Heart Transplant: Overview And Benefits

The Heart is that the hardest working muscle within the physique and it’s the pump which moves blood via the circulatory system, supplying oxygen and nutrients to the tissue and removing carbon dioxide and other wastes. When a human heart is not working and causing problem to the body, and it does not respond to any therapies, the science has provided a possible solution to replace the injured organ. A transplant is the answer for those people who are likely to die if they do not receive a new heart soon, who are fit and lusty other than the injured and diseased organ and those people who have not positively respond to the treatment. A heart graft is a surgical operation whereby a diseased heart is superseded with a healthy heart from a lusty deceased person. The first world success heart transplant human to human was carried out by Doctor Christian Barnard in south Africa on the 3rd of December 1967. Luis Washkansky was the first human to receive a heart graft at the age of 53 years old who was afflicted of a cronic heart disease. His donor was a young woman who died for a car incident. He was given drugs to put down his immune system and keep his body from rejecting the heart, these drugs also left him vulnerable to sickness, although he died from double pneumonia 18 days later the surgery. The technique used during the operation was originally developed by a group of American researchers in 1950.

These are the following diseases that a human should have to receive a replacement of his own heart. The Coronary heart disease is caused by the heart’s blood provision when is stuck by develop of fat core in the coronary arteries. Cardiomyopathy it’s when the heart makes it harder to pump blood to the whole body and it includes include dilated, hypertrophic. Congenial heart disease is the disorder that developed in a heat’s human womb. Arrhythmia it’s a rhythm problem of the heart and heart valve diseases it’s when a value does not close tightly enough. Only in the United Kingdom, last year, 6077 people were on a waiting list for an organ transplant and 292 were waiting for a new heart, and only 151 hearts transplants were performed; the lack of suitable organs is one of the main issue for transplant since 1967. A heart can be kept viable for a transplant only for six hours. which leads to the second major complication for the people in the waiting list must cope with, the delay of the organs. A cronic rejection is one of the primary problems in the long-term graft; it’s a multifactorial operation that has the major impact on the long-term graft and patient survival after the transplant. It's identified as an evolving damage that results from multiple alloimmune attacks on the organs. Malignancy, it’s due to the elevated doses of prophylactics needed during immunosuppressive therapy after the heart transplant; the complication after it are 39.1% in a period time of 10 years. These interferences to long-term survival could be avoid by the induced of transplant tolerance wherein the beneficiary’s immune system is convinced not to trigger a damaging immune response against donor antigens, therefore removing the need for a cronic immunosuppression, which the side effect is increase complicated recipients' antibody-mediated rejection.

Worldwide, there is a constant growth of number of patients with an urgent necessity of organ but the number of organs and cells accessible from deceased and living people are restricted. There have been manifold medical intent of xenotransplantation during the last 300 years. Xenotransplantation is any surgical procedure that include the transplantation, implantation or infusion into a human receiver either living cells, tissues or organ from a nonhuman animal source or body fluids, tissues, organs and cells that got in contact with an ex vivo (out of living)

with live nonhuman animal cells, organs and tissues. In 1964, Dc. James Hady has performed the first heart xenotransplantation on a human by replacing the diseased heart with a chimpanzee’s heart. The patient died after several hours because the heart wasn't large enough to support the circulation.

The developments of this surgical procedure are driven by the requirements of humans' organs. The current state of research of xenotransplantation is laboratory experiment because the achievements that science has reach and worked on since the first xenotransplantation are really promising for the future of it; but they still haven't achieved the required success to proceed to solve this global issue. Through the last 56 years, xenotransplantation has been done on a human with different source of organs; chimpanzee, pig, baboons and sheep and these attempts were documented even though none of these transplantations have been approved by the FDA (Food and Drugs administration).

Overall, the benefits of xenotransplantation are improvements in new areas of research and the potential of enlargement of transplantation, the percentage of organs donation sent to the black market is reduced and the amount of organ sources is increased which could potentially reduce the people in the waiting list. On the other hand, xenotransplantation has negative sides; the percentage of rejection is higher that the success even though anti-rejection drugs are used to prevent it ; some religious community do not approve the mixing of species because it’s against the creator will which leads to moral issues. The animal's organs have a shorter span life than the humans one, so they become weaker through the years and they eventually die. The animal’s organs relocated into the human bodies are most likely to impart animal-borne disease which will cause important problems to the post-surgery recovery.

Referencies

1. Unknown author, Heart transplant,https://www.nhs.uk/conditions/heart-transplant/ (19/03/2020)
2. Unknown author, Who is a Heart Transplant Candidate at UPMC? unknown date https://www.upmc.com/services/transplant/heart/candidates (19/03/2020)
3. Cold Spring Harb Perspect Med, Heart Transplantation: Challenges Facing the Field 2014 May https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3996379/ (26/03/2020)
4. Uknown author, Coronary heart diseases 10 March 2020 https://www.nhs.uk/conditions/coronary-heart-disease/ (26/03/2020)
5. Uknown author , Congenital heart disease, unknown date,https://www.bhf.org.uk/informationsupport/conditions/congenital-heart-disease (26/03/2020)
6. Uknown author, Arrythmia ,18 June 2018https://www.nhs.uk/conditions/arrhythmia/ (26/03/2020)
7. David K.C.Coopera, BurcinEkserb , A. JosephTectorb A brief history of clinical xenotransplantation 26 June 2015 https://www.sciencedirect.com/science/article/pii/S1743919115003337 (15/04/2020)
8. David K. C. Cooper A brief history of cross-species organ transplantation January 2012 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3246856/ 15/04/2020
9. Unknown author WHO | Xenotransplantation unknown date https://www.who.int/transplantation/xeno/en/ 15/04/2020
10. Yung Puga Gisella L.a, Rieben Robertb, Bühler Leoc, Schuurman Henk-Janc, Seebach

Jörg D.a , Xenotransplantation: where do we stand in 2016? 09 February 2017 https://smw.ch/article/doi/smw.2017.14403 15/04/2020
11. Unknown author xenotransplantation 28 March 2019 https://smw.ch/article/doi/smw.2017.14403 15/04/2020
12. https://www.yeahmatt.com/product/healthy-vs-unhealthy/?add-to-cart=2222 15/04/2020
13. https://connectusfund.org/8-crucial-pros-and-cons-of-xenotransplantation
14. https://www.prosancons.com/medicine/pros-and-cons-of-xenotransplantation/
15. https://organdonationalliance.org/the-key-to-preserving-organs-for-transplant/
16. https://www.ncbi.nlm.nih.gov/pubmed/26643469
17. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3783121/
18. https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/16537/organ-donation-and-transplantation-activity-report-2018-2019.pdf
19. https://www.history.com/this-day-in-history/first-human-heart-transplant 16/04/2020
20. https://web.stanford.edu/dept/HPS/transplant/html/frequently_asked_questions.html 18
21. http://sitn.hms.harvard.edu/flash/2015/xenotransplantation-can-pigs-save-human-lives/ 18
22. https://wwwnc.cdc.gov/eid/article/2/1/96-0111_article 18
23. https://www.webmd.com/heart-disease/guide/transplantation-treatment#1 18
24. https://www.history.com/this-day-in-history/first-human-heart-transplant 18