

## EDITORIAL

### TRANSPLANTATION OF HUMAN HEART

Last December, a hospital and a surgical team in South Africa startled the world by embarking on the first case of human heart transplantation, and within a matter of a month, further transplants were reported from centres in the United States and South Africa. The score was three deaths out of five, and the remaining two, on all basis of medical assessment would be fortunate to survive for long. However, the publicity and official communications from the surgeons responsible were such that the world was led to believe that success was round the corner, and a new milestone in medical progress had been attained.

Transplantation of human organs involves two main problems. Firstly, there is the question of technical feasibility, which is in turn dependent on the availability of donor tissue in conditions suitable for use, and the surgical skill in achieving the actual transplant involving the selection of a suitable recipient who should have next to no expectation of further survival, and yet be in a state to withstand a very major operation. Secondly, there is the problem of tissue rejection, which has so far defeated medical skill, and can only be suppressed in the majority of cases partially with lifelong medical care and therapy. The donor must yield his tissue immediately death is pronounced, and in many cases pronounced when the heart was still beating and the persons still breathing—all accepted signs of life! Of course, the heart beat and respiration were in the majority of cases present because of the use of artificial means. Nevertheless, it has become a point of serious controversy whether such a state of animation was life or death. The controversy has been sufficiently disturbing for the medical men, that it is now generally recommended that the decision of the state of death of the donor should not be within the domain to decide of anyone who is going to be connected with the transplantation itself, and meanwhile, some countries are in fact considering legislation to define when death can be said to exist!

The selection of the recipient is likewise beset with difficulties, for it is obvious that when a person is able to withstand an operation which will take many hours, and need the service of many doctors in a team cannot be moribund by any stretch of imagination. In other words, his immediate expectation of life may be anything

up to a year. Yet he must be bad enough physically to permit the attending surgeon to consider offering a therapy which has high operative mortality, and poor chance of a two-year survival in most cases. Of course, in transplants involving tissue like cornea, bone, bone marrow, heart valves and vessels, the problem is nowhere as dramatic or acute, for there is not the same pressing need for immediate removal of donor tissue, and the operative risk is lower, and the success prospect more rosy.

Lastly, there is the problem of tissue rejection, where the diagnostic criteria are not well known, and the regime of suppression by irradiation, immuno-suppressive agents, and anti-lymphocytic globulin not only hazardous in themselves but also uncertain in action. The doctors involved in the aftercare find that they are in difficulty in recognising the signs of rejection early enough before serious irreversible damages supervene, and in even greater difficulty when treating, because they are using regimes where the dosages and efficiency are not known sufficiently well to ensure a high percentage of success and safety.

Hence it is that other than transplants of cornea, bone, bone marrow, arterial segments and cardiac valves, most of the transplants have been confined to animals, or of a temporary nature like pig liver transplant in hepatic failure, or a supplementary one like renal transplant where one other kidney remains in the recipient in case of a total reject of the transplanted one. Also, it is practically an accepted rule that one would like to see a transplantation success in animals over a satisfactory survival period before the venture in human case is to be made.

In the last few years, transplantation of major human organs such as liver and lung have all failed because of rejection, and cardiac transplant has as yet no success even in animals. Some hopeful results have been achieved in renal transplants, but only with the aid of dialysis and life-long intermittent therapy, and even here, other than in the case of kidneys from twin donors, the period is as yet too short to permit a dogmatic assertion of benefit.

Viewed in this light, the recent spate of cases of heart transplant in human cases would appear hasty, to say the least, and rather than rushing to emulate an experiment which may

prove to be ill-considered, untimely, and disastrous, the medical world at large would in fact be wiser to hold its accolade till more is known. Certainly, the reports released so far are disturbing in that no breakthrough appeared to have been made by the daring surgeons in the

control of tissue rejection, and the attempts have given an impression of a hopeful seeking of a miraculous exception in human tissue reaction, which most probably did not exist, than a considered risk backed by some acceptable success in experimental animals.

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