Invited editorial

The neurosurgeon’s responsibility for organ procurement

More and more, surgeons are realizing that an organ removed for transplantation after cardiac arrest is poorly accepted by a recipient. A recent editorial in the British Medical Journal implied that such an operation would constitute malpractice; this may not be current legal opinion, but certainly the chances of a successful transplant are better if organs, particularly the kidneys, are taken from a “beating-heart cadaver.” This has emphasized the necessity of defining death as an absence of cerebral function, a concept which now has statutory recognition in a number of American states. Several sets of criteria for the establishment of a dead brain have been suggested. The Collaborative Study on Cerebral Survival pointed out that standards based upon a single system practically always had exceptions, and suggested the following criteria for an absolute determination of cerebral death within a few hours of the onset of coma and apnea.

Prerequisite. All appropriate diagnostic and therapeutic procedures have been performed. (This eliminates the possibility that the criteria might be applied to comatose patients with reversible conditions such as drug intoxication, intracranial hematomas, obstructive hydrocephalus.)

Criteria. The following criteria should be present for a period of at least 30 minutes, 6 hours after the cerebral insult:

1. Absence of responsiveness
2. Apnea
3. Absent cephalic reflexes (except vestibular), dilated pupils
4. Electroencephalograph silence.

Although these criteria are probably adequate to substantiate a dead brain if the prerequisites are met, when an early pronouncement of death is desirable, often before results of drug surveys or definitive diagnostic tests can be obtained, a confirmatory test (angiography, bolus curves, echoencephalography and retinoscopy for sludging) indicating the absence of cerebral circulation for a period of 30 minutes adds a final degree of certainty to the decision.

It is noted that the presence or absence of the spinal reflexes has no bearing upon the diagnosis of cerebral death. A test for spontaneous respiration, often mentioned as a requirement, is unnecessary and inadvisable because the usual period of observation is insufficient for arterial O₂ to fall to levels which would excite the medullary centers, but is long enough for CO₂ to reach levels that could damage other organs. A number of the lower cranial nerve reflexes might be omitted, except for the fact that their presence (for example, cough) although of no prognostic value, might raise false hopes and questions in relatives.

Standards requiring that the criteria be present from 6 to 24 hours are probably “overkills” and unduly restrictive. Some do not require electroencephalographic or circulatory examinations, but they do specify that the criteria must be met for relatively long periods of time. Under these circumstances, although the patient is moribund, the presence of electroencephalographic activity in some cases indicates that the brain is not completely dead.

It will be some time before the general public accepts unreservedly the medical concept of death from lack of cerebral function. The relationship of the heart to life has been held by people for so long that probably one
or two generations must pass before the new viewpoint is firmly ingrained in the public's mind. Until that time, the physician, more knowledgeable and more receptive of changing ideas, has a duty to inform the relatives of his moribund patients of these advances and to invite their cooperation in obtaining organs for chronically ill patients. It is estimated that if all suitable donors could be utilized, the needs of transplant surgeons for kidneys could be met many times over. Yet, there is a dearth of such donors. This stems from a certain apathy on the part of attending physicians to inform the next-of-kin of the possibility and need for donor organs. Because relatives seem likely to consent to removal of organs for positive altruistic reasons, this approach might also augment the decreasing number of autopsies being performed.

The neurosurgeon has a particularly important role to play because many of his patients vegetating from head injuries, brain tumors or other encephalopathies, are ideal donors. Surely, at the time it becomes his lot to plan their ultimate disposition, which includes the possible donation of viable organs as well as dignified death rites, he has a duty to society to initiate a sympathetic discussion with relatives so that he may inform them of their opportunity to give healthy organs to benefit, and even to restore to an active life, the victims of chronic illness. Such a community service might well increase the confidence of patients in doctors and improve the public image of physicians.

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References

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