28

Organ Transplants

The most significant question posed in consideration of whether or not organ transplants are permissible is the justification of the hazard to which the donor is subjected in such procedures. Is a person obligated, or even permitted, to place his life in danger in order to preserve the life of his fellow-man? A number of authorities record a view attributed to the Palestinian Talmud which *requires* a person to jeopardize (but not sacrifice—as stated earlier) his life in order to save his fellow. R. Joseph Karo amplifies this position by stating that it is predicated upon the reasoning that "certainty" takes precedence over "possibility" (*Bet Yosef, Choshen Mishpat* 426). The effect of this rationale is to limit the obligation posited by the Palestinian Talmud to situations in which it is justified to assume that the procedure will *certainly* save the life of the beneficiary.

However, the requirement to risk one's life in order to save the life of another is not cited in any of the codes of Jewish law. This has led a number of rabbinic authorities to advance arguments designed to demonstrate that the Babylonian Talmud differs with the Palestinian Talmud and posits no such requirement. Accordingly, most authorities do not regard the jeopardization of one's own life to be obligatory. Yet, while at least one scholar, R. David ibn Zimra (16th cent.), considers one who does so to be a "pious fool,"[1] the assumption of such a risk cannot be considered a transgression. The matter is best summed up in the words of Rabbi Yechiel Michal Epstein, author of an early twentieth-century compendium, *Arukh ha-Shulchan,* who, paraphrasing an earlier source, writes, "However, everything depends upon the circumstances; it

is necessary to weigh the matter on a scale and not to safeguard oneself more than necessary."[2]

It would appear that the question of hazardous experiments which have no anticipated therapeutic benefit to the subject can be analyzed in much the same manner. There is no obligation to volunteer for such hazards; yet, although an individual subjecting himself to such risks may perhaps be a "pious fool," the person doing so commits no transgression.[3] It is unconscionable, and a violation of Jewish law, to subject a person to such hazards without fully apprising him of all possible risks and obtaining his informed consent. Moreover, the risk is warranted only if it is anticipated that information derived from the experimentation will be of value in the treatment of a *choleh le-faneinu,* a patient already afflicted by a disease or physiological disorder. This concept was first articulated by R. Ezekiel Landau of Prague in the eighteenth century in his celebrated responsum on autopsies, which will be examined in a later chapter. This concept was understood by a renowned twentieth-century scholar, R. Abraham I. Karelitz (popularly known as *Chazon Ish*), to include potential victims of a plague or epidemic[4] and applied by Rabbi I. Y. Unterman to battlefield situations in permitting the erection and supplying of field hospitals on the Sabbath even prior to the firing of the first shot.[5] The reasoning is that epidemics invariably claim victims and war situations forebode casualties.

Let us return to the question of organ transplants. Although, as we have seen, it is permissible to assume risks in order to save the life of another, there is no obligation to donate a limb or organ for this purpose. There are strong grounds for arguing that, even according to the view attributed to the Palestinian Talmud, there is no obligation to sacrifice an organ. To subject oneself to danger from which one may emerge unscathed is one thing; to sacrifice a limb or an organ which will not under any circumstances be regenerated is quite another. A person may avail himself of property belonging to another in order to save his own life, but with the anticipation of making restitution at some future time. Insofar as organs are concerned this is patently impossible. R. David ibn Zimra adds that it is inconceivable that the Torah, "whose paths are paths of pleasantness" (Proverbs 8:17), would *demand* such a great sacrifice of any person as a matter of *obligation.* Nevertheless, a person who donates an organ in order to save

the life of another has clearly performed an act of *chesed* (loving-kindness) of the highest order.

Heart transplants do not pose novel theoretical problems of substance. To be sure, in a celebrated controversy, two renowned authorities, R. Zevi Ashkenazi[6] and R. Jonathan Eibeschutz,[7] disagreed over the possibility of a chicken existing and growing to maturity without a heart. But R. Zevi Ashkenazi's statement that a creature cannot live without a heart does not refer to a chicken attached to a heart-lung machine. There is no reason to conclude that he would have considered the removal of the recipient's diseased heart while the recipient is attached to a heart-lung machine to be an act of murder. If this were the case, then implantation of a new heart would be tantamount to resurrection of the dead! By the same token, all open-heart surgery involving the stopping of the heart in order to provide a stationary field for surgery, while the functions of the heart are taken over by a heart-lung machine, would be tantamount to murder.

Opposition in rabbinic circles to heart transplants was initially based upon two considerations: (1) On occasion, the donor's heart has been removed before it has stopped beating. According to Jewish law, the donor is still alive and removal of the beating heart constitutes an act of homicide. Furthermore, a *goses* (moribund person) may not be moved for fear of hastening his death. Accordingly, even preparations for transplant surgery, such as wheeling the donor to an operating theater, etc., would be forbidden while the donor is yet alive. (2) The probability of success, at one time, was considered to be extremely slim. It was the opinion of many authorities that, at least at that time, the hazards to the recipient were too great to warrant the risks involved.

At present the major problem with regard to heart transplantation is that death of the donor is determined by neurological criteria that, as will be discussed in a later chapter, are *not* consistent with Jewish law. There is, however, no barrier to utilization of a heart that has already been removed even if such removal was improper.

Cadaver transplants and the permissibility of willing one's organs pose a different set of problems. The considerations with regard to these questions are closely akin to those posed by autopsies. These questions will be examined in a later chapter. As will be shown, post-mortem examinations are permissible when designed to yield information necessary to remove an already existing threat to life. Transplantation of an organ from a corpse to a living recipient is similarly permissible if necessary in order to eliminate a danger to the life of the recipient.

Renal disease constitutes an immediate threat to the life of the patient. Transplantation of a healthy kidney to replace the nonfunctioning kidneys of the patient is permissible. Kidney transplants are permissible even though accumulated body wastes may be eliminated by dialysis involving intermittent use of an artificial kidney since the general prognosis for the patient following a successful kidney transplant is more favorable than for the patient treated by dialysis. As stated earlier, cadaver transplants are permitted only if the kidney is removed after the donor has been pronounced dead in accordance with the criteria of Jewish law and unwarranted procedures are not performed while the donor is yet in a state of *gesisah.* Thus, the moribund patient may not be moved, nor may other procedures be initiated, until death has actually taken place.

It is the consensus of rabbinic opinion that eye or corneal transplants are permissible provided that the patient is blind in both eyes.[8] Bilateral blindness constitutes danger to the life of the totally blind person since he cannot perceive danger and is in constant danger of falling, slipping, or colliding with objects which may endanger his life. A transplant designed to restore sight is thus a matter of *pikuach nefesh* (saving a life). Some, but by no means all, authorities permit a corneal transplant on behalf of a patient who is blind in only one eye.[9] Competent rabbinic advice should be sought in every individual case.

These statements apply only to removal of organs from a cadaver for purposes of immediate implantation in a recipient in need of the transplant. Removal of an organ for storage in an organ bank presents a different problem which will be analyzed in our discussion of autopsies.

NOTES

1. *Teshuvot Radbaz,* III, no. 627.
2. *Choshen Mishpat* 426:4.
3. See, for example, R. Moshe Feinstein, *Iggrot Mosheh, Yoreh De'ah,* II,

no. 174, anaf 4. Cf., however, R. Eli'ezer Waldenberg, *Tzitz Eli'ezer,* IX, no. 45, sec. 13 as well as X, no. 25, chap. 7, secs. 5 and 12 and chap. 28; and R. Simchah Kook, *Sefer Assia,* III (5743), 293. For additional sources see J. David Blesch, *Contemporary Halakhic Problems,* IV (New York, 1995), 279, note 20.

4. *Chazon Ish, Oholot* 22:32.

5. *Torah she-be-'al Peh,* XI (5729), 14. Cf. R. Shlomoh Goren, *Shevilin,* Iyar 5729, pp. 22–24.

6. *Teshuvot Chakham Zevi,* no. 74.

7. *Kereti u-Peleti* 40:4.

8. Cf., however, R. Samuel Huebner, *Ha-Daron,* no. 13 (Nisan 5621), pp. 206–217.

9. See Rabbi I. Y. Unterman, *Shevet me-Yehudah,* I, 313 ff.; R. Yekutiel Yehudah Greenwald, *Kol Bo al Aveilut,* pp. 45–47; R. Ovadiah Yosef, *Yabi'a Omet,* III, nos. 21 and 22; and R. Mikhael Fuhrshleger, *Torat Mikha'el* (Jerusalem, 5727), no. 56. Cf., however, R. Yechiel Ya'akov Weinberg, *Seridei Esh,* II, no. 120; R. Meir Steinberg, *No'am,* III (5720), pp. 87–96; and R. Isaac Glickman, *No'am,* IV (5721), pp. 206–217. Cf., also, the discussions of this topic by R. Eli'ezer Waldenberg, *Tzitz Eli'ezer,* XIII, no. 91 and XIV, no. 84.

31

Time of Death

The formulation of a definition of death is in reality an attempt to arrive at an understanding of the very essence of human life. A living person is more than a mere organism. When endowed with a certain indefinable component, the organism is a vibrant human being; when that component is lost, what remains is nothing more than a corpse. The act of pronouncing a patient dead entails legal and moral ramifications of the highest significance.

The definition of death has serious medical, legal, moral and theological significance. Formulation of such a definition and the delineation of the precise moment at which death occurs is, in actuality, an endeavor to arrive at an understanding of the very essence of human life and of the nature of what it is that is lost at the time of death. Thus, theological considerations are of paramount importance.

For this reason much of the current debate concerning the determination of death misses the mark. A definition of death cannot be derived from medical facts or scientific investigation alone. The physician is eminently qualified to describe the physiological state which he observes. But he can do no more than report his clinical observations. Whether the patient meeting any description or set of descriptions is alive or dead is not, strictly speaking, a medical question. The physician may be called upon to determine whether medical science can or cannot be of further aid in restoring vital functions, but the physician possesses no esoteric information which will enlighten others with regard to the precise moment at which the moribund patient slips into death. Whether a human organism in any given physiological state is to be treated

as a living person or as a corpse is an ethical, religious question and not a medical one. Accordingly, advances in medical science and technology have no effect upon Jewish teaching with regard to the establishment of time of death.

Until fairly recently man could do very little when afflicted by serious illness and hence was powerless in face of the ravages of nature and could only proclaim with resignation: "The Lord hath given, the Lord hath taken, may the name of the Lord be blessed" (Job 1:21). In recent times many have come to feel that since doctors and scientists have succeeded in prolonging life through the application of human intellect and scientific technology, it is fitting and proper that those selfsame individuals should be the arbiters of whether the quality of such life is worth preserving and, hence, of whether they may withhold their gift in a given situation. The argument acquires at least a measure of cogency when the decision to terminate life is reached for a purportedly higher purpose, e.g., transplantation of organs from a moribund person to a patient who may have chances for greater viability. The new dictum appears to be: "Science hath given, science hath taken, may the cause of science be blessed."

Nevertheless, from the perspective of classical Jewish ethics, any proposal for redefinition of the time of death which would have the effect of declaring a person to be deceased while any of the vital functions is yet present must be viewed as a threat to the very sanctity of human life. It is axiomatic that society has no moral right to sacrifice the life of one human being for the sake of another. No matter how laudable efforts to salvage organs for lifesaving transplants may be, the snuffing out of the life of one person in the process of saving another is tantamount to murder.

Death as a concept, as distinct from a physiological state, is most frequently associated with the separation of the soul from the body. Indeed, the colloquial Hebrew phrase frequently employed as a synonym for death is *yetziat neshamah,* literally, "departure of the soul." Nevertheless, while departure of the soul from the body may constitute the essence of death, this phenomenon does not lend itself to direct empirical observation. Accordingly, other criteria must be sought which may serve as reliable indicators that this phenomenon has already occurred. The attempt to formulate a definition of death is thus really an attempt to identify

the physiological criteria which serve as the symptomatic indications that the soul has departed from the body.

Common law and, until recently, all legal systems based upon that tradition defined death as "total stoppage of the circulation of the blood and a cessation of the animal and vital functions consequent thereupon, such as respiration, pulsation, etc."[1]

This definition of death is entirely consistent with the Jewish point of view and, indeed, was probably influenced by Jewish teaching. The talmudic discussion, which serves as the primary source for establishing the criteria of death in Jewish law (*Yoma* 85a), indicates that death may be assumed to coincide with cessation of respiration. The Gemara cites the verse "all in whose nostrils is the breath of the spirit of life" (Genesis 7:22) as indicating that life is present as long as respiratory activity persists. Indeed, the Sages understood this verse as indicating that the soul departs through the nostrils; the soul, in taking leave of the body, simultaneously causes respiration to cease and death to occur. The Midrash[2] notes that the first person described in the Bible as having been afflicted by sickness is Jacob and remarks that prior to the time of Jacob sickness was unknown. Jacob's illness was an answer to his prayer for prior indication of impending death in order that he might make a testament before dying. Before the days of Jacob, according to the Midrash, a person simply sneezed and expired without any other indication whatsoever that death was about to overtake him. In presenting the details concerning the creation of Adam, the Torah states, "and He blew into his nostrils the soul of life" (Genesis 2:6). The soul is thus described as having entered the body through the nostrils. According to the Midrash, the soul departs through the same aperture by which it entered. Since before the days of Jacob sneezing was indicative of the termination of life, the Midrash indicates that, now, upon sneezing one should give thanks for the privilege of remaining alive. Thus there arose the practice that we voice a wish, "To health!" or "God bless you!" upon hearing another person sneeze.[3]

Although the Gemara speaks of examination of the nostrils as the most reliable criterion of death, rabbinic commentators indicate that cardiac activity is crucial in determining whether death has occurred. Cessation of respiration was employed as an operative definition of death only because, under ordinary circumstances, absence of breathing indicates that the heart has also stopped beating. This is clearly indicated by Rashi's choice of language in his comment upon the Gemara's discussion. In explaining the statement that it is not sufficient to examine the chest area to determine that the heart is not beating but that it is also necessary to examine the nose for possible breathing, Rashi comments, "At times life is not evident at the heart but is evident at the nose." It is readily understandable that a feeble heartbeat may not be audible or otherwise perceivable in a weakened patient (particularly before the invention of the stethoscope) since the rib cage and layers of tissue intervene between the heart itself and the outer skin.[4] Respiration is more easily detectable, and, therefore, Jewish law insists upon examination of the nostrils. However, in a situation in which life is not evident at the nose, for whatever reason, but *is* evident at the heart, cardiac activity is, in itself, sufficient to indicate that the patient is alive. Indeed, a renowned authority, Rabbi Zevi Ashkenazi, *Chakham Zevi*, no. 77, states definitively that the absence of cardiac activity is the crucial criterion of death and that respiration is simply an indicator of the presence of a heartbeat, for "there can be no respiration unless there is life in the heart." Thus, the renowned rabbinic authority, Rabbi Moses Sofer definitively declared that the patient may not be pronounced dead unless, in addition to total absence of respiration, the patient also "lies as an inanimate stone *and* there is no pulse whatsoever."[5] Pulsation is, of course, a direct demonstration of the presence of a heartbeat.

A clear understanding of this definition is necessary in light of life-support techniques available in the contemporary practice of medicine. Until recent times, life-sustaining machinery was not available. Accordingly, there was little reason to debate the precise moment at which death occurred since all relevant clinical signs of death tended to appear virtually simultaneously. At present this is no longer the case.

The most dramatic development in this area is the use of the respirator. This machine enables a patient no longer capable of spontaneous respiration to acquire life-supporting oxygen. The apparatus operates by forcing air into the lungs at set intervals. Oxygen is absorbed by the alvioli within the lungs and enters the bloodstream. Unabsorbed gases are forced out as the lung relaxes and contracts. The process which simulates breathing is quite literally an artificial form of respiration. It is also possible to attach

a respirator to a person who has already died and to cause the lung to be artificially inflated and deflated. This does not mean that the person is alive. In terms of Jewish law, it is not necessary, or even permitted, to intebate a corpse. It is spontaneous respiration, as distinct from artificial respiration, which serves as a criterion of life.

Yet patients maintained on artificial respiration are very much alive. The indicator and cause of life is ongoing cardiac activity. It must be emphasized that the heart of a patient sustained on a respirator beats in an entirely normal and natural manner. The heartbeat is spontaneous. The respirator merely "breathes" for the patient; it does not cause his heart to beat artificially. The function of a respirator is precisely the same as that of the iron lung machine used to sustain polio victims incapable of independent respiration. There can be no doubt that iron lung patients, who are fully conscious and capable of engaging in many meaningful activities, are alive. Similarly, a patient maintained on a respirator must be considered to be alive even if he is in a coma, since the comatose state is not synonymous with death. Physicians who advocate a policy which would permit them to pronounce such a patient dead do so on the basis of an entirely different criterion of death, *viz.*, "brain death," a criterion which is not acceptable from the point of view of Jewish law.

The respirator should not be confused with a heart-lung machine, which does perform a dual function. A heart-lung machine pumps blood and causes it to course through the body without the assistance of a normal, beating heart. This apparatus, which can sustain life for only a very limited period of time, is commonly used in conjunction with open-heart surgery, but is not medically appropriate for use as a life-sustaining mechanism in an otherwise terminal patient. Thus, a patient sustained on a respirator must be deemed to be alive by virtue of the presence of spontaneous cardiac activity. Moreover, even minimal respiratory capacity is, *per se*, a sufficient criterion of life, even though utilization of a respirator is necessary to provide an adequate intake of oxygen. Accordingly, a respirator may not be removed lest this act itself hasten the demise of the patient.

It must also be stressed that only the *irreversible* cessation of respiratory and cardiac activity constitutes death. A patient who has experienced heart failure but who may be resuscitated is not yet dead. Were this not the case, it would lead to the conclusion that a patient undergoing open-heart surgery is actually dead during the period of time in which his cardiac and respiratory functions are taken over by an artificial apparatus. Even more absurd would be the inescapable inference that a doctor who resuscitates a patient has resurrected the dead! It is thus obvious that only irreversible cessation of respiratory and cardiac activity constitute the criteria of death.[6] It follows, of course, that Sabbath laws and other halakhic restrictions are suspended both on behalf of a patient on a respirator and on behalf of a patient for whom there is even the faintest hope of successful resuscitation.

As previously cited, Rabbi Moses Sofer adds a third criterion to the two previously discussed, *viz.*, that the patient lie as an inanimate stone, i.e., total absence of all movement. This position is readily deducible from the comment of Rashi, *Yoma* 85a, who, in his explanation of the stated requirement for an examination of the nostrils, remarks that such examination is to be made if the person is "like a corpse which does not move its limbs." The clear implication is that, in the presence of such movement, the patient is deemed to be alive on the basis of manifestation of this vital sign alone.

Other authorities have stated that life may be present even in the absence of these perceivable criteria. Thus, if residual vital forces are in any way manifest, e.g., electrical activity in the heart as evidenced by means of an electrocardiogram or brain waves as recorded by an electroencephalogram, the patient must be deemed to be alive on the basis of such criteria alone.[7] Thus the earlier definition of death as "cessation of the animal and vital functions . . . such as respiration, pulsation, etc.," accurately reflects Jewish teaching even in the inclusion of the term "etc."!

Although in theory cessation of respiration and cardiac activity are the determining criteria in establishing that death has occurred, in practice this principle is considerably modified so that absence of these vital signs is not sufficient to establish that death has occurred. Halakhah provides that the Sabbath may be violated in order to save the life of an unborn fetus. Therefore the *Shulchan Arukh* states that if a woman dies in childbirth on the Sabbath, a knife may be brought through a public domain in order to make an incision into the uterus for the purpose of removing the fetus. However, Rema, in a gloss to this ruling, indi-

cates that this provision, while theoretically valid, is inoperative in practice. Rema declares that, quite apart from the question of desecration of the Sabbath, it is forbidden to perform a post-mortem cesarean in order to save the fetus, on weekdays as well as on the Sabbath, because we are not competent to determine the moment of maternal death with exactitude.

Since it is forbidden to so much as move a limb of a moribund person lest this hasten his death, there can be no question of an incision into the womb until death has been established with absolute certainty. In view of the fact that by the time that the death of the mother can be conclusively determined the fetus is no longer viable, this procedure would be purposeless and consequently would constitute an unwarranted violation of the corpse.

The principle enunciated by Rema is that what may appear to be cessation of respiratory and cardiac activity cannot be accepted as an absolute criterion of death. Our lack of competence is due to an inability to distinguish between death and a fainting spell or swoon. In the latter cases respiratory activity does occur although respiration may be so minimal that it cannot be perceived.

In stating that we are incompetent to determine the moment of death with precision and cannot apply the criterion of respiration with reliability, Rema does not spell out clinical signs which may be accepted as conclusive. Nor does he indicate how much time must elapse following apparent cessation of respiration before the patient may be pronounced dead. There is some discrepancy in the writings of later authors with regard to establishing such a time period. A contemporary authority, R. Yechiel Michal Tucatzinsky, *Gesher ha-Chaim,* I, chap. 3, p. 48, records that the practice in Jerusalem is not to remove the body from the deathbed for a period of twenty minutes following the presumed time of death. Earlier, R. Shalom Gagin, *Teshuvot Yismach Lev, Yoreh De'ah,* no. 9, stated that the custom in Jerusalem is to wait a period of one half-hour. Rabbi Gagin further noted that our incompetence to determine the time of death with precision should not necessitate a delay of "more than half an hour or at the most an hour" for final pronouncement of death.

A contemporary scholar[8] has argued that, in light of the clinical aids now available to the physician, the considerations which previously necessitated this waiting period are no longer operative. Rema's declaration that the ruling of the *Shulchan Arukh* is not followed in practice is based upon the fear that a fainting spell or swoon may be misdiagnosed as death. In many cases the possibility of such errors can be eliminated by use of a sphygmomanometer to determine that no blood pressure can be detected in conjunction with an electrocardiogram to ascertain that all cardiac activity has ceased. Accordingly, there is strong reason to advocate that, under such circumstances, the original ruling of the *Shulchan Arukh* now be followed in practice.

This suggestion should not be construed as an abrogation of Rema's ruling, since many authorities recognize that Rema's statement is based upon empirical considerations and admits to exceptions. For example, R. Ya'akov Reischer, *Shevut Ya'akov,* I, nos. 1 and 13, in discussing the bizarre case of a pregnant woman who had tragically been decapitated, states unequivocally that the physician who had the presence of mind to incise the abdomen immediately in order to remove the fetus need have no pangs of conscience since, in this instance, the mother's prior death is established beyond cavil. Similarly, it may be argued, Rema's statement should not be viewed as normative under changed circumstances which enable medical science to determine whether death has already occurred. This argument is cogent in view of the fact that Rema himself remarks that it had become necessary to disregard the earlier authoritative decision of the *Shulchan Arukh* solely because of a lack of medical expertise. Granted that with the use of clinical aids one can establish conclusively that all cardiac activity has ceased, the contention that no further waiting period is needed is borne out by *Chakham Zevi's* previously cited statement, "There can be no respiration unless there is life in the heart."

In recent years there has been a concerted effort to modify the traditionally accepted criteria of death. The motivation is a twofold one: (1) to make organs available for transplantation before such organs become irreversibly damaged; (2) to eliminate the financial and emotional expense of sustaining the life of patients for whom medical science holds out no hope of recovery. The various proposals which have been offered center around differing forms of "brain death." The term "brain death," although it has attained wide currency, is a misnomer since the clinical criteria employed do not serve to establish the fact that the brain has

been destroyed but rather are indicative of a dysfunction which has occurred within a limited part of the brain.

The most widely propounded proposal for a new definition of death is that of the Ad Hoc Committee of the Harvard Medical School. The recommended criteria of the Ad Hoc Committee are: (1) lack of response to external stimuli or need; (2) absence of movement or breathing as observed by physicians over a period of at least one hour; (3) absence of elicitable reflexes; and (4) a flat or isoelectric electroencephalogram. According to this definition, death is equated, not with destruction of the brain or even of a part of the brain, but with the loss of the body's integrating capacities as signified by the activity of the central nervous system. Indeed, the chairman of the Ad Hoc Committee candidly stated that the criteria offered are not a definition of death at all but constitute a definition of irreversible coma.[9] It is quite obvious that this definition of death is unacceptable from the point of view of Jewish law.

It is of more than cursory interest to note that in an earlier age Jews were subjected to bitter scorn for demanding immediate burial following manifestation of clinical signs of death. During the mid-nineteenth century various civil jurisdictions promulgated ordinances against precipitous burial. State authorities demanded a delay of as long as seventy-two hours following manifestation of clinical signs of death before permitting burial. Since Jewish law forbids such delay, rabbinic authorities of the day felt constrained to voice vigorous opposition. Moses Mendelssohn and other prominent figures of the Enlightenment urged a reconsideration of the Jewish position which they considered to be archaic and barbaric. During that period the halakhic definition of death was considered too liberal; at present it is deemed too conservative. The immutability of Jewish teaching regarding the definition of the time of death was affirmed in forceful terms by Rabbi Moses Sofer, who declared, "These are the clinical symptoms of death which have been transmitted to us from the time that the nation of God became a holy people. All the forces in the world . . . will not cause us to move from the position of our holy Torah."

Rejection of "brain death" as an acceptable criterion of death is entirely compatible with recognition that decapitation does serve as an incontrovertible indication of death even if spasmodic

muscular movements persist after the head is severed. The Mishnah, *Oholot* 1:6, states: "And likewise cattle and wild beasts . . . if their heads have been severed, they are unclean [as carcasses] even if they move convulsively like the tail of a newt [or lizard] that twitches spasmodically [after being cut off]." However, the currently proposed criteria differ significantly from decapitation as described in the Mishnah. Decapitation involves destruction of the entire brain. It might be argued with cogency that total cessation of circulation of blood to the brain will result in destruction of brain tissue. *Total* destruction of the brain might then be equated with decapitation, and the patient pronounced dead after total destruction has occurred.[10]

However, in point of fact, there is at present no clinical method of determining whether total destruction of brain tissue has occurred. Radioisotope techniques, when and if sufficiently refined, may be employed only to determine that perfusion of the brain has ceased. Cellular decay of the brain does indeed commence upon cessation of blood flow but requires an indeterminate period of time to become complete. Cessation of circulation to the brain cannot, in itself, be equated with total cellular destruction of the brain.

Moreover, radioisotope scanning techniques cannot, in their current state of refinement, be utilized in order to determine that even perfusion of the brain has totally ceased. Investigators responsible for the development of these techniques claim only that such methods may be used to indicate cessation of circulation to the cerebrum, which is the seat of the so-called higher functions of the human organism, and are careful to describe the phenomena which they report as "cerebral death."[11] These phenomena are entirely compatible with continued circulation and perfusion of the medulla and the brain stem. In fact, radioisotope techniques do not even demonstrate total cessation of circulation to the cerebrum; they indicate only that effective circulation has decreased below the level necessary to maintain its integrity. Even if scanning methods currently used are accurate, they do not indicate that all circulation to even a part of the brain, i.e., the cerebrum, has been interrupted, but only that the rate of flow is below that necessary to maintain viability. Thus, in a summary of findings which forms part of a recent study, these techniques are de-

scribed as "indicative of significant circulatory *deficit* to the cerebrum."[12]

The Harvard criteria are even less satisfactory than blood-flow tests as halakhic criteria for establishing that cellular decay of the brain has taken place. The Harvard criteria serve to establish only the dysfunction of a limited part of the brain; they do not constitute evidence that even a portion of the brain has been destroyed. *Oholot* 1:6 can be cited only to substantiate an argument that destruction of the *entire* brain is tantamount to death.

It is of more than passing interest to note that a brain-dead mother is capable of sustaining a fetus in her uterus. In at least two reported cases women already declared brain dead gave birth to live babies. In one case a woman was maintained on a respirator for an additional six days so that her baby could be born with a better chance for survival.[13] In a second case the baby was delivered by Caesarean section sixty-three days after a diagnosis of brain death was made on the basis of the Harvard criteria.[14] Although that phenomenon, in itself, is not dispositive with regard to establishing the halakhic criteria of death, the notion of a fetus gestating in a corpse is bizarre, to say the least. That phenomenon certainly serves to reinforce the position that a patient manifesting the Harvard criteria is indeed alive.

NOTES

1. *Black's Law Dictionary,* 4th ed., 1968.
2. *Pirkei de-Rabbi Eli'ezer,* chap. 52; and *Yalkut Shim'oni, Lekh Lekha,* no. 72.
3. Cf. R. Baruch ha-Levi Epstein, *Torah Temimah,* Genesis 2:22.
4. *Teshuvot Chakham Zevi,* no. 77.
5. *Teshuvot Chatam Sofer, Yoreh De'ah,* no. 338.
6. See Rabbi Moshe Sternbuch, *Ba'ayot ha-Zman be-Hashkafat ha-Torah,* p. 69; and R. Eli'ezer Waldenberg, *Tzitz Eli'ezer,* no. 25, chap. 4, sec. 5.
7. Rabbi Moses Feinstein, *Iggrot Mosheh, Yoreh De'ah,* II, no. 146.
8. Dr. Jacob Levy, *Ha-Ma'ayan,* Tammuz 5731.
9. Henry K. Beecher, "A Definition of Irreversible Coma," *Journal of the American Medical Association,* vol. 205, no. 6, pp. 337–340.
10. For an analysis of a statement by R. Moshe Feinstein regarding time of death, see J. David Bleich, "Neurological Criteria of Death and Time of Death Statutes," *Jewish Bioethics,* ed. Fred Rosner and J. David Bleich (New York, 1979), pp. 303–316. See also R. Aaron Soloveichik, "The Halakhic Definition of Death," *ibid.,* pp. 296–302 and this writer's *Contemporary Halakhic Problems,* IV (New York, 1995), pp. 316–350.
11. See P. Braunstein *et al.,* "A Simple Bedside Evaluation for Cerebral Death," *American Journal of Roentegenology, Radium Therapy and Nuclear Medicine,* vol. CXVIII, no. 4, August 1973, pp. 757–767, and Julius Korein *et al.,* "Radioisotopic Bolus Technique as a Test to Detect Circulatory Deficit Associated with Cerebral Death," *Circulation,* vol. 51, May 1975, pp. 924–939.
12. Korein, p. 924.
13. See William P. Dillon *et al.,* "Life Support and Maternal Death During Pregnancy," *Journal of the American Medical Association,* vol. 248, no. 9 (September 3, 1982), pp. 1089–91.
14. See David R. Field, "Maternal Death During Pregnancy," *Journal of the American Medical Association,* vol. 260, no. 6 (August 12, 1988), pp. 816–22. For a probable third case see J. E. Heikkinen *et al.,* "Life Support for 10 Weeks with Successful Fetal Outcome After Total Maternal Brain Damage," *British Medical Journal,* vol. 290 (April 7, 1985), pp. 1237–38.