Clinical Topics

Diagnosis of death

Memorandum issued by the honorary secretary of the Conference of Medical Royal Colleges and their Faculties in the United Kingdom on 15 January 1979

British Medical Journal, 1979, **1**, 332

(1) In October 1976 the Conference of Royal Colleges and their Faculties (UK) published a report[1] [2] unanimously expressing the opinion that "brain death," when it had occurred, could be diagnosed with certainty. The report has been widely accepted. The conference was not at that time asked whether or not it believed that death itself should be presumed to occur when brain death takes place or whether it would come to some other conclusion. The present report examines this point and should be considered as an addendum to the original report.

(2) Exceptionally, as a result of massive trauma, death occurs instantaneously or near-instantaneously. Far more commonly, death is not an event: it is a process, the various organs and systems supporting the continuation of life failing and eventually ceasing altogether to function, successively and at different times.

(3) Cessation of respiration and cessation of the heart beat are examples of organic failure occurring during the process of dying, and since the moment that the heart beat ceases is usually detectable with simplicity by no more than clinical means, it has for many centuries been accepted as the moment of death itself, without any serious attempt being made to assess the validity of this assumption.

(4) It is now universally accepted, by the lay public as well as by the medical profession, that it is not possible to equate death itself with cessation of the heart beat. Quite apart from the elective cardiac arrest of open-heart surgery, spontaneous cardiac arrest followed by successful resuscitation is today a commonplace and although the more sensational accounts of occurrences of this kind still refer to the patient being "dead" until restoration of the heart beat, the use of the quote marks usually demonstrates that this word is not to be taken literally, for to most people the one aspect of death that is beyond debate is its irreversibility.

(5) In the majority of cases in which a dying patient passes through the processes leading to the irreversible state we call death, successive organic failures eventually reach a point at which brain death occurs and this is the point of no return.

(6) In a minority of cases brain death does not occur as a result of the failure of other organs or systems but as a direct result of severe damage to the brain itself from, perhaps, a head injury or a spontaneous intracranial haemorrhage. Here the order of events is reversed: instead of the failure of such vital functions as heart beat and respiration eventually resulting in brain death, brain death results in the cessation of spontaneous respiration; this is normally followed within minutes by cardiac arrest due to hypoxia. If, however, oxygenation is maintained by artificial ventilation the heart beat can continue for some days, and haemoperfusion will for a time be adequate to maintain function in other organs, such as the liver and kidneys.

(7) Whatever the mode of its production, brain death represents the stage at which a patient becomes truly dead, because by then all functions of the brain have permanently and irreversibly ceased. It is not difficult or illogical in any way to equate this with the concept in many religions of the departure of the spirit from the body.

(8) In the majority of cases, since brain death is part of or the culmination of a failure of all vital functions, there is no necessity for a doctor specifically to identify brain death individually before concluding that the patient is dead. In a minority of cases in which it is brain death that causes failure of other organs and systems, the fact that these systems can be artificially maintained even after brain death has made it important to establish a diagnostic routine which will identify with certainty the existence of brain death.

Conclusion

(9) It is the conclusion of the conference that the identification of brain death means that the patient is dead, whether or not the function of some organs, such as a heart beat, is still maintained by artificial means.

References

[1] Conference of Medical Royal Colleges and their Faculties (UK), *British Medical Journal*, 1976, **2**, 1187.
[2] Conference of Medical Royal Colleges and their Faculties (UK), *Lancet*, 1976, **2**, 1069.

Creosote has long been used for line marking on grass games pitches. How safe is this?

Contact with creosote causes irritation of the skin, mucous membranes, and conjunctivae. Depending on concentration, cutaneous contact may result in itching, burning, or papular or vesicular eruptions. Photosensitisation has also been reported. Repeated contact with creosote over long periods may cause cutaneous neoplasms. Protective clothing is generally considered adequate to prevent skin contact. Groundsmen engaged in line marking (and possibly other users of creosote) may be particularly exposed to some of these hazards.

International Labour Office, *Encyclopaedia of Occupational Health and Safety*, vol 1, p 348. Geneva, 1971.
Schwartz, L, *et al*, *Occupational Diseases of the Skin*, 2nd edn, p 227. London, Henry Kimpton, 1947.
Patty, A F, *Industrial Hygiene and Toxicology*, 2nd edn, vol II, p 1392. New York, Interscience Publishers, 1967.

Correction

10-year survey of 485 sterilisations—Part I

In Dr Robert G Whitelaw's article "10-year survey of 485 sterilisations" (6 January, p 32), the last line of paragraph 4 of the discussion should have read ". . . sterilisation for the woman who wants no more children.[15]"