

Poster presentation

Open Access

Mesenchymal stromal cells for the treatment of steroid induced avascular osteonecrosis in children – a two year follow-up

N Tzaribachev*¹, M Vaegler¹, A Schaefer², M Rudert³, P Reize⁴ and I Mueller¹

Address: ¹University Children's Hospital, Tuebingen, Germany, ²University Hospital, Dept. of Radiology, Tuebingen, Germany, ³University Hospital, Dept. for Orthopaedics, Munich, Germany and ⁴Hospital for Orthopaedics, Stuttgart, Afghanistan

* Corresponding author

from 15th Paediatric Rheumatology European Society (PreS) Congress
London, UK. 14–17 September 2008

Published: 15 September 2008

Pediatric Rheumatology 2008, **6**(Suppl 1):P147 doi:10.1186/1546-0096-6-S1-P147

This abstract is available from: <http://www.ped-rheum.com/content/6/S1/P147>

© 2008 Tzaribachev et al; licensee BioMed Central Ltd.

Background

Children with haematological or autoimmune diseases (e.g. lupus erythematosus) are prone to acquire avascular osteonecrosis (AVN) following treatment with high dose steroids. More than 35% of those with advanced AVN stages (Marcus/Enneking II and III) fail to respond solely to core decompression.

Multipotent mesenchymal stromal cells (MSC) are capable of transforming into various mesenchymal tissues, e.g. bone. A combination therapy might be of benefit for those children.

Objective

We aim to show that the regeneration process of osseous structures is possible by local MSC application for steroid induced AVN in a child.

Patients and methods

One female patient with leukaemia and steroid induced AVN of the right knee (Marcus Enneking stage II-III) was treated with core decompression and local application of autologous MSC. The healing process was followed by MRI and CT-scan over a two year period.

Results

No early or late adverse events occurred. Two weeks after the procedure our patient was pain-free. Follow-up MRIs on day +72 and +210 showed a slow regress of the initial bone marrow edema and a continuing regeneration of the

osseous defect. The CT-scan 24 months later documented the re-ossification of the initial lesion.

Conclusion

Local MSC-application might be a promising treatment option for advanced steroid induced AVN in children with haematological or autoimmune diseases. Results of a prospective study are under preparation.

References

1. Dominici M, Le Blanc K, Mueller I, Slaper-Cortenbach I, Marini F, Kraus D, Deans R, Keating A, Prockop Dj, Horwitz E: **Minimal criteria for defining multipotent mesenchymal stromal cells. The ISCT position statement.** *Cytotherapy* 2006, **8**:315-7.
2. Bruder SP, Kurth AA, Shea M, et al.: **Bone regeneration by implantation of purified, culture-expanded human mesenchymal stem cells.** *J Orthop Res* 1998, **16**:155-162.