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The stem-cell hope

By Lee Hui Chieh

Stem cells, which have the potential to develop into some or all of the specialised cells in tissues and organs provide hope that they can replace damaged cells. The race is on to find new ways to harness them to treat various diseases.

To most people, a bone marrow transplant is as familiar as any Japanese, Korean or Taiwanese tearjerker, which often features a protagonist who is dying of leukaemia and needs such an operation.

Stem-cell therapy, on the other hand, sounds experimental, almost the stuff of science fiction.

Yet, the bone marrow transplant, which has been in the medical lexicon for decades, is really a form of stem-cell therapy. It is a transplant of haemopoietic stem cells, or immature blood cells, found in the bone marrow.

Bone marrow transplants have been used here since 1983 to treat blood diseases such as leukaemia.

These and other stem-cell treatments here have been done mostly with adult stem cells.

These are immature cells found in the body's tissues or organs that can eventually develop into some or all of the specialised types of cells found in those tissues and organs.

The appropriate stem cells are injected into the body to replace diseased or damaged cells.

The race is on to find new and more effective ways of harnessing stem cells for the treatment of various diseases.

Miss Cho, 56, a procurement officer, still played at club level after leaving the national team in 1989.

In the last few years before she called it quits, her knees became swollen and painful after each game.

In 2003, the pain worsened and her knees hurt when she climbed the stairs. One day in 2005, she woke up to find them locked.

She sought help from Associate Professor James Hui, National University Hospital's (NUH) senior consultant



Former national netball player Sally Cho (above) was forced to give up the sport 10 years ago when the pain in her knees became unbearable.

orthopaedic surgeon, who sliced her left kneecap and implanted cartilage grown from stem cells taken from her bone marrow into the joint. The cartilage cells grew to fill the spaces between the bones, he said.

Miss Cho had the procedure done on her right knee two years later.

After a year of physiotherapy, she is now playing badminton weekly. She said: 'Now I can play normally but I don't go all out like before.'

She is among more than 200 patients who have paid \$4,000 to \$8,000 to undergo this therapy, on trial since 2003. Prof Hui hopes to recruit 300 patients aged below 65.

NUH is also testing a second method using stem cells injected directly into the knee.

Patients first undergo an existing treatment where microfractures, holes made with a tiny pick, are made through keyhole surgery in the bone of the worn-out joint. This stimulates the bone marrow into releasing a type of stem cell that later grows into cartilage.

Stem cells are also retrieved from the hip, grown and injected into the knee with hyaluronic acid, which protects the cells.

NUH hopes to enrol 100 patients in this trial, which began last June. All of them will get microfractures and the acid, but only some will be given the additional stem cells for comparison purposes. The 42 patients treated so far paid between \$4,000 and \$7,000.