

EDITORIAL

Heart transplantation after donation by circulatory death donors

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Keywords - Organ donation, heart transplantation, non-heart beating donor, outcome

Transplant surgeons and the transplant team at St Vincent's Hospital in Sydney, Australia have performed the first three heart transplants using 'dead hearts'.¹ The organ donors were DCD (donation after circulatory death) donors, which means that they were declared dead after their circulation had stopped. Up to now, donor hearts were always obtained from people who are confirmed as brain dead but with a heart still beating and their circulation intact. Hearts were the only organ that is not used after the heart has stopped beating - known as donation after circulatory death. Organ donation from DCD donors yielded mostly kidneys, livers and lungs. DCD previously referred to donation after cardiac death; 'cardiac' was changed to 'circulatory' years ago, as it was already clear that the heart was not 'dead' at the time of declaration of death after cessation of the circulation. It needs to be remembered that the world's first heart transplant by Barnard in Groote Schuur Hospital in Cape Town, South Africa in 1967 was performed with a heart taken from a patient who had a circulatory arrest after catastrophic brain trauma.² After establishing criteria for brain death in 1968,³ almost all hearts for transplantation were donated by brain dead, heart beating organ donors.

A novel technique has made this form of organ donation possible. Beating hearts are normally taken from brain-dead people, kept on ice for around four hours (cold storage) and then transplanted to patients. The Australian transplant team took the hearts from organ donors after the heart had stopped beating. Five minutes after the circulation had stopped, the organ donor was declared dead, and the procedure was started to obtain the heart for transplant. The hearts were optimised for transplantation using a form of machine preservation, known as a 'heart-in-a-box', in which the heartbeat is restored and where the heart is perfused. The heart is kept warm and the preservation fluid, containing blood of the organ donor, helps to reduce damage to the heart muscle and increase transplant success.

Does this mean that we have greatly increased the number of potential heart donors? This may very well be true. In the

Netherlands, about 50% of all donor procedures are DCD donors. Many, but not all, will have hearts that may be suitable for organ donation. It will also open the possibility to perform heart transplants in countries that do not allow organ donation from brain dead donors, as in Japan and other Asian countries. If the technique of normothermic machine perfusion becomes widely available, this potential can be used. Meanwhile, we may need to explain to the public that the fact that the heart can be restarted does not mean that the organ donor was not dead at the moment of organ donation.

References

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