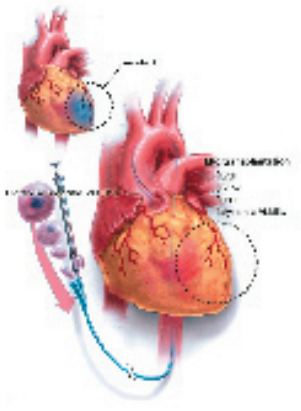
Chaophya Hospital
BKK THAILAND
www.chaophya.com

Cell Therapy for Ischemic Heart Disease

An Overview

Chaophya Hospital, in collaboration with a leading biotechnology firm, TheraVitae, is now offering state-of-the-art cell therapy for end-stage ischemic heart patients for the first time in Asia. Using autologous cell therapy, circulating adult stem cells harvested from the patient's own blood, the cells are separated from other blood cells and greatly expanded in number in the laboratory using GMP manufacturing standards.

Approximately one week later these cells, called angiogenic progenitor cells or APC's for short, are re-infused back into the blood vessels supplying blood flow to the heart muscle. The injected cells migrate out of the blood vessel's lumen and take hold in the ischemic muscle region where they stimulate the formation of new blood vessels to bring more blood flow to the needy heart muscle fibers.



In addition to being precursor cells for blood vessels, some of the APC's are known to also morph into cardiac muscle cells, fuse with heart muscle fibers and secrete cytokines, molecules that provide the homing signals to recruit other cells and molecules to help rejuvenate the function of heart muscle. In this case, the APC's transfused are expected to turn into or stimulate the formation of new blood vessels.

Benefits of autologous adult stem cell therapy are numerous:

- "Autologous" stem cell therapy means the adult stem cells used for treatment are taken from the patient's own blood so there is no danger of the patient's body rejecting them.
- Risks of infection are lowered because the genetically identical cells contain no infectious agents beyond what the patient already harbors could be introduced.
- The cell collection is nearly painless and is identical to a blood donation; thus no need for immunosuppressive drugs or administration of anesthesia.
- Using adult stem cells completely sidesteps the thorny ethical issues associated with use of embryonic stem cells.
- Administration of the APC's is quite safe: the risks involved are similar to those of the standard balloon angioplasty procedure that is routinely performed daily the world over.

The entire procedure takes approximately 14 days, depending upon the patient's physical condition. The beneficial effect becomes clinically discernable usually after one month and becomes maximal at 3-6 months.

While the treatment may not cure heart disease, it can substantially improve the flow of blood in a large majority of the patients treated, thus reducing chest pains and sharply increasing physical capacity. The result for many patients is an improvement in quality of life to the point where many activities enjoyed before their illness have once again become possible and enjoyable.

Cell Therapy Treatment History

Worldwide over the past decade, more than 200 heart patients have received cell therapy in one form or another, mostly in Europe. Because of regulatory requirements, the U.S. lags behind in this area. Three trials have received FDA approval and are currently underway in the U.S. at the University of Pittsburgh in Pittsburgh, St. Elizabeth Medical Center in Boston and Texas Heart Institute in Houston, with more trials expected in the coming months.

The first patient treated at Chaophya Hospital was featured in the November 21, 2005 issue of Time magazine, and to-date more than eighty patients from North America, Europe, the Middle East, and Southeast Asia have been successfully treated.

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Frequently Asked Questions

What are stem cells?

Stem cells are primordial, unspecialized cells that have the remarkable potential to renew themselves as long as the person or animal is still alive. Under suitable conditions, they can become another type of more specialized, terminally differentiated cells such as brain, heart muscle, liver, nerve, red blood cells, etc. Stem cells serve as a sort of repair system by replenishing cells that are lost because of senescence or injuries.

Who is suitable for this treatment?

At this stage, the treatment will be confined to heart patients who have recurrent symptoms and inadequate heart function, despite having undergone multiple conventional treatments with coronary artery bypass surgery and/or balloon angioplasty and stenting of stenotic or narrowed coronary vessels and are deemed not suitable for repeat treatment.

Will immunosuppressive drugs be required after cell therapy?

No, since the cells are your own cells there is no risk of rejection. Also the risk of transplanted cells attacking the host, so-called graft versus host reaction, is also eliminated.

How long does it take to grow the cells in the lab?

At the present time, it takes about a week to grow the cells in sufficient numbers for therapeutic purpose.

Does the process of growing the cells in the lab involve contact with animal cells or proteins?

No, the procedure developed by Theravitae to grow the cells does not involve any contact with foreign cells or proteins and this obviates the risk of inadvertent transmission of animal's virus.

How long do I have to stay in the hospital?

It depends on your general medical condition. For the initial blood drawing, patients usually stay overnight for observation and comprehensive medical evaluation. For the actual cell therapy procedure done a week later, patients usually need to stay for only a few days in the hospital.

How are the cells administered?

The cells are given through a catheter inserted through a groin artery and threaded into the coronary blood vessels. This is essentially the same procedure that is performed in the percutaneous balloon angioplasty procedure.

What are the risks of this procedure?

The risks of cell therapy are the same as the risks associated with balloon angioplasty. The cell product itself is very safe and essentially has no added risks since the cell product is a normal constituent of the blood.

Is there risk of the cells inducing the formation of tumor?

To date, there is no reported case of this occurring in more than 200 patients receiving cell treatments worldwide. While embryonic stem cells do have the tendency to form tumor if injected into the body, this does not happen with adult stem cells.

How long does it take to discern the improvement after cell therapy?

The improvement can be seen as early as one month and usually reaches its peak after about six months.

How can I get more information?

You may email us at international@chaophya.com if you have any further questions.

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The Hospital/The Doctor

About Chaophya Hospital

Chaophya Hospital, incorporated in 1988, is a leading private health care institution in Thailand. From its inception, the hospital was conceived as a tertiary care general hospital to provide high quality healthcare by specialists to both local and international patients, and this has always been the guiding principle in its conduct and development. The hospital received ISO9001:2000 certification in 2001.

Under the leadership of Prof. Suphachai Chaithiraphan, MD, Chaophya Hospital is privileged to be at ground zero of the innovative stem cell therapy for end-stage ischemic heart disease patients. The hospital is a trailblazer in translating stem cell research from the laboratory bench to the patient's bedside. Since March 2005, more than eighty patients from U.S., U.K., Southeast Asian and the Middle East regions have been treated successfully and it is expected that the number of patients will grow rapidly in the coming months and years.

The Heart Center at Chaophya Hospital offers cardiac patients comprehensive services rendered by experienced medical experts in cardiology. The Chaophya team consists of physicians, pediatricians, surgeons, anesthesiologists, nurses and supporting medical staff who work together in preventative medicine, treatments, and rehabilitation. The Chaophya Hospital Heart Center is composed of the heart clinic, C.C.U., I.C.C.U., cardiac catheterization room and operating room, and rehabilitation center.

About Professor Suphachai Chaithiraphan, MD

Prof. Suphachai Chaithraphan, MD is the Chairman of the Executive Board of Chaophya Hospital and Director of its Heart Center, which is at the forefront of cell therapy research and treatment for end stage ischemic heart disease patients. Regarded as one of the leading cardiologists in Asia, Dr. Suphachai did his internship and residency in the US, completing his Fellow in Cardiology and several years of cardiology practice at Beth Israel Hospital in New York City before returning to Thailand. Dr. Suphachai is extensively published, with over 215 articles to date. For the past 14 years, he has held the position of Chief Editor of Thai Heart Journal.

Medical Society Memberships
- Fellow of the American College of Cardiology (FACC)
- Fellow of the Royal College of Physicians of London
- Fellow of the Royal Australasian College of Physicians
- Fellow of the American College of Physicians
- Fellow of the Royal College of Physicians of Thailand
- Fellow of the Academies of Medicine of Malaysia and Singapore

Board Certifications
- American Board of Internal Medicine
- American Board of Cardiology
- Thai Board of Internal Medicine and Cardiology

Experience:
- Professor of Medicine-Emeritus, Department of Medicine, Faculty of Medicine, Mahidol University, Bangkok, Thailand
- President, Asean Federation of Cardiology
- President, Thai Atherosclerosis Society
- President, Asia-Pacific Society of Hypertension
- President, Thai Cardiac Imaging Society
- President , Royal College of Physicians of Thailand
- President, Thai Hypertension League
- President, Siriraj Medical College Alumni
- Consultant to The Cardiac Center, Siriraj Hospital, Bangkok, Thailand
- Secretary-General, Heart Foundation of Thailand under The Royal Patronage of H.M. the King
- Chairman, Thai Board of Cardiology
- Chairman, Thai Board of Internal Medicine

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