

Osteoarthritis

Skeletal Disease/Injury | Bone Marrow, Adipose



Osteoarthritis is degeneration of the cartilage, which is a tough flexible tissue that covers the ends of joints and forms structures such as ears, nose and the windpipe. Cartilage permits bones to glide over each other and prevents bones rubbing together. Injury, inflammation or damage of the cartilage due to sport, genetic factors or autoimmune activity leads to pain and lack of mobility in the affected joints. It can therefore be acute, with sudden onset due to injury, or it can manifest as chronic long-term degradation.

The exact number of osteoarthritis sufferers is unknown due to the milder symptomatic sufferers not seeking medical assistance or relying on over-the-counter medication to control the pain and inflammation. Nevertheless, an estimated 8 million people are affected by osteoarthritis in the UK, and its cost is thought to amount to 1% of annual UK GNP. Over 10,000 people per annum require medical treatment for damage.

Osteoarthritis is most common in women over 50 years of age, while accidental damage occurs most frequently in those under 35.

Clinical Trials

The anti-inflammatory effect of mesenchymal stem cells (MSC) is of particular interest. So far, clinical trials all focus on MSCs from various sources and in combination with a variety of other media to mediate an anti-inflammatory response.

Most trials require follow up for many years due to the progressive and degenerative nature of the disease, so most have yet to conclude and provide finalised results.

Presently there are 20 clinical trials listed on www.clinicaltrials.gov using stem cells to investigate alternative treatment options for cartilage damage. Most are sourced from adipose or from bone marrow as an autologous source of stem cells (e.g. NCT01159899, NCT00891501 and NCT01399749). Some are also assessing bioscaffolds combined with both autologous and allogeneic stem cells to effect a better repair with greater longevity (e.g. NCT00850187).

There is also work assessing the benefits of autologous versus allogeneic sources of MSCs. However, there are currently no clinical trials using cord blood, although this is likely to be a function of the availability of sufferers with cord blood samples.

References

<http://www.cartilagehealth.com/acr.html>

<http://www.nhs.uk/Conditions/Cartilag-damage/Pages/Causes.aspx>

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