The AHA-Syndrome and Cardiovascular Diseases

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17. Two Hearts and the Path to Heartful Living

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Abstract: The present chapter describes two hearts, viz. the bio-electric pump of anatomy and the human heart of poetry and philosophy. This latter heart is the centre of the soul, the abode of love, caring and emotion. The chapter introduces phenomenology as an approach aiming to illuminate the individual’s immediate experience of the body of life, and of health and illness. It describes the intertwining of the scientific heart and the human heart in emotion and in illness. The human lives are swept in immediate emotion and feeling, and this subjective emotion impacts the medical and the poetic heart at once. Living heart-fully as a pathway toward heart health is advocated.

Keywords: Heart, Phenomenology, Emotion, Cardiac rhythms, Heartfulness.

“It is only with the heart that one can see rightly. What is essential is invisible to the eye.”

The Little Prince, Antoine De Saint-Exupery

The Two Hearts in the Human Body

From the standpoint of clinical medicine, the heart is a bio-electric pump, defined by its anatomical structures and its electro-physiological operation:

“The heart is the muscle that pumps blood filled with oxygen and nutrients through the blood vessels to the body tissues. It is made up of four chambers... that receive blood from the body and pump out blood to it... Blood vessels, which compose a network of arteries and veins that carry blood throughout the body... Four valves to prevent backward flow of blood.”

Ohio State University Medical Centre [1]

From the medical perspective, the image of pumps and pipes is central, the vital flow of blood maintained by the heart, which beats about 80 times a minute, 115,000 times a day or 42 million times a year. When physicians attempt to explain the heart to a child whose own heart is impaired, the heart is first of all depicted as a pump:

“It’s true, your heart really is a pump and it is about as big as your fist. It’s made out of a strong muscle that squeezes together to make your heart beat. Here is how it works.”

University of Michigan Cardiovascular Centre [2]
The average human being shares this perspective of anatomy and worries at any hint that this biological pump is endangered.

There is another everyday perspective, however, equally cherished, that knows the heart as the centre of the soul, as the place in which one feels love and compassion for the beloved. We know what it means to “speak from the heart” or to be “wounded in the heart”. James Barrie, the author of Peter Pan, wrote that “Only where the heart is, can the treasure be found”. Anne Morrow Lindbergh wrote that “There is no harvest for the heart alone. The seed of love must be eternally re-sown”.

This is not a new perspective. Aristotle (384-322 BC) believed that the heart was the centre of the human body, the seat of the soul and emotions, and a primary sense organ of the body. For example, he defined anger as a seething heat in the region of the heart. The ‘cardiocentric’ theory was widespread in the ancient world and included an assumption that the heart was the seat of mental processes including thinking and memory. This view was, in part, simply a matter of ignorance, since dissection had not yet disclosed the nervous system and the nervous pathways between brain and body [3].

Today, however, the cardiocentric view is undergoing a kind of limited revival. The research of John and Beatrice Lacey [4], for example, showed that there is a “two-way communication between the heart and the brain”. The heart seems to send messages to the brain and the brain responds to those messages, in ways affecting human behaviour. Armour [5] expanded this recognition into the new field of neurocardiology, which studies the intrinsic nervous system in the heart, which has afferent pathways of its own [6]. Research has also shown that the heart produces at least two hormones, atrial natriuretic factor and oxytocin (the hormone associated with more intense emotional bonding).

The heart may be an organ of connectedness between human beings. New research is showing the hearts of some intimately connected persons synchronising with one another, even when they are separated from one another without sensory connection in sealed laboratory settings [7]. The implications of these discoveries have not yet been fully tested or explored, yet they suggest a possible bridge with the poetic attribution of a more central role to the heart, especially in emotion and human bonding.

The Phenomenology of Illness

Phenomenology is the disciplined effort, within philosophy, medicine and psychology, to unfold the moment of experience as it is lived; not to dissect or explain it, but to illuminate it. Phenomenological research brings us closer to the immediate perspective of the human being who is swept up, mid-stream in an unfolding life. From the phenomenological perspective, health and disease are not simple physiological facts, rather each involves qualitative differences in the individual’s relationship to the physical environment, in personal temporality and spatiality, in relationships to the family and social world, and in the struggle for identity [8, 9].

As the Dutch phenomenological psychiatrist van den Berg showed, a sick individual – whether mentally or physically ill – lives a different existence and inhabits a perceptually and experientially different world [10, 11]. Illness and suffering turn a person back upon himself/herself. The world seems less inviting, loses its appeal, while at the same time one senses that life goes on for others without one.
For example, a woman with chronic fatigue syndrome wrote that “The destination and map I had used to navigate before were no longer useful”. She continued by declaring her need to “think differently and construct new perceptions of my relationship to the world” [12]. Understanding the patient’s objective medical condition, as measured through a complete blood count, magnetic resonance imaging (MRI) and other measures, without empathy for the “world of the sickbed”, misses this human dimension in illness. The physician is ill-equipped to assist the ill in discovering a new destination and map or in constructing new perceptions of one’s relationship with the world [13]. And yet this human dimension is often critical for any real hope of wellness or recovery.

Kingdom of the Sick

“Illness is the night-side of life, a more onerous citizenship. Everyone who is born holds dual citizenship, in the kingdom of the well and in the kingdom of the sick. Although we all prefer to use only the good passport, sooner or later each of us is obliged, at least for a spell, to identify ourselves as citizens of that other place.”

Sontag [14]

Susan Sontag described the human being stricken with illness as entering the “kingdom of the sick”. Becoming ill or disabled dramatically changes the patient’s experience of the world. The longer an illness or disability lingers, the more radically the patient’s world is transformed. If a health professional wishes to understand the patient’s perspective, it is crucial to come to understand the flavour and texture of the world of illness.

Initially, patients often experience illness or injury as a ‘violation’ that breaks into their life uninvited. The entrance may be abrupt, in a violent injury or heart attack, or may be more gradual. One day an individual feels too ill to go to the office or to play tennis as expected. Unless the onset of illness is violent, most patients cling to the expectation of acute illness. The patient may take a few vitamins, get some extra sleep or take a medication left over from a previous illness. There is a momentary retreat from life in order to recover, but the expectation remains that, in a few hours or days, one will resume life and get back to normal life priorities.

When illness worsens or lingers, patients turn to their health professional, usually the family practice physician. Patients in mainstream cultures in the United States are typically thoroughly acculturated in the acute medicine model. They visit the physician, looking for a specific diagnostic process leading to medication and recovery. The typical primary care visit will not produce a conclusive diagnosis, but the patient remains oriented to a process of brief treatment of symptoms and a return to life as usual in short order.

As illness lingers or progresses, patients often become more emotionally invested in the process of diagnosis and a search for a cure. If the diagnostic process is prolonged, uncertainty grows and all too often primitive fears that one is not cared about. The common assumption that one is entitled to treatment and a quick cure slowly breaks down. Emergence of chronicity challenges much favoured beliefs about self and life.

Modern public hygiene and medical progress have dramatically reduced the incidence of the infectious diseases such as cholera and malaria that were the scourge of the early 20th century. The acute care medical model, which occupies the larger part of current medical school training,
is enormously successful, in diagnosing and treating acute injuries and infectious conditions. Increasingly, however, the primary care clinic is congested with the care of the chronically ill. Patients with chronic illness now account for between 46 and 75% of healthcare costs. This includes such diverse conditions as diabetes mellitus, arthritis, hypertension and chronic heart disease. Little in current medical training adequately equips the physician to cope with patients who linger but will not get well.

Perhaps it is time – in this era of functional symptoms, lifestyle-based diseases and chronic illnesses – that medical thought must turn once again, to consider not only the pipes and the pumps, but how the individual will live from the heart.

**Emotional Tuning of the Heart**

Friedman and Rosenman [15] opened up the study of how lifestyle and emotion affect the heart. Their pioneering research followed 3,000 men for nine years and showed that “Type A behaviour” doubled the risk for heart disease. The Type A phenomenon included a variety of inter-related behaviours and traits. Type A individuals show time-urgency, competitiveness and hostility. They are hyper-aware of time and engage in multi-tasking (balancing multiple tasks simultaneously). In general, Type A individuals create their own tension by high expectations of self and others.

Later, Dembroski et al. [16] and MacDougall et al. [17] extended the research on Type A behaviour. They studied 12,000 men and isolated the toxic core of Type A hostility and anger. Angry doctors and lawyers, for example, are five times more likely to die of heart disease than their non-angry peers. It is anger and hostility, which kills, more so than all of the associated factors of competitiveness, time urgency and the like.

A number of basic research studies confirm the destructive effects of anger. Ironson et al. [18] asked research subjects to recall moments of anger and found that their ejection fraction lowered during the moments of anger. The heart does not pump as effectively when the individual is angry. Similarly, Boltwood et al. [19] studied individuals with atherosclerosis, partially clogged arteries and showed that recalling angry situations produced spasm of the arteries.

Anger and negative emotion are the enemies of the healthy heart. The cultivation of positive emotion is a pathway to health [20].

**The Lonely Heart**

Without loving companionship, human beings are more vulnerable to cardiovascular and other illness. Research supporting this conclusion comes from many directions. An early Israeli study of 10,000 married men with heart disease found that one simple questionnaire item had a dramatic moderating effect, even in the presence of high cholesterol, electrocardiogram (ECG) abnormalities and high anxiety [21]. Among those men who said ‘Yes’ to the question, “Does your wife show you her love?” only 52% developed angina. Among the group who said ‘No’ to the same question, 93% developed angina!

Similarly, James Lynch [22], in his book *The Broken Heart: The Medical Consequences of Loneliness* showed that the sudden loss of a partner and chronic isolation are significant contributors to cardiovascular illness and sudden death. Conversely, Lynch showed that human touch lowered heart rate and blood pressure. Dean Ornish [23] also garnered an impressive array of evidence that good relationships support cardiovascular health.
Rhythms of the Heart

The human heart beats in ever changing rhythms. Exertion increases heart rate, as does anxiety. Human touch often lowers heart rate. Healthy young hearts show high variability in heart rate. A young athlete’s heart will oscillate between peak and lowest heart rates, with a difference between the two often exceeding 20 or 30 beats/min. With aging and with sedentary lifestyle, the heart loses its variability. A sedentary 55-year-old often shows swings of only three to five beats from peak to lowest heart rates.

The level of variability is also a marker of physiological resilience, and heart rate variability (HRV) has come to be regarded as a useful prognostic index or marker for morbidity and mortality. The medical index for how much variability there is in heart rate is called the SDNN – the standard deviation of the time interval between heart beats. A higher SDNN (above 100 milliseconds (ms)) is an indicator of optimum health and a lower SDNN (below 50 ms) is an indicator of impaired health. Lower HRV predicts a greater risk for further cardiac symptoms and death after a heart attack [24]. Lowered HRV is a predictor of mortality from all causes, especially sudden death.

Negative emotion also affects HRV. Clinical depression lowers HRV and increases risk for coronary artery disease [25]. McCraty et al. [20] have identified ‘coherence’ as another quality of HRV. When the human being is absorbed in positive emotional states, as in a moment of closeness with a loved one, heart rate changes are smooth and well-ordered, resembling a mathematical sine curve – called ‘coherence’ by McCraty. When emotions are negative, the heart rate signal is ragged, irregular and low in coherence. Figure 1 shows two line graphs of moment to moment heart rate changes, contrasting the high coherence during moments of appreciation to the low coherence during frustration [20].

![Heart rate graph](image)

Fig. 1. Line graphs depict the coherent variation of the heart in a state of appreciation and jagged, irregular variation in frustration.

Childre and McCraty’s [26] description is as follows:

“... sustained positive emotions, such as appreciation, love, or compassion, are associated with a highly ordered or coherent pattern in the heart rhythms, reflecting greater synchronisation between the two branches of the autonomic nervous system.”
"... during the experience of negative emotions such as anger, frustration, or anxiety, heart rhythms become more erratic or disordered, indicating less synchronisation in the reciprocal action that ensues between the parasympathetic and sympathetic branches of the autonomic nervous system."

Modern computer technology allows both researchers and clinicians to analyse the raw heart rate signal into component waves of varying frequency. Heart rate changes are driven by several biological governors, each producing changes in specific time frames. The Fast Fourier Transform (FFT) separates out changes in heart rate in high frequency, low frequency and very low frequency ranges. The Task Force of the European Society of Cardiology and the North American Society of Pacing and Electrophysiology [27] established a standard for categorising these frequency ranges.

Today, biofeedback practitioners are teaching individuals to gain control over their heart rhythms, increasing the coherence of the heart rate changes, consciously directing HRV into specific frequency ranges and increasing overall variability [28, 29]. During HRV biofeedback, patients learn to relax and release negative emotions, cultivate positive emotional states and develop a smooth, even mindful breathing, all of which contribute to increased coherence in heart rate changes, and increased overall HRV.

Del Pozo et al. [30] provided HRV biofeedback to patients with coronary artery disease and demonstrated a significant increase in the patient's HRV (as measured by the SDNN index). This result is preliminary evidence that HRV biofeedback is a promising tool for improving survival rates in coronary artery disease.

**Living Heartfully**
What does it mean to "live heartfully"? Clearly it involves learning the following lessons:

**Transduce Harsh Negative Emotion into Gentler Positive Emotions**
Anger is the toxic enemy of heart health and living heartfully must highlight a pathway past anger. Bhat, a cardiologist in California, asks his patients to imagine that they are cuddling a baby, petting a puppy or caring for someone who is ill [31]. Bhat calls this the *Mother Theresa effect* and sees it as a direct pathway to dissolving negative emotion. When the patient cultivates positive emotion, the result is optimal HRV.

**Welcome Loving Connections with Others**
MacLean [32] emphasises what he calls “open-heartedness”, which involves the capacity to be emotionally available to experience the initial stages of connection with another and the capacity to stand outside of one’s ego long enough to emotionally touch and be touched by another. Open-heartedness means a personal transformation, in which the heart guides one’s daily life more than mental calculations and self-interest.

"Where ego strategises, love embraces. Where ego closes in on, love opens to. Where ego feels fear, love feels fearlessness. Where ego finds reasons to run, love knows the value in staying."

MacLean [32]
Master the Stress of Everyday Life
A study by Blumenthal et al. [33] of patients with cardiac ischemia shocked many, when it showed that stress management had a greater effect in reducing cardiovascular effects than standard medical care or exercise. Of all the patients with standard medical care 30% suffered new cardiovascular symptoms. The addition of exercise dropped that number to only 21% and stress management dropped the number to 10%. A meta-analysis of 37 research investigations on the effects of stress management programs for patients with coronary artery disease, showed a 34% reduction in cardiac mortality and a 29% reduction in myocardial infarction.

Cultivate Mindful Breathing
The calming effects of slow, full breathing have long been recognised in schools of meditation and yoga. Traditional Chinese medicine long ago observed the reciprocal relationship between regular breathing and the subject’s mental state:

“... the tranquility of the mind regulates the breathing naturally and in turn, regulated breathing brings on concentration of the mind naturally.”

“... the mind and breathing are interdependent and regular respiration produces a serene mind.”

*Questions and Answers of Meisha* by Yue Yanggui, Qing Dynasty, cited by Xiangcui [34]

Regulated breathing is a powerful tool to optimise heart rate variability and improve cardiovascular health.

Cultivate Spiritual Disciplines
The pathway to heartful living is the domain of the spirit and spiritual leaders in each tradition have provided insights into healing the heart. Buddhism, for example, has a special school known as *Metta*, which focusses on the cultivation of loving-kindness, a sense of connectedness with all living beings. The *Metta Sutra* is a Buddhist spiritual text which describes this pursuit of compassionate loving-kindness towards all living beings. It describes the love of a mother who will readily risk her own life to protect her child, as the image to guide those who would develop more compassion. *Metta* prescribes specific meditations to develop a deeper compassion for others [35]. Similarly, Christian teachings guide the individual to cultivate that perfect love which casts out fear (1 John 4:18). Compassion and love can salve the corrosive effects of negative emotions.

**Conclusion: The Healthy Heart**
There are two hearts in the human being:
(i) The anatomical bio-electric pump, which modern medicine has so exhaustively studied
(ii) The heart as the seat of one’s own soul and the abode of compassion
When we seek to heal the heart with mechanical and pharmaceutical means alone, we ignore the existential roots of many heart conditions. The manner in which the human being lives his/her life and the manner in which this person connects with others, has significance for cardiac morbidity and mortality.

The two hearts are not the same, yet also not separate. The compassionate heart, the heart of compassion for others, may also be the biological heart which secretes the hormone of bonding – oxytocin. The human being torn with anger also has a bio-electric pump whose pumping is impaired, and whose vessels are in spasm.

The human being empty of love is a human being more vulnerable to illness. Cultivating a network of supporting relationships, and opening oneself to feeling connected within relationships will optimise wellness.

It is time to make room in health care for the “lessons of the heart”, along with the anatomy of pumps and pipes.

Key Points

☐ Two hearts are meaningful for each human being – the anatomical heart and the heart of compassion and connection.
☐ Phenomenology illuminates the human being’s immediate experience of the living body and impact of illness on his/her relationship with the world.
☐ Health care professionals must become more familiar with the kingdom of the sick – the life transformed in chronic and life-threatening illness.
☐ Anger and negative emotions corrode the cardiovascular system, while positive emotions heal the heart.
☐ Loneliness and loss leave an individual vulnerable to cardiovascular illness. Human touch and human companionship support heart health and survival.
☐ Lowered heart rate variability is a risk factor for cardiovascular illness and death. Cultivating higher variability enhances health and wellness.
☐ Living heartfully involves developing positive emotions, opening one’s heart to others, managing stress, learning mindful breathing and cultivating spiritual disciplines as a pathway to compassion.

References


