

Ancient pathologies with current medical diagnoses: “There is nothing new under the sun” (Koheles 1:9)

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In *Ta’Nach*, only brief mention is made of ailments and pathologies experienced by various personalities, without providing an in-depth description of the underlying etiologies of such health issues. *Ta’Nach* is not a medical textbook and the lack of such descriptors of health issues is therefore appropriate. However, it is interesting to delve into such pathologies using current medical terminology and understanding. This article focuses on cardiovascular health issues, sugar-related diseases, and cancers that possibly were experienced by individuals noted in *Chumash*, *Nevi’im*, and the Talmud. The original text, as interpreted by commentators, provides some insight into the health ailment, allowing for the formulation of an educated guess as to the specific ailment and pathology. Obviously, medical analyses of ancient pathologies cannot draw upon current biomedical technology, e.g., radiology, electrocardiograms, MRIs, CAT scans, blood and urine chemistry, or clinical specimens [1].

I. Heart disease

The unexpected death of Sarah may have been caused by the sudden stoppage of her heartbeat. The *parsha* of the *Akeida* (Bereshis 22) is physically close to the *parsha* of Sarah’s death (Bereshis 23) and, as there are no coincidences in the Torah, Rashi (Bereshis 23:2) connected these two events, with the *Akeida* being the trigger for the demise of Sarah. Although there are many versions as to how Sarah was informed of the *Akeida* (see: Bereshis Rabbah 58:5; Me’Am Lo’ez; Tanchuma), the simplest version is that a messenger informed her that Avraham had taken Yitzchak to the mountain, bound him, and prepared an alter upon which to sacrifice him. Upon hearing the unraveling of these events, Sarah became confused, not allowing the messenger to finish the story and to relate that Yitzchak was not sacrificed. The sudden shock of hearing that Yitzchak was to be slaughtered caused Sarah’s soul to fly from her body, and she died (Sifsei Chachamim, Bereshis 23:2). Rabbi Chaim Shmulevitz [2] suggested that the sudden shock of learning that Avraham presumably slaughtered Yitzchak caused Sarah’s heart to stop beating, possibly referring to the cardiopathology termed a sudden cardiac death (SCD). This cardiac pathology encompasses many unexpected natural deaths, with or without warning symptoms, occurring in persons without known non-cardiac fatal conditions. Among the factors that trigger SCD are emotionally charged experiences, with a correlation noted between the recent loss of a family

member and an enhanced risk of SCD [3-7].

Sarah died at the age of 127 years, and SCD is more common in elderly women in the general population. On March 11, 2011, northeast Japan experienced an earthquake and a tsunami, causing loss of life, massive destruction, and dislocation of populations. Physical and emotional stressors, such as distress and anxiety, experienced by the affected populations led to a doubling of the incidence of SCD, with the more pronounced increase among elderly women [8].

Avraham, however, was not adversely affected when commanded by *HaShem* concerning Yitzchak and the *Akeida*. Rabbi Shmulevitz [2] suggested the reason was that *HaShem* gradually approached the subject of the *Akeida* with Avraham, rather than suddenly shocking him as happened with Sarah. The flow of words was as follows (*Bereishis* 22:2): *HaShem* said to Avraham, “Please take your son, your only son;” Avraham responded that he had two sons. *HaShem* continued, the son “who you love;” Avraham responded that he loved both his sons. Finally, *HaShem* specified, “Yitzchak.” Rashi explained that *HaShem* gradually related this message to Avraham so as not to confuse or disorient him. With Sarah the opposite occurred and, quite possibly, it was the unexpected shock of hearing about the *Akeida* that caused Sarah’s demise as a result of SCD.

Medically, SCD is the sudden, unexpected death caused by the loss of heart beating, resulting in no blood flow to the brain and to other vital organs. In the United States, SCD is responsible for half of all heart disease deaths and is the largest cause of natural death, resulting in about 325,000 adult deaths each year. SCD is not a heart attack (a myocardial infarction), but can occur during a heart attack. Heart attacks occur from blockage in one or more of the coronary arteries leading to the heart, preventing the heart from receiving sufficient oxygenated blood. If oxygen in the blood cannot reach the heart muscle, the tissue dies. In contrast, SCD occurs with malfunction of the electrical system to the heart, causing irregular heartbeats, perhaps beating too fast or too slow. The ventricles may flutter (ventricular fibrillation) and blood will not be delivered efficiently throughout the body. Within the first few minutes, the blood flow to the brain is reduced so that a person loses consciousness and faints. Death follows, unless emergency treatment is begun immediately [9].

The hardened heart of Pharaoh is mentioned three times in

Parshas Va'iera, each time with a different adjective. In *Shemos* 7:3, “*kashev*” was used and may refer to Pharaoh’s heart remaining unimpressed by *HaShem*’s actions; in *Shemos* 7:13 the word “*chazak*” was used and may imply that Pharaoh consciously opposed submission to the will of *HaShem*, and in *Shemos* 7:14 Pharaoh’s heart was described as “*kaved*,” perhaps suggesting that although Pharaoh was impressed by *HaShem*’s miraculous plagues, he delayed a positive, submissive response. Dr. L. Hoenig [10], citing Me’Am Lo’ez, noted that the term “*kaved*” is used in conjunction with the liver, the only organ that when roasted over a fire becomes tougher and harder. He speculated, perhaps tongue-in-cheek, that this is a subtle reference to an actual pathology and perhaps Pharaoh suffered from hardening of the coronary arteries. In support of this theory, Hoenig cited studies by Magee [11] of 3,000 year old mummified human remains that showed signs of arterial disease. While intriguing, this does not explain why the hardening of the heart caused Pharaoh to refuse to send the Jewish people. As can be noted in the text (*Shemos* 7:14), *HaShem* told Moshe, “Pharaoh’s heart is heavy, he refuses to send the people,” implying a direct correlation between the two phenomena. Thus it is most likely that the term “heart” is used in the Torah to describe the mind and a psychological stubbornness, rather than a specific cardiovascular ailment.

Cardiac arrhythmia is the condition in which the electrical impulses to the heart that coordinate the heartbeat function improperly and cause the heart to beat too fast or too slow. This abnormality may be hinted in *parshas Vayigash* (Bereishis 45:23-27) regarding the incident when the brothers related to their father, Yaakov, that Yosef - who was presumed dead for the past 22 years - was still alive and, more so, was ruler over the entire land of Egypt. The brothers realized that suddenly announcing this unexpected good news to Yaakov may be detrimental to his health. Thus, Serah, the daughter of Asher and an expert harpist, was recruited to sit before Yaakov, play the harp, and sing the following, “Yosef, my uncle, is still alive. He rules the whole of Egypt, for he did not die” (Sefer HaYashar cited by Munk [12]). However, this plan was not entirely effective. Some commentators suggest that upon hearing that Yosef was still alive, Yaakov experienced cardiac arrhythmia and fainted [13]. Rashbam postulated that Yaakov missed a heartbeat. S’forno noted that upon hearing the mention of Yosef, Yaakov’s pulse rate dropped and his heartbeat slowed, causing him to faint. Ibn Ezra, Rabbeinu Bachya, and Ramban opined that Yaakov’s heart stopped beating briefly, causing him to faint. The Ramban, who was a physician, noted that the frail and elderly cannot tolerate sudden joy and that many of them faint when happiness, unexpectedly and suddenly, comes to them. Only later, when the brothers related to Yaakov all the words that Yosef had spoken to them and that he saw the wagons that Yosef sent to transport him, did Yaakov revive.

A similar incident, related in Talmud Kesubos (62b), concerned Rabbi Chanina ben Chachinai who studied in an out-of-town yeshiva and was absent from his family for 12 years. When he returned suddenly and his wife saw him standing in the doorway, her heart gave such a “leap” that she died from the shock (Rashi). Her husband, stunned that this should be her reward for allowing him 12 years of unhindered Torah study, prayed for her revival and she was restored to life.

The events surrounding the capturing of the Ark of the Covenant, containing the Tablets, is the setting of Chapter 4 of I Samuel. The P’lishtim and Israel, led by King Shaul, are about to enter battle, even though the prophet, Shmuel, foretold of Israel’s defeat. In the initial encounter, the P’lishtim were victorious, killing 4,000 Jewish soldiers. Eli HaKohen’s sons, Chafni and Pinchus, decided to battle again, but this time, the Ark of the Convent would lead the Jewish soldiers in battle. The ensuing battle was disastrous, with the Ark captured and Eli’s two sons, along with 30,000 Jewish infantrymen, killed. King Shaul escaped and ran to Shiloh to tell Eli HaKohen of the events. “When he (King Shaul) came, Eli was seated in a chair next to the road, looking out, for his heart was pounding (according to Radak; Me’Am Loez) about (the fate of) the Ark of God” (verse 13). Upon being informed that the Ark was captured, Eli (verse 16) “fell backwards off his chair, opposite the site of the city gate, breaking his neck (*i.e.*, one of the cervical vertebrae); he died, for the man was old and heavy, he had judged Israel for 40 years.” Mezudath David explained “heavy” as slow in motion, either because of his age or because he was heavy in weight. From verse 13 and 16 we learn that Eli was a prime candidate for a heart attack - his heart was racing, he was very old (98 years of age), overweight, and stressed over the events of the war. Perhaps, Eli did experience a heart attack and when he arose from his chair, he lost balance, fell backwards, and severed his cervical vertebrae - causing his death.

Heart palpitations are feelings of a pounding or racing heart caused by, among other factors, anxiety, stress, panic, fear, and depression, and they differ from cardiac arrhythmias which are experienced as sensations of an abnormal heart rhythm [14]. Both Dovid and Shaul may have experienced heart palpitations. Chapter 24 of I Samuel commences with the death of the prophet Shmuel, followed by King Shaul’s defense of the land against the P’lishtim. Upon finishing with the P’lishtim, Shaul resumed his pursuit of Dovid. Told that Dovid was in the Wilderness of En-gedi, Shaul traveled with 3,000 troops to that rocky area in search of Dovid. A cave was noted and Shaul entered to relieve himself. Seeing that the entrance to the cave was covered by an unbroken spider web, Shaul felt secure to enter by himself. However, he was unaware that Dovid and his troops were hidden deep within the cave. Seeing this as an ideal opportunity, Dovid’s troops

encouraged him to kill Shaul. Dovid declined, but instead stealthily approached and cut off a corner of Shaul's robe. Verse 6, translated according to the Mezudath David is as follows: "And it was afterwards, Dovid's heart was pounding in his chest, for he had severed Shaul's robe." Apparently, Dovid experienced heart palpitations that began only after cutting the robe of Shaul. What emotional stress triggered Dovid's heart pounding? Perhaps, it was depression. "Rabbi Nechemyah said: This is why Dovid's heart began pounding, for he had denied Shaul the *mitzvah* of *tzitzit*," which was not applicable if one corner of a four-cornered garment was missing (Me'Am Lo'ez, I Samuel).

In a later incident, Shaul also may have experienced heart palpitations. I Samuel 28 described Shaul's final battle against the P'lishtim. "And Shaul saw the camp of the P'lishtim. And he feared and his heart trembled greatly" (28:5). Heart trembling could refer to heart palpitations brought about by the strong emotion of distress. Shaul, seeing that his army was greatly outnumbered by the army of the P'lishtim (Mezudath David), lost confidence. To add to his anxiety, Shaul understood that *HaShem* was not with him because he sinned regarding the complete destruction of Amalek, for which he was chastised by Shmuel, who recently died. Shmuel's death left Shaul as a broken and frightened man (Abarbenel). The loss of his mentor Shmuel, the impending battle with the P'lishtim, and *HaShem*'s disassociation with him were psychological factors that could trigger heart palpitations.

The death of the prophet Shmuel was also noted previously in chapter 25 of I Samuel. While all of Israel were mourning over the loss of Shmuel, Nabal, a wealthy man of low character, was celebrating his sheep shearing. Apparently, the following incident between Dovid, Nabal, and Nabal's wife, Avigayil, occurred shortly before Rosh HaShannah. Dovid and his soldiers, hiding from Shaul and his army, were in need of food and drink, especially as the holiday was approaching. Dovid assigned 10 soldiers to go to Nabal's festive party and to request provisions. Dovid was not asking for a free handout, but rather for payment, as his soldiers protected Nabal's sheep from attack by wild beasts. Nabal's refusal to provide provisions was told to Dovid, who then mobilized his troops to attack Nabal. A youth within Nabal's camp relayed these events to Avigayil, who, without informing her husband, quickly brought loaves of bread, wine, sheep for slaughtering, flour, roasted grain, raisins, and figs to Dovid and his army. These provisions placated Dovid, and the attack against Nabal was canceled. The next morning Avigayil informed Nabal of her actions and "his heart died within him and he became like a stone" (I Samuel 25:37). Several commentators noted that Nabal was paralyzed and lifeless, resulting from the shock of learning of his loss of the provisions given to Dovid. "And it was just ten days later (*i.e.*, on Yom Kippur) that *HaShem* inflicted a stroke on Nabal and he died" (I Samuel 25:38). Apparently, during

these ten days (*i.e.*, the Ten Days of Repentance) Nabal was semi-conscious, awake enough to potentially do *teshuvah*; it was his lack of repentance that led to the death sentence on Yom Kippur. Dr. Moshe Steier [15] suggested that Nabal suffered a myocardial infarction (*i.e.*, a heart attack) on Rosh HaShannah, followed by 10 days of tension and anxiety which induced a second and fatal heart attack on Yom Kippur. A heart attack occurs when there is a blockage of the coronary arteries, perhaps caused by a blood clot or by the accumulation of fatty deposits. Such blockage, if not quickly resolved, can cause sections of heart muscle to die.

Chest pain, termed angina pectoris, occurs when the heart muscle does not receive sufficient oxygen due to the narrowing or blockage of the coronary arteries. It is usually precipitated when the heart muscle needs more oxygen than it is receiving, for example, during physical exertion, such as walking, running, exercising, *etc.* [16]. Angina pectoris may explain the following passage in Talmud Shabbos (11a): "And Rava bar Mechasya said in the name of Rav Chama bar Gurya who said in the name of Rav, [I can tolerate] any sickness, but not a sickness of the bowels, any pain, but not heart pain, and any ache, but not a headache." Nitroglycerin is the classical medication, used for over 130 years, to treat angina pectoris. Its mode of action is based on its metabolic conversion to nitric oxide, a free radical gaseous vasodilator. Nitric oxide causes the smooth muscle of blood vessels to relax, thereby widening the blood vessels (vasodilation) and increasing blood flow [17]. A natural source of nitric oxide is derived from the chemical pathway operating through the chemical reduction of dietary nitrate in dietary vegetables to nitric oxide. Beetroot is particularly rich in nitrate and has been shown to increase cardioprotective levels of nitric oxide with a corresponding reduction in blood pressure [18] and an increase peripheral oxygenation [19]. These scientific findings elucidate the following passage in Talmud Nedarim (49b). Rav Tarfon said to Rav Yehudah, "Your face shines today." Rav Yehudah responded, "Yesterday your servants went out to the field and brought me beets. We ate them without salt and that is why my face shines today." Beets are a source of nitrate, which when metabolized to nitric oxide, causes vasodilation, including that of the peripheral blood vessels of the face. The Talmud concludes with the statement, "And if we had eaten them with salt, our faces would shine all the more." Ingestion of salt causes the body to retain water, thereby expanding the extracellular fluid volume. Perhaps, as stated by the Talmudic anecdote long before the medical pathology was known, the ingestion of beets with salt caused vasodilation of venous blood vessels with a concomitant increase in extracellular fluid volume. This would cause the face to shine even more.

II. Sugar-mediated diseases

a. Diabetes mellitus

“And if men quarrel, and one strikes the other with a stone or with a fist and he does not die but is confined to bed. If he gets up and walks about outside on his support, the assailant shall be cleared; he shall give only payment for the loss of his time and he shall provide for his cure” (Shemos 21:18, 19). If person A strikes person B, person A must compensate person B for loss of wages and for the medical expenses to treat the wound. This is discussed in tractate Bava Kamma (85a), with the focus on the word, “only,” which is an exclusionary word. The Tanna Kama raised the question about secondary sores which developed subsequent to the wound, which already may have healed. Should person A compensate person B for such secondary sores? The Talmud clarified the case, in that person B disobeyed his physician’s advice and ate “honey or all types of sweets,” which are harmful to a wound. The wounded area worsened to a condition termed *gargusni*. So the Tanna Kama’s question was - should person A be obligated to compensate person B, who did not follow his doctor’s advice, causing the condition to progress to *gargusni*. The answer can be found in the word “only,” which teaches that person A only needed to compensate person B for the initial wound, and not for the subsequent secondary sores, termed *gargusni*, which arose because person B refused to follow the physician’s medical advice. The Talmud inquired to the identification of *gargusni*. Abaye (as explained by Rashi) defined it as “dead tissue.” The *gemora* inquired of the cure for *gargusni* and answered that the curative agents were aloe, wax, and resin found in wine barrels, which were smeared on the affected area. Tratner [20] and Jacobi [21] suggested that *gargusni* refers to gangrene and person B was a diabetic. In the medical literature a case study was presented in which a gangrenous sore was treated with aloe [22].

Experimental and observational studies have identified a link between the development of type 2 diabetes with high sugar intake, usually associated with obesity and lack of exercise. Until recently, little was known of whether alterations in sugar intake, independent of obesity and exercise, can account for type 2 diabetes. Basu *et al.* [23] found that the prevalence of diabetes within a population increased by 1.1% for every 150 kcal/person/day increase in sugar availability (about one can soda/day). The impact of sugar intake on the prevalence of type 2 diabetes was independent of alcohol use and of a sedentary life style and was modified, but not confounded, by being overweight. Yet a direct correlation was noted between the duration and degree of sugar intake with the prevalence of diabetes within the population. Declines in sugar intake correlated with declines in the rate of diabetes, independent of changes in the prevalence of obesity. In the scenario described in Talmud Bava Kamma (85a), the only information provided is that person B ate sweets and was

prone to ulcers, nothing is known of whether he was obese or whether he followed a sedentary life style. The study by Basu *et al.* noted that development of the type 2 diabetes correlated primarily with sugar intake. If person B was a type 2 diabetic, the advice of the physician to curtail the intake of honey (a concentrated source of sugar) and other sweets was the correct prescription, as their consumption would lead to diabetic ulcers. As noted in Mishlei (25:27), “Eating honey to excess is not good.”

Type 2 diabetics may exhibit recurrent infections (*e.g.*, boils and carbuncles; skin infections) and dysfunctional, prolonged wound healing. Optimal nutrition is needed for wound healing. Leukocytes (*i.e.*, the white blood cells involved in destroying invading microorganisms) require sufficient glucose to produce the ATP needed for chemotaxis and phagocytosis to fight microbial infection. Thus, the wounds of diabetics lacking sufficient insulin heal poorly because they are prone to microbial infection. In addition, diabetics are at risk for ischemic wounds, because they are likely to have both small-vessel diseases that impair microcirculation and to have altered hemoglobin with an increased affinity for oxygen and not readily releasing oxygen to the tissues [24]. In the case noted in Talmud Bava Kamma (85a), if person B had uncontrolled diabetes, dysfunctional wound healing would be an expected symptom. If left untreated, diabetic ulcers could result and progress to tissue necrosis (Rashi), possibly leading to gangrene.

Rambam may have seen patients with diabetes. Dr. F. Rosner [25] suggested the Rambam was describing diabetes mellitus when he stated, “Individuals in whom sweet white [humor] occurs are very somnolent [hyperglycemic?]. To those who have an excess of sour white [humor], hunger occurs, then they become extremely thirsty. When this white liquid is neutralized, the thirst will disappear.” In Aphorism no. 69, chapter 8 of *The Medical Aphorisms of Moses Maimonides*, Rambam described his encounter with diabetics as follows: “Moses says: I, too, have not seen it (diabetes) in the West (Spain, where Rambam was born or Morocco, where he fled Almohade persecution), nor did any of my teachers under whom I studied mention that they had seen it. However, here in Egypt, in the course of approximately ten years, I have seen more than twenty people who suffered from this illness. This leads to the conclusion that this illness occurs mostly in warm countries. Perhaps the waters of the Nile, because of their suaveness (sweetness?), may play a role in this.”

b. Reactive (postprandial) hypoglycemia

Chapter 7 of tractate Gittin (67b) commences with the following case. “If one was seized with *kurdiakos* and said, ‘Write a bill of divorce for my wife,’ he did not say anything,” and he is to be disregarded. Rashi explained that *kurdiakos* was a type of delirium caused by a demon who possessed someone who drank large quantities of new

wine. Rambam, in his commentary to the Mishnah described *kurdiakos* as a type of epileptic seizure that rendered the person incoherent. Hankoff [26] postulated *kurdiakos* to be delirium tremens, a severe form of alcohol withdrawal that caused severe mental or nervous system changes.

Yerushalmi Gittin (7:1) described a person with *kurdiakos* as an individual exhibiting insane behavior, such as sleeping overnight in a cemetery, tearing his clothes, and destroying what is given to him. The mental confusion of this individual is explained using an example of a weaver. While working with black thread the weaver was given a red thread and, apparently being unaware of the change in thread color, continued weaving. In tractate Gittin (67b) the remedy for *kurdiakos* is for the person to consume lean meat broiled on coals and to drink fresh, watered-down wine.

Dr. Leo Levi [26] provided a novel approach to diagnose *kurdiakos*, analyzing the features noted in the Talmud as follows: (1) symptoms: transient mental confusion (cannot distinguish between black and red thread); (2) etiology: excessive intake of glucose (via grape juice, as “new wine” mentioned in the Talmud was, as yet, unfermented and lacked a significant alcohol content, but had a high sugar content); and (3) treatment: a diet high in protein (lean meat) and low in carbohydrates (highly diluted fresh wine). From his analysis, Levi concluded that this person exhibited the condition termed reactive (postprandial) hypoglycemia. This pathology occurs after consuming a large carbohydrate-based meal, evoking the pancreas to over-secrete insulin. The secretion of insulin leads to the removal of glucose from the blood stream and its storage in the liver. Insulin secretion continues much after the digestion of the meal, causing the level of blood glucose to decrease to below normal (*i.e.*, hypoglycemia). [Interestingly, the low level of blood sugar resulted from the over consumption of carbohydrates.] Symptoms of hypoglycemia include, amongst others, blurred vision, confusion, and light headedness. The accepted treatment for reactive (postprandial) hypoglycemia is a high-protein, low-carbohydrate diet, as noted in the Talmud.

III. Cancer

Several personalities in *Nach* exhibited pathologies that were postulated to have been cancerous tumors. The Roman emperor, Titus [27-30], and the giant, Goliath [31-35], were diagnosed with brain cancer and King Jehoram [36] with colorectal cancer. For an in-depth analysis of this topic, the reader is directed to the article, Tumors in Tanach and Talmud, authored by my colleague Dr. Alyssa

Schuck (nee: Reisbaum) [37], Department of Biology, Stern College for Women.

Raasan is an interesting disease (Kesubos 77b), possibly a brain tumor. The symptoms of *raasan* include tearing eyes, a runny nose, saliva dripping from the mouth, and being surrounded by flies. Abaye explained that therapy is via brain surgery. A concoction was prepared by mixing pennyroyal (a type of mint), wormwood, bark of a nut tree, shavings of a dressed hide, a lily, and calyxes that cover an immature red date, which were mixed and boiled. The patient was brought to a marble house (*i.e.*, the operating room) and 300 cups of the boiled concoction were poured over his forehead, apparently, to soften the cranium. A portion of the softened cranium was removed, thereby exposing a parasite on the brain. Using a tool, each of the organism’s four legs were lifted and a myrtle leaf placed below each leg, thereby preventing the parasite from digging into the brain of the patient. Tongs were used to remove the parasite, which was burned. Considered to be an infectious disease, Rabbi Yochanan cautioned to avoid contact with the flies that swarmed around a person infected with *raasan*. Consumption of mangold (or beet) and drinking beer made from cuscuta of the *hizmi* shrub prevented contracting this ailment.

After conducting a medical analysis of the Talmudic description of *raasan*, Dr. J. Preuss [38] concluded that no known modern medical illness conformed to its clinical manifestations. Dr. F. Rosner [39], however, suggested that *raasan* was a brain tumor. He explained that although Rashi referred to its etiology as an insect on the brain, the Talmudic text can equally be understood to refer to a tumor whose outgrowths resembled the feet of an insect and whose removal must be performed with much care and caution.

Concluding statements

Heart disease, diabetes, and cancer are the leading causes of mortality in the United States. These pathologies, apparently, are not new, but may have been health issues thousands of years ago. The various pathologies noted herein and the individuals in which they were hypothesized to occur are conjectures and cannot be taken as fact. It is interesting and thought provoking, however, to relate these ancient illnesses to current medical diagnoses and knowledge. When a Torah thought can be made more relevant to the generation, it becomes more meaningful and tangible.

Dedication: This article is dedicated to the memory of Dr. Shoshana (Roseanne Greenberg) Schmerer, who passed away suddenly on Monday, June 8, 2015. Shoshana's journey to Torah began at NCSY's weekly program at Stuyvesant H.S. After high school she enrolled in Neve Yerushalayim. Rabbi Smith of Neve Yerushalayim wrote about Shoshana: "What made Shoshana stand out, even amongst Stuyvesant girls, was that she never stood out, because angels don't leave footprints. Angels come into the world with a mission and they leave when the mission is done." Shoshana's next stop was SCW. She majored in Biology and upon graduation continued at Mount Sinai

School of Medicine and received her Ph.D. My memory of Shoshana includes her being an extremely fine and refined individual, her sweetness, her sense of humor, and her sincerity and dedication to the principles of Torah. May the *nesama* of *Shoshana Naomi bas Dov Beryl* have an *aliyah*.

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References

- [1] Hoenig, L., 1997, Jacob's limp, *Sem. Arthrit. Rheumat.*, 26:684-686.
- [2] Shmulevitz, C., 1982, "And Sarah died," In *Peninim MiShulchan Govohah*, vol. 1, p. 108, Eliach, D. (ed.), Machon Moreshet HaYeshivot, Jerusalem, Israel.
- [3] Dale, D. et al., 2013, Lives forever changed: family bereavement experiences after sudden cardiac death, *Appl. Nurs. Res.*, 26:168-173.
- [4] Lown, B., 1987, Sudden cardiac death: biobehavioral perspective, *Circulation* 76:186-196.
- [5] Lown, B., 1990, The Mikamo lecture. role of higher nervous activity in sudden cardiac death, *Jpn. Circ. J.*, 54:581-602.
- [6] Schwartz, B.G. et al., 2012, Emotional stressors trigger cardiovascular events, *Int. J. Clin. Pract.*, 66:631-637.
- [7] Wicks, A.F. et al., 2012, Major life events as potential triggers of sudden cardiac arrest, *Epidemiology* 23:482-485.
- [8] Niyama, M. et al., 2014, Population-based incidence of sudden cardiac and unexpected death before and after the 2011 earthquake and tsunami in Iwate, northeast Japan, *J. Amer Heart Assoc.* 2014:3:e0000798.
- [9] WebMed, n.d., <http://www.webmd.com/heart-disease/guide/sudden-cardiac-death> (retrieved 6/21/2015).
- [10] Hoenig, L., 2007, Did Pharaoh need a cardiologist?, *The Florida Jewish News*, 3 (17):15, 19.
- [11] Magee, R., 1998, Arterial disease in antiquity, *Med. J. Aust.*, 160:663-663.
- [12] Munk, E., 1994, *The Call of the Torah*, volume 1, Mesorah Publ., Ltd., Brooklyn, NY
- [13] Roguin, N., 1994, Jacob's cardiac arrhythmia, *Harefuah*, 126:618-619.
- [14] Peacock, J. and Whang, W., 2013, Psychological distress and arrhythmia: risk prediction and potential modifiers, *Prog. Cardiovasc. Dis.*, 55:582-589.
- [15] Steier, M., 1974, The cause of arterial disease, *Amer. Heart J.*, 88:677.
- [16] American Heart Association, n.d., http://www.heart.org/HEARTORG/Conditions/HeartAttack/Angina-Pectoris-Stable-Angina_UCM_437515_Article.jsp (retrieved 7/10/2015)
- [17] Wikipedia, n.d., Nitric oxide, https://en.wikipedia.org/wiki/Nitric_oxide

References (*continued*)

- [18] Wylie, L.J. et al., 2013, Beetroot juice and exercise: pharmacodynamic and dose-response relationships, *J. Appl. Physiol.*, 115:325-336
- [19] Kenjale, A.A. et al., 2011, Dietary nitrate supplementation enhances exercise performance in peripheral arterial disease, *J. Appl. Physiol.*, 110:1582-1591.
- [20] Tratner, E., 1982, A new Talmudic source on the history of diabetes (late onset), *Korot* 8:205-212.
- [21] Jacobi, M., 1998-1999, Mai gargutani” an obscure medical term in Bava Kamma 85A, *Korot* 13:165-170.
- [22] Ardire, L., 1997, Necrotizing fasciitis: a case study of a nursing dilemma, *Ostomy Wound Manage.*, 43: 30-34, 36, 38-40. .
- [23] Basu, S. et al., 2013, The relationship of sugar to population-level diabetes prevalence: an econometric analysis of repeated cross-sectional data, *PLoS One*, 2013, 8(2):e57873.
- [24] Huether, S.E. and McCance, K.L., 1996, *Understanding Pathophysiology*, Mosby-Year Book, Inc., St. Louis, MO.
- [25] Rosner, F., 1984, *Maimonides’ Medical Writings. Treatises on Poisons, Hemorrhoids, Cohabitation*, The Maimonides Research Institute, Haifa, Israel.
- [26] Hankoff, L.D., 1972, Ancient descriptions of organic brain syndrome: the “kordiakos” of the Talmud, *Amer. J. Psychiat.*, 129:147-150.
- [27] Levi, L., 1989, What is kordiakus? *Proc. Assoc. Orthodox Jewish Sci.*, 8-9:235-237.
- [28] Roder, F., 1991, The Roman emperor Titus - a victim of a tumor in the cerebellopontile angle? *Korot* 9:767*-771*.
- [29] Katz, Y., 1997, Did a mosquito kill Titus? *Harefuah*, 133:654-656.
- [30] Adlerstein, Y., 2000, *Marharal of Prague. Be’er Hagolah*, Mesorah Publ., Ltd., Brooklyn, NY.
- [31] Rabin, D., and Rabin, P., 1983, David, Goliath, and Smiley’s people, *NEJM*, 309:992.
- [32] Shapiro, R. and Mintz, A., 1990, Head injuries in the Old Testament, *Radiology*, 174:84
- [33] Sprecher, S., 1990, David and Goliath, *Radiology* 176:288.
- [34] Berginer, V.M., 2000, Neurological aspects of the David-Goliath battle: restriction in the giant’s visual field, *Israel Med. Assoc. J.*, 2:725-727.
- [35] Donnelly, D.E. and Morrison, P.J., 2014, Hereditary gigantism - the biblical giant Goliath and his brothers, *Ulster Med. J.*, 83:86-88.
- [36] Ben-Noun, L., 2004, Colorectal carcinoma that afflicted King Jehoram, *Minerva Medica*, 95:557-561.
- [37] Reisbaum, A., 1999, Tumors in Tanach and Talmud, *Derech HaTeva. A Journal of Torah and Science*, 3:28-29.
- [38] Preuss, J., 1993, *Biblical and Talmudic Medicine*, translated by F. Rosner, Jason Aronson, Inc., Northvale, N.J.
- [39] Rosner, F., 1993-1994, The illness “ra’atan (insect in the brain?), *Korot*, 10:157*-161*.

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