat (humors) according to their quality and quantity, i.e. homeostasis in the internal environment of the body is maintained and the body remains healthy. Most of the Unani physicians have stated that minor causes affect the heart and cause palpitation and syncope and the person, who often gets severe attacks of syncope, without any known cause is liable to sudden death. Although cardiac arrhythmias were poorly understood until the twentieth century, physicians have palpated the pulse since antiquity. It was mentioned that the heart is the source of heat and blood vessels carried pneuma the life sustaining spirit of the vital organs and the purpose of the valves is to prevent the reversal of blood flow. Ali-bin-Abbass majoosi (930-994 AD) wrote about the Galen that a person was suffering from khafkan every year; Galen did repeatedly Fasad (venesection) of this patient for few years and then that person never suffered from khafkan. Naæes bin Auz Kirmani wrote that the cause of Gashi (syncope) is the weakness of heart. If volume of ruh decreases, it disturbs the temperament of Qalab (heart), makes it weak and ruh will not perfuse into the organs and organs due to lack of capability of accepting the ruh nafšani (psychic pneuma) results in loss of sensation and movement called Gashi (syncope). Ibn Nafis (1210-1288 AD) vividly described the correct anatomy of heart and circulation. Ibn Sina (980-1037 AD) maintains that heart is a muscular organ whose muscle has a distinct property than the other muscle. The quwa provides the basis for different bodily function. Each and every organ is furnished with a power (quwat), through which specific physiological functions are performed by that particular organ. There are three major divisions of quwa of the body.
quwat-e-haywaniyath (vital faculties) which furnished hayat (vitality) to the organs, to enable them to receive quwat-e-nafsaniyath (mental power), to accomplish various activities of life. The organs concerned with this faculty are known as aza-e-haywaniyath. Among these qua'wa one qua'wat is qawat-e-failah (efficient power) which causes contraction and relaxation in the heart and arteries. Unani scholars mentioned khafkan (palpitation), Gashi (syncope), zoaf-e-qalab (weakness of heart), zigat-e-qalab, gazaful qalab and different types of pulses, which are signs and symptoms of cardiac arrhythmia but they have not described the cardiac arrhythmia as such, because technology was not so advanced in those days.

**Khafkan**

**Khafkan** is a type of heartbeat which is produced by the heart to expel out, the noxious agent. When the intensity of this agent increases it results in Gashi and further enhancement of Gashi causes death of the person. This agent may be present in qalab (heart), in the gilaf-e-qalab (pericardium) or in adjacent organs. This noxious matter may be khilti (humorous) or gayer khilti (non-humorous), waram (inflammation) or tafaaraq-wa-itsaal. Burhanuddin Ibn-Nafis mentioned that khafkan is a sari (rapid), mutwatir (continuous) and muztarib (irregular) heart beat. Khafkan is an abnormal heartbeat, when become severe, heart become weak and causes Gashi, and sometimes results in death. There are four causes of khafkan which include: Su-mizaj sada which is simple imbalance of temperament where change in heat, cold, moisture and dryness takes place. Su-mizaj madi is the abnormal temperament in which the specific state of equilibrium (homeostasis) is disturbed due to change in specific ratio of kammiyat and kayfiyat (quantity and quality) of akhlat (humour) locally or generally. In this condition, there may be deficiency of a madah or it’s excess.

Four types of Su-mizaj madi are: Su-mizaj damvi (imbalance of temperament of blood); Su-mizaj balghami (imbalance of temperament of phlegm); Su-mizaj safravi (imbalance of temperament of bile) and Su-mizaj sawdawi (imbalance of temperament of black bile). This Su-mizaj causes the change in the pulse, which is associated with hot flashes and dysnoea and may progress to Gashi or sudden death.

In Zakawt-e-hiss (hypersensitivity of heart), the heart gets affected by least noxious agents like fear, anger, etc. In Zoaf-e-qalab (Weakness of heart), the heart is affected by the least noxious agents. The difference between zakawt-e-hiss and zoaf-e-qalab is that in the former, pulse is stronger and other functions of the heart will be normal, but in later the pulse will be weak and other functions of the heart will also be affected. Increased blood volume, obstruction in the transport of blood and ruh (oxygen) by sudah (embolism), pulse becomes abnormal in its length and breadth. Sometimes khafkan is caused by poison either taken orally or by biting of poisonous animals, Tashahamul-qalab (increased fat in the walls of heart), Azam-ul-qalab (hypertrophy of the heart muscle), and Itsaul-qalab (dilatation of heart). Sometimes it may occur due to other disease like Ikhtinaqul raham (hysteria), Kasrat haiz (menorrhagia), Ahtibasi-haiz (amenorrhoea), Naqras (gout), Waj-ul-mufasil (arthritis), Dual-raqas (chorea), Sarra (epilepsy), and Zutuliya (pneumonia). Palpitations are described as skipped beats, a sudden thump, hard beating, fluttering in the chest, jittery sensation, a rapid pulse, or as nearly a vague feeling that their heart is irregular. It is often described as a sensation of an empty feeling or no heartbeat ended by a thumb. Unani scholars have described the symptoms of khafkan as fast heartbeats. Sometimes patient feels pain and tenderness in cardiac area, which makes the patient unable to sleep on left side All those patients who are prone to khafkan and Gashi are susceptible to sudden death. It is also caused when heart fails to contract or relax.

**Gashi (syncope)**

Gashi is the name of the condition in which most of the motor and sensory functions of the body vanished but respiratory movements remains intact and tactile sensation is also preserved up to some extent. A person who experiences repeated attacks of syncope without any known cause will die suddenly. If there is no asabab-e-madi (material cause) or asabab-e-sabiqa (direct cause) of Gashi and patient is suffering from recurrent khafkan and Gashi, then it is due to cardiac cause and patient could die suddenly in any attack. Gashi means sudden tahltul (dissolution) of quwat-e-haywani (vital faculty). When the heart is harmed by any noxious substance, its power of perception and beating often gets adversely affected and the person become unconscious lead to khafkan,
Gashi and causes death\textsuperscript{9,13,14}. Gashi qalbi (cardiac syncope) is often sudden and patient becomes unconscious, peripheries become cold, slow breathing, pulse become weak, colour of the skin becomes yellowish and could not listen the sounds clearly\textsuperscript{9,13,14,18,27}. In modern system of medicine, the cardiac syncope is often sudden in its onset is frequently unaccompanied by any prodrome\textsuperscript{28}. Gashi causes death mainly due to dissolution of ruh (vital spirit) or due to condensation of ruh\textsuperscript{16}. There may be three conditions in Gashi qalbi (cardiac syncope); it may be fatal or mortal, which is further of 2 types, it may cause maut-e-fajah (sudden death) or delayed death. The sudden death may or may not be preceded by syncope, there may be only Gashi, which could be fatal or not and the conditions which affects the heart reversibly and due to their severity, may results in Gashi or some other cardiac problem\textsuperscript{27}. It is well established that syncope related to a cardiac cause is associated with a relatively high sudden death rate\textsuperscript{28}.

**Zoaf-e-qalab**

The word zoaf means weakness or deficiency/excess of one or all of the qwawa-e-arba (four faculties). If this condition remains within normal limits, the organ will function normally and its temperament will remain normal. If there occurs any disturbance in this equilibrium, it will lead to an abnormal temperament, which in turn affects the qwawa-e-arba (quwat-e-haywaniyah, quwat-e-nafsaniyah, quwat-e-tabbiya, quwat-e- tanasuluya) of that organ, so that the organ could not function normally. Any condition, which affects the normal functioning of the heart, is called zoaf-e-qalab (weakness of heart). The normal temperament of heart means that ruh haywani (vital pneumonia) and hararat-e-garazia (innate heat) should be in large quantity in heart and there should be no itilhab (inflammation) and dukhnyat (carbon dioxide)\textsuperscript{11}. When zoaf-e-qalab takes place, the ruh (oxygen) does not reach the organ in sufficient amount\textsuperscript{10}. Zoaf-e-qalab is a disease in which the patient becomes very weak which delays the functioning of the heart and heart becomes weak. In Mi'atul Hikmat, zoaf-e-qalab is defined as a disease, in which the heart becomes weak, heart starts beating rapidly, there is blurring of vision, sweating, sometimes the colour of the face become yellowish and the patient becomes unconscious\textsuperscript{29,29}.

**Zigatal Qalab**

Literally it means drowning of the heart\textsuperscript{30,31}. In Moalijat-e-Bukratiya, it is described as a melancholic disease of heart\textsuperscript{21}, in which the patient feels that his heart has stopped beating. It is associated with drowsiness and dribbling of saliva\textsuperscript{21,30,31}. It has been correlated with stokes adams disease\textsuperscript{30,31}. In this disease, the pulse becomes very slow which is associated with dizziness or syncope. Due to weakness of heart, the pulse becomes slow and irregular\textsuperscript{30,31}. Some Unani scholars have not made any difference between khaften and ikhtilaj-e-qalab but there is a difference, in former, heartbeat becomes strong and in latter, it becomes rapid and irregular. In ikhtilaj-e-qalab, the heart fibrillates while in Qazaful qalab, patient feels that his heart is coming out of the chest which has been correlated with tachycardia\textsuperscript{21,30,31}.

**Al-Nabz (the pulse)**

Unani Physicians were observing pulse for diagnosing the disease. Pulses such as the pulsus serratus, or saw shaped pulse, the thread pulse and the pulsus myurus (a pulse described as having diminishing strength which tapers like a rat’s tail) have been described\textsuperscript{33}. Pulse is a movement in the vessels of pneumonia, which comprises expansion and contraction The purpose of this movement is to temper pneumonia with breeze\textsuperscript{4,12,16,24,25,32,33}. Each pulse beat comprises of two movements and two pauses-Expansion: Pause; Contraction: Pause\textsuperscript{4,12,16,24,25,32,33}. According to Unani physicians, there are ten features in the pulse from which which discerns the states of the body\textsuperscript{4,12,24,25,33}. These include amount of expansion (mqadar inbisat); quality of the impact imparted to the finger of the observer at each beat (kafiyat-e-qara); duration of movement (zamanah-al-harkat); duration of pause (zamanah-al-sukun); consistency of artery (qiwarm-al-alah); emptiness or fullness of the vessel between the beats (khala-waintila); the feeling-whether hot or cold (malmas); equality or inequality of force in successive beats (istwa-wa-ikhtilaf); regularity or irregularity, rhythmic or dysrhythmic (nizam-wa-adamnizam); and metre, rhythm, harmony, accent (al-wazan). The irregular pulse is found in atrial fibrillation and occasional irregularities are likely to be due to extra systole\textsuperscript{34,35}. A large number of abnormal pulses have been described in Tibbi literature with their ashab (causes) leading to the diagnosis of various diseases of the vessel walls, disease of the heart, and of the other organs and systems of the body directly or indirectly affecting the heart\textsuperscript{4}. The examination of pulse is one
of the most important parts of clinical examination. Following types of irregular pulses are described in Tibbi literature.

Nabz Gazalee (Gazelle pulse) or Goatleap pulse is the unequal pulse varying in one part; it is slow but later on becomes rapid.

Nabz Moaji (Wavy pulse, undulatory pulse) the beat is too soon or too late. The pulse is soft but it is not very small; has some breadth. It is like waves, which follow one another in orderly manner and yet in the extent of rise and fall, and in swiftness and slowness. The irregularity is in respect of thickness, smallness, height and breadth of the parts of the artery.

Nabz Doodi (Vermicular pulse or creeping pulse) is similar to the wavy pulse, but is small and very regular; it’s regularity causes it to be mistaken for a swift pulse though it is not so.

Nabz Namle (Ant-like pulse or formicant pulse) is smaller and still more regular than the vermicular pulse. It differs from vermicular pulse in the great ease with which upward rise, ante position of beat or postposition is perceived. Irregularity of breadth is hardly perceptible.

Nabz Manshari (Serrate pulse or arsh pulse) resembles the wavy pulse in inequality of the various parts, rise, breadth, ante position and post position. It differs, however, in being harder though the hardness is not uniform. Hence, the serrate pulse is swift, continuous and hard; its part differs in size of expansion and in hardness and softness.

Nabz Zinabulfar (Mouse tail pulse) refers to the progressive inequality of the components from decrease to increase, from increase to decrease. This may apply to several beats or only to one beat or only to a part of beat. This inequality is in respect of volume, or of slowness or of weakness.

Nabz Zinab Misalli (Spindle shaped pulse or recurrent pulse) starts from smallness and increases up to a certain limit. Then it declines and comes back to the original position. It is like two mouse tail joined to each other at the base.

Nabz Zulqaruttain (Dicrotic pulse) is regarded it as single beat varying in anteposition and postposition while others regard it to be a dual beat. The intermission between the two beats is not so much as to facilitate for a movement of contraction and then expansion. This type of pulse is found in extra systoles.

In Nabz Zulfitra (Intermittent pulse), a pause appears when movement is expected.

In Nabz Waqae Fil Wast (Fading or falling pulse, Supernumerary pulse) an extra beats appears during the period of rest after the first beat has ended.

Nabz Mutashanuj (Spasmotic pulse)

Nabz Mutawaesh (Tremulous pulse)

Nabz Multavi (Twisted pulse) is like a thread, which is twisted. These varieties differ from one another in progress and delay of the beat in position and breadth.

Nabz Mutwaair (Cord like pulse) -is the variety of the twisted pulse. It resembles the tremulous pulse with the difference that in the cord like pulse the movement of expansion is less conspicuous; similarly, the departure from the regularity of position of rise is less evident but tension is evident.

If only occasional pause is long it is probably due to premature beats while real irregularity is generally due to atrial fibrillation. Irregular pulse is also seen in atrial flutter with changing A-V block and in extreme degree of sinus arrhythmia. If irregularity is coming at a regular interval, which can be predicted, it is generally due to regular ectopic beats, Wenkebchā’s phenomenon or due to sinus arrhythmia.

Conclusion

Although there is no concept of cardiac arrhythmia reported in ancient Tibbi literature as such but it has been known in terms of various cardiac ailments e.g. Kha'fā'qan (palpitation), Gashi (syncope), Zoaf-e-qalab (heart weakness) Zigatul qalab, and Qazaful qalab. The signs and symptoms of these ailments resemble to the cardiac arrhythmia up to large extent. The basic concept of cardiac dysrhythmia is given as collaborative efforts of both Unani and modern medicine.

References

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