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Pulse normal; brain dead

By Avinoam Reches

There is no more difficult moment in medicine than when a doctor is required to inform a worried family, fearfully waiting for news, that all efforts have failed and their loved one has died. This is even more difficult when the deceased looks as if he is in a deep sleep, his body warm and the cardiac monitor showing a normal pulse. Only the monotonous noise of the respirator indicates the seriousness of the situation.

It is easy to understand how hard it is for the family to accept the truth of the death, to consent to the disconnection of the respirator and to donate the loved one's organs for transplant.

Modern medical technology enables us to extend life despite various diseases, and also blurs the border between life and death. On the other hand, the constant need for organs for transplants obligates us to determine the moment of death with great precision, via an agreed process, and as quickly as possible, even in cases when the deceased's heart continues to beat.

Wait three days

The distinction between life and death has never been simple or easy. The Greek philosopher, Plato, wrote in his "Book of Laws" that "the presentation of the deceased shall not last longer than the time required to distinguish between deceptive death and real death, and it is proper to transfer the body for burial on the third day."

Galen, a compatriot of Plato's who lived about 500 years after him, cautioned the residents of his city thus:

"Do not bury the dead until 72 hours, which are three whole days, and if not, be aware that you have killed him and buried him alive."

The complicated issues of defining the moment of death continue to plague us to this day. The modern medical conception of death is that it is not a momentary event but rather a gradual process that occurs at a different rate in the body's various cells and tissues. Inasmuch as death is a

process that sometimes lasts hours or even days, doctors must determine with certainty that the process has indeed begun, and that the patient is at an irreversible stage in the process - that there is no turning back, even if not all the body's tissues have actually died.

It is easy to determine death when it is caused, for example, by cardiac arrest - the cessation of heart function deprives the body's tissues of oxygen, with the brain being affected first. The patient loses consciousness within seconds, and then his ability to breathe. If the cardiac arrest lasts for more than a few minutes, the brain suffers irreversible damage and death occurs immediately, at a clearly defined moment in time. "Heart-lung death" has been accepted by the general public for generations as undisputed, final and absolute.

"Brain death," however, is much harder to understand and accept emotionally, because death can occur even when the heart continues to beat. The first medical insight that led to this new approach was presented in a medical article in 1959, and described a condition of "irreversible coma" in a young man who had lost consciousness and lacked brain stem function, apart from respiration. The patient was kept "alive" for an extended period on a respirator, a newly invented device at that time. A new medical reality was created that was dependent on the new resuscitation measures, and for which the medical community needed medical definitions that had not existed before then.

Lack of response

In 1968, the Harvard Committee published the first criteria for determining brain death and irreversible coma. The new definitions included a lack of response and reception to stimuli, and the absence of any movement or breathing. The new definition likewise required two electroencephalograms (EEGs) at least 24 hours apart, showing no electrical activity in the cerebral cortex. Another publication, in 1971, clarified that the brain stem is the most important component in the cessation of brain activity.

A decade later, a committee of medical specialists appointed by the American president stated that death is likely as a result of "the irreversible cessation of heart-lung activity, or that of brain function, including the brain stem." Thus brain death assumed its rightful place alongside heart-lung death. The committee called for the drafting of proper medical standards for the determination of death.

It is important to note that a patient defined as suffering from brain death can remain in this condition for hours or days, and

in extremely rare cases even a few years, until the heart stops, too, and heart death is also declared. Throughout this time, the patient requires feeding and continuous artificial respiration, to keep his tissues alive. A person who is declared brain dead will never regain consciousness or any normal functions. Patients who are in this state are, unfortunately, ideal organ donors, while a person who is declared "heart dead" suffers damage to his organs due to lack of oxygen, and quite often the organs cannot be used.

In 1985, the Hadassah Medical Organization published a highly detailed procedure for determining brain death. This procedure later became the "General Administration Circular" of the Health Ministry, and is now the binding rule for all doctors in Israel in the determination of brain death. The purpose of the procedure is to set uniform rules for declaring brain death, and to prevent a situation in which a living person is declared dead, or alternatively, that a dead body is declared alive. The procedure is also designed to ensure that the determination of the existence or absence of brain death be conducted without unreasonable delay and by reasonable means under various clinical conditions.

The procedures require preconditions, such as a deep coma and the absence of independent respiration, before tests for brain death can be conducted. The patient's medical condition must also be known, and that his ailment is incurable. The procedure also requires a minimum hospital stay of 12-24 hours before brain death can be declared. Other causes for the patient's condition must also be ruled out - such as low body temperature, the influence of drugs or a metabolic disorder, which could mislead the doctors.

Only if all these conditions are met can doctors proceed to the next stage of the procedure, in which the brain itself is examined. The determination is made by a meticulous examination of all the known brain stem reflexes, including the breathing reflex, which is examined by a controlled pausing of the respirator. Brain death can only be declared if it is determined beyond all doubt that all the reflexes are absent, without exception. This examination is conducted by two doctors who check the patient together. If the patient is a child, a pediatrician joins the determination committee. The committee consists of the senior doctors that day in the fields of anesthesia, neurology, neurosurgery or internal medicine, who are not the patient's attending physicians and do not belong to that hospital's organ transplant team.

Reaching a consensus

The initial procedures, from the 1980s, relied only on a clinical

examination of the patient. When these procedures were presented by Hadassah's doctors to Israel's chief rabbis in 1987, they declared that they found the procedures to be "possibly acceptable under halakha (Jewish law) if they are supplemented by an objective scientific examination of the brain stem." The demand at that time was to add a brain stem auditory response test to the procedures.

Presumably, the adoption of the brain death protocol by the Chief Rabbinate would add more communities to the pool of organ donors, making such adoption a national priority. Unfortunately, in the 20 years since 1987, the doctors and the rabbis have not reached an understanding or a consensus, with each side digging in its heels and accusing the other of obtuseness and egocentric considerations.

The current protocol for determining brain death, which is not yet in practice, was developed as a broad social process over several years, led with great wisdom by Dr. Yitzhak Berlovitz, in his former position as deputy director general of the Health Ministry. The proposed protocol contains the required "confirmation tests," as requested by the Chief Rabbinate, for determining brain death. These tests include, in addition to the BAER test, proof of the lack of blood flow to the brain, using a Doppler or computerized imaging test.

Not all doctors concur with this fundamental change to the determination of death. The dissenters argue that this last test requires advanced medical equipment that is not available at all hospitals, and will complicate or prevent the determination of death.

There seems to be consensus among Berlovitz's partners in advancing the protocol in principle, with the bone of contention being the implementation process. Over the years there have been rejections of rabbinate's demand that one of its representatives, or a doctor whom it trusts, be a member of the committee determining brain death.

The doctors, for their part, have suggested that from the moment that death is declared and sealed by a medical action undertaken only by the doctors, the whole process will be transparent and will be explained to any person chosen by the family. Many doctors these days also add a "confirmation test," when such a request is made by the patient's family.

A bill from MK Otniel Schneller (Kadima), currently up for debate by the Knesset, aims to promote the establishment of a public-medical steering committee of doctors, rabbis, jurists, philosophers and ethicists. According to the bill, the committee would determine the procedure for training and qualifying the

doctors who would declare brain death, would approve the awarding of qualification certificates for declaring brain death and would review the processes for determining brain death at the hospitals.

This bill has some stumbling blocks but also offers great hope. I believe that the parties will find the wisdom to settle the small differences that remain after so many years of disagreement.

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